

DEPARTMENT OF DEFENSE APPROPRIATIONS
FOR 2022

HEARINGS
BEFORE A
SUBCOMMITTEE OF THE
COMMITTEE ON APPROPRIATIONS
HOUSE OF REPRESENTATIVES
ONE HUNDRED SEVENTEENTH CONGRESS
FIRST SESSION

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DEPARTMENT OF DEFENSE APPROPRIATIONS FOR 2022

FRIDAY, MAY 7, 2021.

FISCAL YEAR 2022 UNITED STATES AIR FORCE AND SPACE FORCE BUDGET

WITNESSES

HON. JOHN P. ROTH, ACTING SECRETARY OF THE AIR FORCE
GENERAL CHARLES Q. BROWN, CHIEF OF STAFF OF THE AIR FORCE
**GENERAL JOHN W. RAYMOND, CHIEF OF OPERATIONS, U.S. SPACE
FORCE**

OPENING STATEMENT OF CHAIR MCCOLLUM

Ms. MCCOLLUM. The hearing will come to order.

This hearing is fully virtual, and we are going to go over a few housekeeping matters.

For today's meeting, the chair or the staff designated by the chair may mute participants' microphones when they are not under recognition, for the purpose of eliminating background noise.

Members, you are responsible for muting and unmuting yourselves. If I notice that you have not unmuted yourself, I will ask you if you would like the staff to unmute you. If you indicate that you would like the staff to help by nodding, that would be good and then the staff will unmute your microphone.

I would also like to remind all members and witnesses that we have a 5-minute clock and it applies. If there is a technology issue, and we have had a few, we will go to the next member until the issue is resolved, and members will retain the balance of their time.

You will notice a clock on your screen, and that will show how much time is remaining. And it is easiest to see the clock if you are in grid mode.

At 1 minute remaining, the clock will turn yellow. At 30 seconds remaining, I will gently tap the gavel to remind members that their time has almost expired. When your time has expired, the clock will turn red, and I will begin to recognize the next member.

In terms of speaking order, we will follow the order set forth by House rules. And that will begin with the chair and the ranking member; members present at the time the hearing is called, in order of seniority; and, finally, members not present, they will be included as they join into the meeting.

Finally, House rules require me to remind you that we have set up an email address to which members can send anything they

wish to submit in writing at any of our hearings or markups. And that email address has been provided to your staff.

So, as I said, the subcommittee is in order. And, this afternoon, the committee will receive testimony on the posture of United States Air Force and Space Force.

Our three witnesses are the Honorable John Roth, Acting Secretary of the Air Force; General Charles Brown, Chief of Staff of the Air Force; and General John Raymond, Chief of the Air Space Operations.

All three of our witnesses have long and very distinguished careers serving our country, and we thank you for your service. However, this is the first time each of you has testified before the committee, and we welcome you.

While the hearing today will cover multiple topics, I will quickly highlight a few items that I want to make sure get discussed.

The Air Force today stands at a pivotal point in its history. General Brown has characterized the Air Force situation, and I quote, "Accelerate, change, or lose." In other words, the Air Force must modernize, do so quickly, and this will require hard decisions.

This committee will need to give serious consideration to the divestment of so-called legacy systems in order to free up limited funding for more relevant capabilities. At the same time, characterizing a program or an effort as "modernization" does not grant it a free pass. We will continue to scrutinize all programs for cost and for performance.

In addition, I want to hear from the Air Force on how they are tackling climate change and from both services on how they are combating sexual assault and extremism in the ranks.

As to space, in the 16 months since Space Force was established, significant progress has been made in standing up its operations unit, Space Force Command. However, while progress has been made on the operations side, progress in addressing longstanding acquisition issues has been disappointing so far.

Too often over the past two decades, the space acquisition programs have been delivered late, over budget, and sometimes billions of dollars over budget. Just one example is the current missile-warning satellite program, which, according to GAO, was delivered nine years late. That is nine and \$15 billion over its original estimate.

The intent of establishing Space Force was to fix these issues. Yet, to date, space acquisition appears to be simply the sum of its previous parts, with minor tweaks around the edges. The Department of Air Force has yet to resolve fundamental issues on roles, responsibilities, and authorities between its various space acquisition units. Now, we understand, I want to be clear, I mentioned 16 months and a new administration, but we need to see movement.

Nowhere is the lack of progress more evident than the absence of senior civilian acquisition leadership solely focused on space within the Department of the Air Force. More than 80 percent of the Air Force's funding goes towards acquisition. Overseeing and leading an organization attempting to deliver such technical, complex systems is not a part-time job, which it is how it has been handled in the past.

Congress established an Assistant Secretary of the Air Force position to serve in a Space Force acquisition executive position, and that has yet to be filled. So, we want to hear when that is going to be filled. And I believe this person should have responsibility for aligning programs, plans, budgets, and integrating those plans across the Department.

I strongly urge the administration to quickly fill this position at the earliest opportunity and to seek a space acquisition professional to carry out this important responsibility.

The committee's support for Space Force hinges on how well it manages the funding that the taxpayers provide to deliver capability to the combatant commands.

We would also like to hear about the Department of the Air Force's plan to address space acquisition and bring greater discipline to delivering space capabilities on schedule and within budget. I am encouraged that President Biden has named Frank Kendall, a seasoned acquisitions expert, to lead the Department of the Air Force and aerospace programs.

I acknowledge that we are holding this hearing before the release of the full budget request, and we understand that this may limit your ability to answer certain questions. However, given the tight timeframe we have to write the bill, I ask that you be prepared to respond to members on any specific budget question they ask today immediately, and also to the full committee at the same time, after the request is submitted.

And, with that, I thank you again for appearing in front of the committee today to discuss these important issues.

I will ask you to present a summarized statement in a moment, but, first, I would like to recognize our ranking member, Mr. Calvert, the gentleman from California, for his opening comments.

Mr. Calvert.

OPENING REMARKS OF MR. CALVERT

Mr. CALVERT. Thank you, Chair McCollum.

I want to thank each of the witnesses for appearing before us today.

The 2018 National Defense Strategy states that, to address the scope and pace of our competitors' ambitions and capabilities, we must invest in the modernization of key capabilities through sustained, predictable budgets. To accomplish this, it is what Congress and the subcommittees, in particular—

Ms. MCCOLLUM. Mr. Calvert, you have gone silent and we have lost your feed.

Let's just pause for a minute and see if he can get back on. Hopefully staff is with him and monitoring.

Members, I don't want to proceed because Mr. Calvert needs to hear the testimony as well. So we will wait a few more minutes. I thank you so much for your indulgence. I appreciate it. Thank you.

Mr. CALVERT. Can you hear me now?

Ms. MCCOLLUM. I can hear you. I do not see you.

Mr. CALVERT. Okay. We have a little technical issue here. We are working through it.

All right. I am back.

Ms. MCCOLLUM. There you are. Welcome back.

Mr. CALVERT. Sorry about that.

Ms. MCCOLLUM. Why don't you start almost from the beginning?

Mr. CALVERT. Okay. I will say thank you again, Chair McCollum, and I will just get into what we need to accomplish, this subcommittee. And listening to our witnesses today, I am anxious to do that.

Obviously, in this era of great-power competition, our Air Force/Space Force must be modernized, ready, and lethal in order to address threats from adversaries like China. I would like to hear from each of you on how the airmen and guardians are keeping pace with rapidly evolving threats in aerospace, cyberspace, and other domains.

Furthermore, in order to adapt to the changes in the strategic environment, I agree with General Brown's "accelerate, change, or lose" vision. American air dominance is not a birthright. We must evolve into a new warfighting era to maintain our edge.

I would hope that the new leadership builds on successes of the last administration, specifically the efforts of Dr. Will Roper. He recognized the Air Force needed to do better at bringing disruption into the system, including small business. He was able to take a sixth-generation fighter from concept to prototype in 1 year. That is the type of disruptive change that the Air Force and the entire Department desperately needs.

There has also been a lot of discussion about how the Air Force, in particular, is looking to shed legacy systems to invest in new technology. While I support these efforts, I am interested to hear more about how we are adequately balancing resources between future high-end warfare and the realities of our current operations.

Finally, I must address an issue that is close to my heart that speaks to the realities of risk not only in high-end warfare but also in training. An F-16 mishap at Shaw Air Force Base in June of 2020 took the life of First Lieutenant David Schmitz.

The report highlighted multiple failures on the part of the Air Force, ranging from training standards to risk mitigation and emergency procedures. Following this hearing, I want to get a status update on all the faults highlighted in the incident report.

As this young man's Member of Congress, I am committed to working with the Air Force and holding it accountable to ensure that corrective action is being taken to honor Lieutenant David Schmitz's sacrifice and to ensure this never happens again.

I understand that, under current and future fiscal constraints, you will have to make difficult decisions about where budget priorities will fall. I hope they will not come at the cost of increased risk in training and readiness.

I look forward to reviewing these choices once the fiscal 2022 budget is submitted and continuing our dialogue so that we can make the right choices for airmen, guardians, and the Nation as a whole.

And thank you again for taking the time, and I am sorry for our little technical glitch.

I yield back.

Ms. MCCOLLUM. I am so glad you were able to resolve that. And thank you for your words, your strong words, about making sure

that all our servicemembers, but for today, in particular, the people who serve in the Air Force, have the training and the right equipment so that they can fulfill missions, including their training mission, and come home safe. Thank you for your strong words. It is very important to remember that.

I would like to first turn to Secretary Roth.

Mr. Secretary.

SUMMARY STATEMENT OF SECRETARY ROTH

Secretary ROTH. Thank you very much, Chair McCollum.

Good afternoon, everybody. Chair McCollum, Ranking Member Calvert, members of the committee, it is a pleasure to be here today.

I am also honored to have General Brown and General Raymond join me here in representing the nearly 700,000 airmen and guardians that defend our Nation. We thank you for your consistent and persistent support over the years, which has enabled us to build the world's greatest air and space forces.

As an integrated force, our airmen and guardians stand ready, willing, and able to meet responsibilities to our Nation and continue defending the high ground. From 300 feet to 300 miles off the ground, we protect the homeland, we project power, and we defend our democracy.

The long-term strategic competition with China and Russia demands that we focus on capabilities we need today to win tomorrow. Our Nation's competitive strategic advantage relies on air and space superiority, which is underpinned by rapid technological advancement and the extension of space as a warfighting domain.

In line with Secretary Austin's priorities to defend the Nation, take care of our people, and succeed through teamwork, our fiscal year 2022 budget is the beginning of a journey to the Air and Space Forces of 2030. It builds capabilities that allow the Department to modernize while continuing to meet national security objectives and defend the high ground.

Specifically, we are committed to investing in, one, empowering airmen and guardians; two, capability-focused modernization; three, connecting the Joint Force; and, four, expanding partnerships.

First, our airmen and guardians remain the heart of our ability to deter and, if necessary, defeat our competitors. We are transforming our talent management systems to ensure that we develop and train leaders with the competence, character, and skills required to win high-end fights. And we remain devoted to recruiting and retaining a diverse corps of multi-capable, innovative talent to outmaneuver our adversaries today and in the future.

We owe it to our force to provide them with an environment where all can thrive. That is why we are directing critical resources to rid our ranks of any corrosive elements and injustices that degrade our ability to provide a lethal, ready force.

Second, to remain the world's greatest Air and Space Force, we must look to the future through a lens of capability-focused modernization. Evidenced by nuclear modernization, next-generation air dominance platforms, our digital acquisition approach revolutionizes how we design and field capabilities to the warfighters.

This budget expands on these digital revolutions while also investing in next-generation space systems that are resilient and defensive. Space is no longer a benign domain. Our U.S. Space Force is purpose-built to deter and protect free access to space.

Third, combatant commanders require an agile military that operates seamlessly across all domains at both speed and scale. That is why we continue to invest in capabilities like the Advanced Battle Management System to connect the Joint Force, every sensor to every shooter, across all domains.

Likewise, access to and freedom of action in space is central to the success of a connected Joint Force. In its second year, U.S. Space Force is focused on integration. Investments in space capabilities increase the effectiveness of operations across all domains. The result is a military that is better-connected, better-informed, faster, and more precise.

Finally, the U.S. Air and Space Force do not fight alone. We benefit from the expertise and capabilities of our sister services and coalition forces, as well as from commercial industry, interagency, and academia. We will continue to invest in enduring relationships while expanding new partnerships to transform how we fight future wars.

Members of the committee, thank you for inviting us to testify. I look forward to your support of our fiscal year 2022 budget and am confident that, with your help, the Air and Space Forces will be armed with the capabilities necessary to protect our Nation and defend the high ground.

We welcome your questions. And I ask that this opening statement be entered into the record.

Ms. MCCOLLUM. The formal remarks from all three of you gentlemen will be entered into the record.

Thank you for being so succinct.

General Brown.

SUMMARY STATEMENT OF GENERAL BROWN

General BROWN. Chair McCollum, Ranking Member Calvert, distinguished members of this committee, good morning and good afternoon. I am humbled to appear before you as our Nation's 22nd Air Force Chief of Staff. I represent the 689,000 total force airmen serving today. Your support to our airmen and their families is greatly appreciated.

It is an honor to be present for my first posture hearing with Acting Secretary Roth and my fellow service chief and friend of many years, General Jay Raymond.

As a general officer, I have spent the last decade-plus in joint positions focused overseas and/or supporting operations in the Middle East, Europe, Africa, and most recently in the Indo-Pacific. With this context, I have been able to look at the Air Force from a different perspective, and I have personally seen the reemergence of great-power competition and how the character of war has changed.

The strategic environment has rapidly evolved, and we haven't changed fast enough to keep pace. The People's Republic of China has recognized modern warfare as a contest amongst systems, not individual units or platforms. Accordingly, Secretary Austin has

prioritized China as our pacing threat. Meanwhile, Russia continues to modernize its armed forces, increasing the capability of its missiles, strike aircraft, warships, artillery systems, and nuclear weapons. And current competition and future warfare will be conducted across all domains simultaneously, will be a trans-regional and global undertaking, with complex actions and actors intertwined.

To account for these changes, our Air Force must change faster than we have been. If we continue on a path of incremental change, our advantage erodes, and losing becomes a distinct possibility.

The Air Force recently updated our mission statement to “Fly, fight, and win. Airpower anytime, anywhere.” To continue executing this mission, we must transform our force and our operational concepts, and we have to do it much faster. That is why I wrote “accelerate, change, or lose,” to call attention to the changes in the strategic environment. Because the capabilities that our Air Force has now that were good enough for yesterday or good enough for today will fail tomorrow.

Our future Air Force must be agile, resilient, and connected, with the ability to generate near-instantaneous effects anytime, anywhere—not just sometimes, in some places, but anytime, anywhere.

Our Air Force is the only service that provides our joint teammates, allies, and partners the assurance of air superiority, the advantage of global strike, and the agility of rapid global mobility through a range of capabilities most requested by today’s combatant commanders.

Additionally, the Air Force’s current ISR and command and control capabilities provide the ability to sense, make sense, and act. While our past and current capabilities have sufficed for the last three decades, they will not effectively perform in tomorrow’s high-end fight.

Finally, we have foundational responsibility to our airmen and their families. I remain focus to ensuring that they are ready, have the tools and infrastructure and talent management systems needed to provide the environment where all can reach their full potential.

The future Air Force design advances our core missions and new approaches to warfighting that realistically support every combatant commander and benefit every service chief. Investing in your Air Force is an investment in the Joint Force.

Ladies and gentlemen, the bottom line is simple: We must modernize for the future and focus on capabilities that maintain our advantage both today and tomorrow. For decades, we collaborated with Congress and our industry partners to modernize for the future. We have done it before, and now I am confident, together, we can do it again. We must be willing to change and make tough choices to fulfill our responsibility of ensuring our national security.

Thank you for the opportunity to be with you today, and I look forward to your questions.

Ms. MCCOLLUM. Thank you very much, General Brown.

And, finally, General Raymond.

SUMMARY STATEMENT OF GENERAL RAYMOND

General RAYMOND. Chair McCollum, Ranking Member Calvert, and members of the committee, it is an honor to appear before you today with Mr. Roth, the Acting Secretary of the Air Force, and General C.Q. Brown, the Chief of Staff of the Air Force, a longtime friend and teammate.

On behalf of the guardians and civilians assigned to the Space Force, let me begin by thanking you for your continued leadership and your strong support you provided our new service.

The United States is a space-faring Nation. We have long understood our Nation is strongest economically, diplomatically, and militarily when we have access to and freedom to maneuver in space.

For the past three decades, we have been able to take that access and that freedom to maneuver for granted. Unfortunately, as the National Defense Strategy and the newer Interim National Security Strategy highlight, this is no longer the case. Both China, our pacing threat, and Russia continue to develop space capabilities for their own use.

And they are both building weapons specifically designed to deny us the benefits we currently enjoy. These threats include robust jamming of GPS and communication satellites; directed energy systems that can blind, disrupt, or damage our satellites; anti-satellite weapons in space or from the ground that are designed to destroy U.S. satellites; and cyber capabilities that can deny our access to the domain.

Thankfully, with the strong support of Congress, the United States seized on the opportunity to make needed change to stay ahead of this growing threat and established the United States Space Force. This leadership is resonating globally, and it is already delivering advantage for our Nation. I am pleased to report, with the establishment of the Space Force, we are better postured today to meet the challenges we face than we were just under 17 months ago.

We have purpose-built this force for this domain. We have slashed bureaucracy at every level in order to empower our guardians to move at speed and to increase accountability.

We have put together a forward-leaning Human Capital Strategy, allowing us to build a more highly trained, educated, and developed force while taking care of guardians and their families throughout their entire career.

We wrote our first doctrine to more clearly articulate the independent value of space power to the joint and coalition forces. And this importance is fully captured in the Department's new joint warfighting construct.

Our international partnerships are stronger, with many of our partner nations following our lead by elevating space.

We have created a new capability development process, from force design and requirements to acquisition and testing, enabled by a digital thread, while driving unity of effort across the Department.

Now that we have built this service, we are moving at speed to capitalize on its creation. We have set conditions to outpace emerg-

ing and dynamic threats and create new military options. Working with the Joint Force, interagency, industry, and our partners and allies, these partnerships will allow us to move at speed and at an affordable cost.

You will soon see our first independent top-line budget, which reflects the importance of space to our national security. Space is a force multiplier for the entire Joint Force. Our top priority is to provide assured access to capabilities for our Nation, to our joint and coalition partnerships, and to modernize to be more survivable in an increasingly contested domain.

Building on the investments made over the previous fiscal years, we will balance the need to protect capabilities that we have on orbit now while shifting to a more defensible architecture in the future. These demanding tasks could not have been possible without sustained support from Congress, including this committee. So, for that, I thank you. We cannot afford to lose space.

I am honored to serve as the first Chief of Space Operations and to have the opportunity to serve side-by-side with our incredible Space Force team. It is because of them that our Nation enjoys the benefits of space today, and it is because of them, America's sons and daughters, that we will compete, deter, and win in the future.

I appreciate the opportunity to appear before you, and I look forward to your questions. Thank you.

[The information follows:]

Department of the Air Force Posture Statement Fiscal Year 2022

**Department of the Air Force
Presentation to the Committees
And Subcommittees of the
United States Senate
And the House of Representatives
1st Session, 117th Congress**



**Statement of:
The Honorable John P. Roth
Acting Secretary of the Air Force**

**General Charles Q. Brown, Jr.
Chief of Staff, United States Air Force**

**General John W. Raymond
Chief of Space Operations, United States Space Force**

THE DEPARTMENT OF THE AIR FORCE

The Air and Space Forces unite under the Department of the Air Force and are inextricably linked in defense of the crucial high ground, integral to the stability of the global security landscape. Under civilian leadership, the Department's nearly 700,000 Airmen and Guardians provide independent and integrated options to national leaders while defending democracy, an ideal that President Biden said, "holds the key to freedom, prosperity, peace, and dignity." The Department of the Air Force enhances the peaceful instruments of diplomacy, sustains instruments of deterrence that check the spread of conflict, and ensures credible consequences for aggression.

Today more than ever, we and our national security partners must be bold. The challenges are many: the People's Republic of China, the Russian Federation, contested domains old and new, the vulnerabilities of proliferated technology and weapons, climate change, a global pandemic and its aftermath, the accumulated results of past budget priorities and decisions, and corrosive, difficult human issues like extremism, sexual assault/harassment, suicide, and disparate treatment of others. We must think and act differently. We no longer have the luxury of time to evolve into what we need to be...we must harness this unique moment together taking action to change. We simply cannot maintain status quo.

Given China's exponential pace of weapons development and extensive marshalling of government and industry, we do not have the leeway to simply maintain our current approach. China is on track to exceed our capacity, so it is our obligation to act with a sense of urgency. China poses challenges unlike any other in our Nation's history. We must be clear-eyed about these threats and our response to them. We recognize the need for change AND must create the capacity for that change. We must substantially improve our understanding of China and the Indo-Pacific region and prioritize the threats accordingly. We cannot afford to keep prioritizing near-term operational posture and today's force structure at the expense of modernization and investment.

This Department is particularly suited for these challenges. We own the high ground with air and space today, but it becomes more contested every day. We cannot allow the erosion of our advantages in this crucial high ground in competition now or in a future conflict. The speed, reach, and responsiveness of the U.S. Air Force and U.S. Space Force reinforce all instruments of national power and norms of responsible behavior. We can see, sense, and strike targets near and far, and provide global warning, networks, and independent options in space. We provide global strike and effects that can hold any target at risk within 24 hours—this is not conceptual or theoretical, it is reality. Global strike requires a unique fusion of intelligence, surveillance, reconnaissance, logistics, access, and speed that only the Air and Space Forces provide at a moment's notice. Our ability to rapidly eliminate threats anywhere in the world is a consequence of our inherent global persistence and reach, not necessarily dependent upon pre-positioning or forward basing. We have been exceptional at this, and **until now we have also been unmatched.**

The Department of the Air Force requires a modernized force that is relevant today and long into the future. We are hard at work designing our future force. We must invest in the cutting-edge technologies and capabilities that are critical to securing our military advantage in the future—this includes updating our two legs of the Nation's nuclear triad, and our nuclear command, control, and communications systems. Enabling our military advantage in the long term means we need to shift away from legacy platforms and weapons systems that are decreasing in relevance today and will be irrelevant in the

future—our aircraft fleet is 30 years old on average, and 44% are beyond their designed service life. Maintaining our aging weapon systems is costly now and, without change, will mortgage our future. We must also create decision superiority by delivering information and capabilities to decision makers at all echelons through a “military internet of things.” A critical step includes accelerating command and control infrastructure by investing in the Advanced Battle Management System (ABMS)—a vital contribution by the Department of the Air Force to Joint All-Domain Command and Control. We must methodically and immediately move out on tough decisions in order to compete.

Similarly, we must revise the Space Force’s force design to be resilient against a significantly increasing threat. We must continue to innovate, adapt and diversify capabilities to meet the threats that challenge America’s access and maneuverability in space and that of our allies and partners. As we advance space defense, we must simultaneously work with stakeholders across the Department of Defense, the whole-of-government, our allies and partners, and commercial industry to integrate and streamline spacepower efforts. Only then will America be able to fully leverage what we have built over the last year.

The Air Force and Space Force have been on the leading edge of technology since their inception. By embracing novel authorities such as middle-tier of acquisition authorities, and innovative approaches such as agile software development, modular open systems approach, and digital engineering, we will stay on the cutting edge. We intend to capitalize on future investments in modeling and synthetic simulation environments to ensure both joint warfighters and operational platforms are ready.

As outlined in the Interim National Security Strategic Guidance, we are “committed to realizing and defending the democratic values at the heart of the American way of life.” Outpacing threats in tomorrow’s complex global security landscape requires innovative thinking and modern investments. We recognize the need for change in order to protect the American way of life. This budget lays out a plan to modernize our military capabilities, and will allow U.S. diplomats to negotiate from a position of strength.

EMPOWERED AIRMEN & GUARDIANS

America’s Airmen and Guardians conduct combat operations, channel innovation, and conquer adversity around the globe all day, every day. We know that Airmen and Guardians are our greatest and most precious resource. While weapons systems and tactics inevitably change, our Airmen and Guardians remain the core of our ability to deter and, if necessary, defeat our competitors. We need multi-capable professionals who bring diverse ideas, leverage digital tools, and outmaneuver and out think our adversaries. Our Airmen and Guardians have committed to service and taken oaths pledging their lives to the protection of our Constitution. And while we are working to provide the best environment possible as we recruit, train, retain, and leverage our strategic advantage—our people.

As a Department, we are working to increase diversity and inclusion, build and fortify resiliency, support our families, and develop empowered Airmen and Guardians. We must ensure a culture of dignity and respect. We must ensure our people have both high quality of service and high quality of life. This starts with ensuring Air Force and Space Force leaders represent the Nation and our Core Values. Our Nation’s defenders must be empowered, resilient, agile, innovative, well-led and clear on how much they are valued.

Diversity

A diverse and inclusive force is a warfighting imperative. The Department of the Air Force must attract, recruit, and retain talented Americans from all backgrounds to leverage diverse ideas and experiences. By

harnessing Airmen's and Guardians' diverse experiences, geographic and socioeconomic backgrounds, cultural knowledge, and language abilities, we possess an asymmetric advantage over our competitors.

To sustain our lethality and credibility, our force must be truly inclusive and reflect the best of the diverse society we serve. This includes removing barriers to service—from reviewing our accession and assessment tools and career development, to expanding outreach to underrepresented minorities through diversity recruiting and increasing scholarships at minority-serving institutions. It will also include modernizing how we develop Airmen and Guardians, transforming our personnel and talent management systems, and championing a culture of support and inclusion for all Airmen, Guardians, and their families.

Sexual Assault Prevention and Response

Sexual assault is a crime that undermines force lethality, readiness, and mission success. The Department of the Air Force is committed to eradicating sexual assault using effective, research-based prevention. These efforts utilize assessment tools to identify those at high risk for unethical behavior, equip all leaders with information and goals to reduce assault risk factors, educate the force on intervention skills, and promote positive unit culture to eradicate sexual assault. When sexual assault does occur, the Department is dedicated to supporting victims and prosecuting those who would harm others through the chain of command and Uniform Code of Military Justice.

Suicide and Personal Violence Prevention

The prevention of suicide and interpersonal violence remains a difficult challenge. To reduce the incidence of suicide, the Department of the Air Force is undertaking a leadership-driven public-health approach informed by data and analysis while partnering with academia, industry, and our sister Services to include diverse ideas and perspectives.

The Department of the Air Force is also committed to eliminating interpersonal violence in any form. Domestic violence, child maltreatment, workplace violence, and sexual assault negatively impact victims, families, units, mission effectiveness, and the Department as a whole. We are dedicated to a strategy that leverages the latest science, implements best practices, and incorporates feedback from our members. Should these acts of violence occur despite our prevention efforts, we are committed to providing victims the necessary care and holding perpetrators accountable.

Quality of Life

We owe our Airmen and Guardians the best quality of life possible. We must continue work to improve all the professional and personal aspects of life for each of our Airmen and Guardians, and their families. It includes professional development, housing, child care programs, healthcare, education, and spousal employment, among many others. We are integrating the availability of quality housing, health care, occupational licensing reciprocity, and school caliber into our strategic basing criteria—ensuring our families have the best support possible. The Department is committed to continuing these worthy efforts. Our Airmen and Guardians deserve nothing less.

A DEPARTMENT OF THE AIR FORCE FOR 2030

As the Department of Air Force prepares to celebrate 75 years of service to our great Nation, the Air Force is transforming itself to address the challenges of near-peer adversaries while the newest branch of the U.S. Armed Forces—the Space Force—is creating and integrating a Service purposely built to compete, deter, and win in the space domain. Both Services, and the entire Department of the Air Force, are dedicated to protecting the Homeland and democracy around the globe. We must modernize and

integrate to meet the challenges posed by great power competition, climate change, cybersecurity, fiscal constraints, and worldwide pandemics. With Congress's support, we will maintain our dominance of the high ground, and we will ensure the American way of life for generations to come.

UNITED STATES AIR FORCE

VISION FOR CHANGE—AMERICA'S AIR FORCE FOR 2030

America fights as a joint team, and the U.S. Air Force is the only Service that can meet our Nation's adversaries with mass, speed, agility and survivability on near-immediate timelines. The Air Force sees, senses, and communicates globally. The Air Force monitors our adversaries' movements, deploys forces en masse, deters competitors, and strikes enemies without warning. No one else can do it. Without the Air Force, the joint force loses. Only with a modernized and ready Air Force is the joint team—and our Nation—secure.

The American homeland is no longer a sanctuary. Our citizens face threats from a variety of actors in both the physical and digital arenas. Competitors, especially the China and Russia, continue aggressive efforts to negate our long-standing warfighting advantages while challenging America's interests and geopolitical position. While the Nation was focused on countering violent extremist organizations, greatpower competitors focused on the American way of war. They studied, resourced, and introduced systems specifically designed to defeat Air Force capabilities that have strengthened the joint force for a generation. That is why the Air Force must accelerate change now, so we can protect the American way of life in 2030 and for decades to come. Simply put, if we do not change, we risk losing. We risk losing in great power competition, we risk losing in a high-end fight, and we risk losing quality Airmen and families.

The President clearly stated that diplomacy is our primary means of engaging with the world: it must be our first tool of choice. The President likewise recognizes that our decisions and actions must come from a position of strength. The Air Force offers safe, secure, and effective nuclear deterrence, which strengthens national policies. It is also important to recognize that air dominance is not an American birthright. The Air Force is pivotal to deterring these aggressors and bolstering our allies and partners.

America remains committed to freedom of the commons to support maintaining the rules-based international order around the globe. Control of the air and enabling domains ensures that the joint force has full freedom of maneuver.

The diversity of our Airmen is both a tactical and strategic advantage. We are committed to recruiting and retaining the best of America. While the COVID-19 pandemic provided new challenges to our force, we remain devoted to caring for Airmen. Suicide and sexual assault persist as challenges that we are tackling head-on. Likewise family support programs are vital to our resiliency as a Service. A diverse and inclusive Air Force helps us out-innovate adversaries today and overcome challenges tomorrow. And, we know that each Airman—active duty, Guard, Reserve, and civilian, no matter their background—took an oath to defend the Nation for all Americans.

Airmen in the near future are more likely to fight in highly-contested environments. These complex, all-domain conflicts will result in combat attrition rates and risks to the Homeland that are more akin to World War II than the uncontested environments to which we have become accustomed. Given our ability to project power from afar, independent of forward access or lengthy prepositioning timelines, Airmen will be the first to respond to many emerging crises. In any scenario, the Air Force plays a unique and integral role to our collective deterrence and joint warfighting credibility. We must accelerate change to meet the challenges our Nation faces. This requires a relevant, modern force based on cutting-edge capabilities that will survive in future conflicts and shifting away from legacy platforms that are increasingly irrelevant.

The Air Force is expected to provide enduring airpower capabilities irrespective of the threat encountered, the technology utilized, or the budget provided. The core missions of airpower—air superiority; global strike; rapid global mobility; command and control; and intelligence, surveillance, and reconnaissance—provide unequivocal advantage to the joint force. Only the Air Force provides air superiority, global strike, and rapid global mobility for the Nation. Without these missions, the Homeland is unprotected and America cannot project power around the globe. We are innovating and advancing our competencies with innovative capabilities such as the Advanced Battle Management System, which will increase commanders' decision advantage. Moreover, new approaches to our core missions enhance the joint force and answer the challenges posed by great power competitors.

The Air Force's future force design recognizes the need for change and the range of threats to the Nation, our allies, and partners. In 2021, we identified three key capability development areas for investment: connect the joint force, generate combat power, and conduct logistics under attack. Moving forward we will prioritize the resources that will allow us to continue to make investments in these areas, with more to come. Additionally, the Air Force will prioritize within its resources, affordable, analytically defensible, force structure and system capability proposals. Through partnership with Congress, the Air Force will prioritize resources to guard the foundations of national freedom and independence for America and our allies.

AIR SUPERIORITY

Combat power, regardless of Service, often depends on the Air Force's ability to deliver air superiority. Our competitors have fielded air forces, radar systems, and missiles that can attack our territory, bases, forces, and allies and partners, or defend against our military actions. Our job is to stop them through control of the air. To do this, we build understanding of the air situation and then use the right mix of capability and capacity to control the air while creating windows of air superiority—no matter the threat. As we stay ahead of our competitors, the Air Force needs flexible systems and agile design processes to field new capabilities at speed.

Current platforms will not fully support tomorrow's demands. Airmen are deliberately balancing today's readiness risk with capability modernization. Remaining ahead of adversaries who are committed to negating our technological edge requires investment in advanced capabilities. Likewise, access to domestic airspace allows us to train in realistic environments, which is essential to developing and maintaining these advanced capabilities. Near-peer competitors are challenging our capability to command the air. We must take action now to ensure the joint force's success tomorrow.

Future Air Superiority Capability

The F-35 Joint Strike Fighter is the cornerstone of our future fighter force and air superiority. Achieving air superiority in a future fight is strongly dependent on full-spectrum dominance. The F-35 and its 5th-generation capabilities are part of our fighter force design that outpaces key competitors. The Air Force is fully committed to the F-35 and needs it to be capable, available, and affordable. As we continue to receive the F-35 into the Air Force and increase our capability, it is important to manage our F-35 fleet in an intelligent and deliberate way to ensure we remain ready to deter adversaries, support our international allies and partners, and meet our Nation's security commitments worldwide.

The Air Force cannot successfully fight tomorrow's conflicts with yesterday's weapons. Our adversaries recognize that full-spectrum dominance is a national strength. As a direct result, competitors are investing to overtake our current warfighting advantage in the air. Next Generation Air Dominance (NGAD) ensures

we maintain air superiority in the future by introducing game-changing technology that includes digital engineering, open mission systems architecture, and agile software. NGAD is not a single platform—it is a capability focused on fielding capabilities to mitigate identified capability gaps, not on creating a “next-generation” aircraft. The capabilities NGAD provides will ensure survivability, lethality, and persistence while seamlessly integrating with the Advanced Battle Management System via a mix of manned, unmanned, and even optionally-manned aircraft along with advanced stand-off weapons.

We will complement NGAD and currently fielded 5th-generation fighters such as the F-22 and F-35 with the F-15EX. Acquiring this re-designed aircraft allows us to shore up our fighter force while driving down sustainment costs, our fleet’s average age, and inherent risk. By leveraging our partners’ investments in the F-15 platform, the Air Force is efficiently fielding a familiar aircraft with proven tactics. It also boasts an open mission software system, which allows us to easily update the computer and avionics software.

GLOBAL STRIKE

Global strike is critical to our national power and an enduring airpower capability. Regardless of the aircraft, weapon, or system employed, we must maintain the capability to attack at a time and place of our choosing. As China and Russia develop new weapons and defenses, we must modernize and develop capabilities to maintain a competitive advantage. Both nuclear and conventional strike must be integrated to compete against these near-peer adversaries. Air Force strike operations are precise, and these effects are delivered through standoff capabilities as well as penetrating platforms.

Nuclear deterrence allows the Nation to negotiate from a position of power. A credible, capable, and safe nuclear deterrent provides the United States and our allies with an umbrella of protection while discouraging the use of nuclear weapons by all nations. Likewise, a strong nuclear strike capability deters conflict.

For precise, conventional attack capabilities to succeed, they must be capable of penetrating highly-contested environments. To maintain our advantage, the Air Force requires capabilities that incorporate domain awareness, full-spectrum survivability, extended range, and sufficient payload. It is vital that our capabilities keep pace as threats evolve. By leveraging human-machine learning, the right mix of manned and unmanned systems, and agile design processes, our global strike capabilities will provide responsiveness, precision, flexibility, connectedness, and integration across the joint force.

The United States Air Force has the unique ability to sense, see, and strike any target, anywhere, at any time, nearly instantaneously, from anywhere in the world. On a daily basis, one aspect of these capabilities is on full display as our bomber task forces execute training scenarios with our allies and partners. It is no secret that potential adversaries closely monitor global activity—these maneuvers make adversaries think twice about conducting malign activities while reassuring our allies and partners.

The Air Force’s global strike capabilities have the range, speed, and flexibility required in a conflict and are far less as dependent on pre-positioning or forward-basing. A continued investment in modernization efforts to our bomber and tanker fleets will ensure our long-range capability for the future. Additionally, a renewed emphasis into air base defense, along with Agile Combat Employment and Joint All-Domain Command and Control concepts will ensure the United States maintains the world’s greatest military asymmetric advantage well into the future.

Ground Based Strategic Deterrent (GBSD)

The Nation requires a fully modernized nuclear triad and supporting infrastructure to maintain our nuclear deterrence capability. Deterrence operates in peacetime, through the gray zone, worldwide, across all domains, and into conflict. And, deterrence requires all three legs for a responsive nuclear triad. By not maintaining a reliable U.S. Intercontinental Ballistic Missile (ICBM) force, we risk deterrence erosion against not one, but two strategic nuclear adversaries. This is too high of a risk to our Nation's security. Our ICBMs have provided a highly reliable and secure deterrent capability since 1959. Delaying their modernization for the last two decades necessitates a comprehensive weapon replacement.

The Ground Based Strategic Deterrent (GBSD), the ICBM replacement, capitalizes on the strengths of a land-based triad component that is survivable, efficient, and geographically dispersed, while replacing aging components and addressing asset attrition along with the ICBM force's declining infrastructure.

B-21 Raider

Our bomber force constitutes the second critical leg of our Nation's nuclear triad and the B-21 Raider aircraft will be the backbone of our future bomber force. The B-21 will possess the range, access, and payload to penetrate the most highly-contested threat environments and hold any target around the globe at risk. This new bomber will provide the capabilities to deter and, if needed, win in high-end, near-peer conflicts. And with bombers as the most flexible leg of the nuclear triad, the B-21 underscores our national security. This aircraft will support combatant commanders across the range of military operations as both a nuclear and conventional bomber.

Over the past three years, the B-21 program accelerated from design to physical manufacturing of aircraft. While building test aircraft, the program is scaling manufacturing infrastructure and capacity across the industrial supply base. In parallel, B-21 beddown preparations continue on-track to support the Nation's newest bomber aircraft projected arrival in the mid-2020s.

Long-Range Standoff Weapon (LRSO)

The Air Launched Cruise Missile is nearly 30 years beyond its intended design life and faces evolving threats and availability challenges. Recapitalization of these missiles via the Long-Range Standoff Weapon (LRSO) is vital to our nuclear deterrence capability.

As our competitors improve their air defense systems, our stand-off delivery capability diminishes. In order to maximize our capabilities, the Nation requires a modernized bomber fleet and the LRSO. This weapon's ability to penetrate contested airspace and survive adversaries' defenses holds targets at risk and is a cost-effective way to modernize the nuclear triad. Additionally, bombers armed with LRSO provide a recallable and re-targetable capability which can hold any target at risk—it is both a visible and tailorable deterrent.

Hypersonics

The Air Force is also investing heavily in hypersonic weapons. This cutting-edge technology increases the Nation's rapid strike capabilities. By leveraging hypersonic weapons' improved maneuverability, America will have additional response options to deter adversaries and reassure allies. An operational hypersonic air-launched weapon enables the United States to hold fixed, high-value, and time-sensitive targets at risk in contested environments from stand-off distances. To that end, the Air Force is developing the Air Launched Rapid Response Weapon (ARRW) using the middle tier of acquisition rapid prototyping authority. ARRW is on track to be the Nation's first operational hypersonic weapon. Hypersonics—and global strike as a whole—enable diplomacy by strengthening the negotiating position of the United States.

RAPID GLOBAL MOBILITY

The Air Force capability that most directly, and physically, supports both the Air Force and our joint teammates is rapid global mobility. Airmen conduct Rapid Global Mobility operations to project and sustain combat power by moving personnel, material, fuel, and supplies across the globe, in and through permissive and contested threat environments on short timelines. The combination of speed, range, flexibility, and responsiveness is what differentiates air mobility operations from other forms of transport and is critical to multi-modal operations contributing to a higher pace for Joint All-Domain Operations. As threats evolve and the United States can no longer operate from well-established fixed bases, rapid global mobility is the lynchpin to persistent logistics, and we are examining unique ways to utilize mobility aircraft.

Air Refueling

Air refueling, one segment of rapid global mobility, is foundational to worldwide power projection. The ability to extend the range and persistence of air platforms provides a decisive advantage and deterrent against adversaries. To maintain our air refueling edge, the Air Force must continue investment in the KC-46 while moving beyond legacy KC-10 and KC-135 aircraft. The inability to phase the divestiture of the legacy tanker fleet shackles funding and manpower resources and hampers the fielding of the more capable KC-46 at the rate required to support combatant commanders. This negatively impacts air refueling capacity and tanker advancement. Offsets from legacy tanker divestment in both funding and manpower are critical to the success of the KC-46 and air refueling as a whole.

Emerging Logistics

Every 4.2 minutes a mobility aircraft takes off from an airfield somewhere in the world. This is a unique opportunity as mobility aircraft are envisioned as critical nodes in the Advanced Battle Management System framework. Mobility platforms of all types can act as sensor nodes, inputting information into the sensing grid and increasing a commander's decision advantage. At the same time, we are exploring novel approaches to logistics through Agility Prime, which is developing electric vertical takeoff-and-landing vehicles (eVTOL). This innovative program will help us rapidly move small numbers of personnel and equipment around a battlefield and quickly rise to respond to emerging challenges such as isolated Service members. We are also training Airmen and developing concepts and practices that allow for dispersed, defensible, and mobile logistics networks. We are establishing agreements with allies and partners that provide access, and the ability to expand access, to key aerial ports, seaports, storage nodes, and associated connections.

Command and Control (C2)

Inherent to outthinking adversaries is the ability to command and control (C2) the joint force. Combatant commanders require an agile military that operates seamlessly across domain boundaries at both speed and scale. The Air Force's current C2 structure is based on a Cold War-era design that is vulnerable and slow—a roadblock to the goal of rapid and agile decision making. The enemy can easily target our C2 structure's centralized nodes with both kinetic and non-kinetic means. C2 must be resilient to attack, responsive to rapid changes, integrated across all domains, and secure from exploitation. This core mission allows the joint force to create an advantage by converging units and capabilities at a time and place of our choosing.

Achieving decision advantage for combatant commanders requires both sensors to gather data and a C2 network to translate and share data across the joint force. Real-time dissemination of actionable information, aided by artificial intelligence and machine learning, allows joint warfighting across all domains at a pace faster than our competitors. This speed matters to the decision maker and the warfighter. And, with the proliferation of technology, future warfighters will have the ability to observe, orient, decide and act within minutes—as opposed to hours and days.

Advanced Battle Management System (ABMS)

A critical step towards accelerating command and control architecture is the Advanced Battle Management System (ABMS)—the Department of the Air Force’s contribution to Joint All-Domain Command and Control. As a new approach towards information sharing and decision management, ABMS enables compressed decision making and converging effects without domain or geographic boundaries. As a family of capabilities—versus a single system—ABMS creates a digital environment capable of increasing awareness, creating greater understanding, and enabling superior decision making—all of which is critical to prevailing in future conflicts.

As a simple analogy, ABMS strengthens decisions by channeling necessary information and capabilities through a “military internet of things.” This internet, designed with digital standards, is being purpose-built to deliver critical capabilities to the joint force including secure processing, connectivity, data management, applications, sensor integration, and effects integration. ABMS helps overcome the Cold War-roadblock of vulnerable command and control nodes. For instance, by transforming from a small number of air operations centers to a “military internet of things,” ABMS allows for agile, distributed, and mobile capabilities able to execute mission command even when fractured by an enemy attack.

ABMS’s infrastructure is critical to ensuring the joint force connects sensors to shooters with machine-to-machine precision and speed while increasing commanders’ awareness. And just like the development of the internet, ABMS is being built across multiple fiscal years. FY20 and FY21 have focused on exploring how we can best connect sensors and shooters while building partnerships with our industry partners. Moving forward, the Air Force will prioritize resources to allow the continued building of ABMS’s digital network environment and infrastructure. By prioritizing the resources to support ABMS investment, the Air Force will be able to initiate replacement of human-in-the-loop data transfer processes with machine-to-machine data exchanges allowing for delivery of multi-domain secure processing and data management, connectivity, and applications that synchronize sensors and networks. In turn, the joint force is enabled to make decisions faster than the adversary is able to respond.

Nuclear Command, Control, and Communications (NC3)

Nuclear Command, Control, and Communications (NC3) systems act as the central nervous system of our nuclear deterrent. They link the President and national leaders to the nuclear force—all day, every day, under all conditions, without fail. Without NC3, we cannot effectively command and control nuclear forces. And without effective command and control of nuclear forces, we cannot deter adversaries.

Previously, electromagnetic pulses posed the greatest challenge to our NC3 networks. Now, electronic warfare, cyber-attack, and threats from space all provide challenges to key nodes and systems. Russia, while embracing a doctrine of nuclear escalation in conventional conflict, is nearly complete with its recent full range of nuclear modernization efforts. Equally concerning is China’s pursuit of new nuclear capabilities tailored to achieve its national security objectives while also modernizing its conventional military.

As we modernize our portion of the nuclear triad, we must also modernize our NC3. The Air Force is pursuing communication capability enhancements with respect to our bomber force and Ground Based Strategic Deterrent so they will be fully integrated into our current NC3 systems and has flexibility to adapt as NC3 systems are modernized. Moreover, we understand that the strategic environment evolves and is increasingly dynamic. Our NC3 architectures and modernization plans will be adaptable, look beyond the near-term, and integrate with the Advanced Battle Management System (ABMS). While ABMS will enable conventional forces, it will also enable nuclear forces with rapid, multi-path transmissions that will transform NC3 from a Cold War-era relic into a C2 network operating at speeds our adversaries cannot match.

Successfully executing command and control across the joint force requires information. A major avenue for that information is the Air Force's intelligence, surveillance, and reconnaissance capabilities.

INTELLIGENCE, SURVEILLANCE, AND RECONNAISSANCE (ISR)

The Air Force conducts intelligence, surveillance, and reconnaissance (ISR) missions to analyze, inform, and provide joint force commanders with the knowledge needed to achieve decision advantage. This ISR sensing grid consists of a robust multi-layered network of sensors, platforms, people, devices, and services with the goal of delivering a holistic, accurate, predictive, and timely characterization of the operating environment. This network is interoperable with the joint force, the intelligence community, allies, and partners. Domain awareness is underpinned by automation, connectivity and analysis; is rooted in intelligence; and is critical to the future of warfare. In that future, ISR underpins the Advanced Battle Management System (ABMS) architecture and allows joint force commanders to achieve an accurate, real-time understanding of the environment. This understanding accelerates decision making, effectively conducts command and control, and achieves decision advantage ahead of competitors.

Future ISR capabilities must be survivable against high-end threats while leveraging forward-looking investments in command and control capabilities—including emerging technology like artificial intelligence—to present decision-ready information faster than our adversaries' capabilities. The Air Force's current ISR systems are viable in a counter-insurgency war, but may not effectively contribute in tomorrow's competitive environment. Without investment in additional capabilities necessary for the high-endfight, we will be reliant on ISR platforms that will be ineffective in highly-contested and denied environments. As a result, we risk fighting blind.

Survivable, Relevant Platforms

ISR platforms play a critical and continuous role in supporting a range of military operations. The most important role of intelligence in military operations is to provide analysis of key aspects of the operating environment to facilitate timely military decisions. Current ISR platforms have been able to accomplish this task with relative ease because they operated in uncontested and low-threat environments where the United States enjoys superiority across all domains of warfare. Such freedom of action will not be the case in the future. Future threats will challenge the ability of legacy ISR platforms to successfully execute their missions.

In the near future, ISR platforms will feed critical data through the Advanced Battle Management System (ABMS), which in turn will present near real-time information to joint force decision makers. Future airborne ISR platforms will need to survive and operate in a more challenging environment. Ongoing modernization efforts will focus on a family of platforms that are effective, resilient, and survivable against technologically-advanced threats, and able to pass data to necessary networks at machine speed. In our

discussions going forward, we will steer away from platform-centric conversations and focus instead on the capabilities needed to inform joint force operations.

Our adversaries are already fielding technologies that will hold our legacy platforms at risk to support the range of military operations in a future high-end fight, and the technological evolution will continue to accelerate. In order to keep pace ahead of emerging threats, we must work with the combatant commands to assess the demand signal on current fleets and where acceptable risk can be taken so the Air Force can accelerate modernization. Legacy ISR platforms, once considered irreplaceable to operations, are often unable to survive or deliver needed capabilities on competition-relevant timelines. These legacy platforms must be phased out, with resources used to invest in modern and relevant systems. Working together, we must take calculated risk now in order to reduce the greater future risk.

For instance, the RQ-4 Block 30 Global Hawk was crucial to the ISR requirements of yesterday and today. However, this platform cannot compete in a contested environment. And tomorrow's conflicts will be contested. Moving beyond this platform allows us to bring the ISR enterprise into the digital-age by using sensing grids and fielding advanced technology that includes penetrating ISR platforms. The Air Force will continue to pursue the FY21 NDAA RQ-4 Block 30 divestment waiver in order to repurpose the RQ-4 Block 30 funds for penetrating ISR capability. Overall, intelligence collection will transition to a family of systems that includes non-traditional assets, sensors in all domains, commercial platforms, and a hybrid force of 5th- and 6th-generation capabilities.

A comprehensive investment strategy that the Air Force is bringing forward synchronizes divestment of legacy platforms, takes calculated risk in upgrading existing platforms, and introduces the next-generation ISR family of systems that will feed into ABMS.

NEW APPROACHES

The Air Force's core missions encompass both enduring capabilities unique to our Service and some capabilities shared with the joint force. Airmen are rapidly iterating and innovating improvements to all core missions. These new approaches to airpower overcome today's roadblocks and focus on tomorrow's great power challenges. Both technology and operational concepts benefit from our Airmen's perspectives. Every day, Airmen increase the agility, speed, resilience, and lethality of our contributions to the joint force.

Force Generation Model

The Air Force is also re-examining how we present forces to combatant commanders. The core missions of the Air Force continue to be in constant demand around the world. And because many of the capabilities we provide are exclusive to our Service, our forces have been under strain for two decades. This strain negatively impacts readiness and our ability to modernize.

Preparing for near-peer adversaries, the Air Force is implementing a new force generation model focused on building and sustaining long-term, high-end readiness. Our goal is to more effectively articulate readiness impacts and capacity limits, and instill discipline into the system. Our new, simplified model, realigns the Air Force with the Joint Staff's three phase model, is easily understood by combatant commanders, builds towards sustainable readiness, and balances current operations with the training necessary for future full-spectrum combat operations.

Agile Combat Employment (ACE)

The Advanced Battle Management System (ABMS) not only connects sensors and shooters but also enhances persistent logistics by sensing the threat landscape and material environment. Persistent logistics, with the inherent ability to posture, sense, and respond, is the warfighting answer to the key operational problem of logistics under attack and enables Agile Combat Employment (ACE). ACE is the ability to quickly disperse & cluster forces to a cooperative security location and conduct operations across all domains with minimal disruption, while maintaining operational flexibility. This new method of operating will allow the United States to confuse the enemy and strike at a time and place of our choosing with minimal risk. The ability of ACE to sustain combat operations through persistent logistics has already been validated through multiple exercises across both the Pacific and European theaters.

ACE requires technological advances like ABMS, novel equipment, and innovative Airmen. Our Airmen are tackling ACE, and the larger challenge of persistent logistics, by adapting techniques previously associated with special operators. Our commanders support these efforts by encouraging critical thinking skills and driving decision making to the lowest levels—in many cases our youngest frontline supervisors. These empowered Airmen are innovating new approaches to projecting combat power across the globe.

Base and Critical Infrastructure Defense

The Department's infrastructure defense efforts are currently focused on directed energy research, development, test and evaluation; counter-small UAS; and investments in cruise missile defense. In the coming years, we will steadily increase investment of critical infrastructure defense measures to meet the challenges of the future fight, ACE, and logistics under attack.

As China and Russia develop weapons that challenge our superiority in the air, they are also making strides that hold our bases at risk. While the Air Force will mitigate some risk through persistent logistics, the security of our air bases is essential to conducting combat operations. Like other aspects of combat operations, base defense is inherently joint. And just as the joint force is dependent on the Air Force to execute our core missions, the Air Force must leverage our sister Services for base defense.

If future expeditionary and permanent air bases are not protected from attack, the Air Force will be challenged to conduct combat operations. Without the Air Force's air superiority, the joint force is at risk of attack from the air for the first time since the Korean War. The Air Force acknowledges that this is a joint problem that requires a joint solution, which is why we have allocated experimental funding to explore and develop directed energy and kinetic and non-kinetic base defense options. Looking forward, the Air Force will prioritize resources that will allow it to continue prototyping the ability to detect, track, identify, and mitigate small unmanned aircraft system threats. Proper base defense encompasses significant decisions with far-reaching impacts—we must get this right.

Infrastructure

We project power, generate readiness, test new platforms, train to support joint operations, and provide safe and healthy communities for our families at our bases. As the joint force becomes increasingly dependent on an integrated battle network, installations also serve as key nodes in enabling mission success around the world. The readiness and resiliency of installations is a matter of strategic importance to ensure the Air Force can always provide combat capability. Changing climate and severe weather events are a continual threat to our installations, and we have seen first-hand the impacts climate and severe weather have on our installations.

The Air Force views installation resilience as the capability of a base to project combat power by protecting against, responding to, and recovering from deliberate, accidental, or naturally occurring events that impede operations. We are taking a deliberate, holistic approach to installation resilience through Department of the Air Force's Installation Energy Strategic Plan. This includes improving the resiliency of our energy, cyber, infrastructure, and response options.

AMERICA'S AIR FORCE FOR 2030

This year we celebrate America's 245th birthday and next year the Air Force celebrates its 75th anniversary. Throughout our history, the Nation prospered because of our willingness to adapt and evolve, to adjust course when the situation dictates. Democracy is not a birthright, and neither is air dominance. And although airpower is our great comparative advantage, tomorrow's competitive environment requires that we accelerate change or lose.

Tomorrow's battlespace will be shaped by human talent, climate change, constricting budgetary resources, and challenges posed by great powers. The Air Force and its core missions stand ready to exploit the air domain, provide nuclear deterrence, and underwrite the national security America expects and requires. By working with Congress, we will protect the Homeland and defend democratic ideals. Moving forward, the Air Force will prioritize its resources so it is able to adapt our equipment, support our Airmen, and bolster our core missions. We must continue to adjust course and overcome situational challenges so America maintains its airpower advantage.

America cannot wait to modernize the Air Force any longer, not one year, one month, or one week. To deter and defeat today's competitors and tomorrow's adversaries, we must re-capitalize our Air Force and we must do it now... the call to accelerate change or lose is not hyperbole—it is a requirement.

UNITED STATES SPACE FORCE

SECURING AN ENDURING ADVANTAGE

The United States is a space-faring nation. We have long understood that our nation is strongest economically, militarily, and diplomatically when we have access to, and freedom to operate in, space. Unfortunately, potential adversaries have taken note of the United States' reliance on space, and this vital national interest can no longer be taken for granted; it must be secured. The rapid advancements of potential adversaries to threaten U.S. freedom of operation in space must be countered with immediate improvements to our space defense architecture and capabilities.

Competitors like China and Russia are challenging America's advantage in space by aggressively developing weapons to deny or destroy U.S. space capabilities in conflict. Both China and Russia have mobile ground-based laser and electronic warfare systems capable of jamming and blinding our satellite systems. China has invested in satellite grappling technologies, like the Shijian-17 satellite's robotic arm, which could be used in future conflicts. Russia has tested an on-orbit system that has released a projectile designed to destroy U.S. satellites in low-Earth orbit.

The United States would prefer that conflict not begin in or extend to space. Our goal is to deter conflict in space from happening and from spilling over into other domains, and the best way to do so is from a position of strength. We are prepared to protect U.S. interests today and we are moving fast to ensure we can deter in the future, but our ability to deter conflict hinges on demonstrating both capability and resolve. Over-classification of existing systems threatens this ability, and we are developing a reveal and conceal strategy to ensure we can compete, deter, and win in this contested domain.

The Space Force was established to protect U.S. investments and freedom of operation in space, provide space capabilities to the Nation, the joint force, sister Services, the intelligence community, and our allies and partners. The Space Force is designed to be lean, agile, and innovative in order to move at speed and compete in the vast domain of space. Our small size also makes us the ideal pathfinder to validate new structures and approaches that can provide benefit across the joint force. While our budget is roughly two percent of the Department of Defense's request, the capabilities we deliver underwrite the force design of the entire joint force. Space capabilities have become a cornerstone of deterrence, not just in space, but in every domain. Without space, our forces abroad, security at home, and allies everywhere are at much greater risk. If we lose in space, America loses.

We spent the first year inventing the Space Force, with an organizational design that reflects the character of our operating environment and the nature of conflict that is likely to manifest. A headquarters and Field Command structure aligns complementary functions and streamlines command authority in the deliberate pursuit of speed and agility. Our first field command, Space Operations Command, stood up in October 2020 as the primary space forces provider to the combatant commands. We will establish the remaining two field commands before the end of 2021: Space Systems Command will develop, acquire, and field operationally relevant and resilient space capabilities in resilient and defensible architectures, and Space Training and Readiness Command will develop tactics, a testing enterprise, doctrine, advanced warfare training, and a dedicated cadre of warfighting professionals. We have already transferred space missions, billets, and monetary resources from 23 Air Force units to the Space Force, and we are preparing to merge operations, acquisition, and sustainment for some space

systems currently distributed across the Army, Navy, and the Office of the Secretary of Defense, including the Space Development Agency beginning next year.

In our second year, we are aggressively integrating the Service into the fabric of national and international security by collaborating across the Department of Defense, interagency, commercial industry, and our allies and partners. As the Space Force creates independent military options for decision makers, we are preparing a force presentation model to optimize integration and delivery of space capability to the joint force. We are working to streamline acquisition processes to increase decision speed and expedite capability development, creating an integrated test enterprise, and doing the analytical and developmental work to create the most effective and efficient force design for the domain to bring unity of effort across the department. Lastly, we have initiated planning for a National Space Intelligence Center to provide scientific and technical intelligence as well as foundational space intelligence to the Service and the intelligence community. These initiatives make us more resilient and competitive, and they will put us in a better position to sustain continuing advantage.

DEVELOPING AND CARING FOR GUARDIANS

The character of operations and aspects of potential conflict in space are fundamentally different from the military art of terrestrial domains. Vast distances and speeds, potential for first-mover advantage, and unique operating environment demand experts that are familiar with these physical characteristics. As in all other domains, Guardians must stay ahead of adversaries to give joint commanders and national civilian leadership new space-based security options. This requires a dramatic change in how we attract, recruit, develop, train, and retain talent.

We are committed to ensuring that the Guardians reflect the diverse character of the United States—it is a national security imperative. Diversity gives us the perspective and skills to meet the challenges of our security environment and ensures we can bring our nation's best talent to bear on the hardest problems. In order to meet these goals, we must work hard to address tough issues like sexual assault, extremism, and discrimination within the force; solving these problems is essential to building a Service that ensures talented people of all genders, orientations, races, ethnicities, and beliefs are included and empowered to reach their full potential.

Guardian Strategy

To win the battle for talent, we have created a Human Capital Office to develop a new strategy for unified talent management for all Guardians, in pursuit of an inclusive and team-centric culture. Our small size creates the opportunity and the mandate for a tailored approach to caring for and developing our Guardians from accessions to retirement and beyond.

This "Guardian Strategy" will lead digital enablement by creating a digital cadre, an optimized data infrastructure, increased process automation, and new digital platforms. Using interviews and other assessment tools as well as focusing our Reserve Officer Training Corps presence at select universities will support both diversity efforts and needs for space related research and technical grounding. We look to develop and employ talent by taking a competency-based development approach, mandating more robust feedback systems, and creating potential-based promotion assessments with sequenced talent management boards. In our first year, professional development opportunities and promotion rates have increased significantly; we must reinforce systemic change to make this an enduring effect.

The Space Force is developing its own officer and enlisted professional military education (PME) programs to fit within the broader concepts of the Guardian Strategy to ensure that all members are career-long learners, and that learning directly relates to the success of their current and future duties. Space Force PME will focus on the development of space-minded warfighters who are credible and effective in multi-domain warfare and the joint environment. We have already expanded space curricula at Airman Leadership School; stood up a Space Force Non-Commissioned Officer Leadership Academy; expanded the Schriever Space Scholars Program at Air University; and created the West Fellowship for Senior Developmental Education. Finally, we are taking a proactive approach featuring teams at the unit level to strengthen social, physical, and mental attributes to energize personal and organizational resiliency. As the Space Force takes care of Guardians and their families, it must prepare them to defend our Nation. Space Force talent must be deliberately managed by well-positioned human resources mission partners in the field commands and headquarters office to support both military and civilian Guardians.

Training and Doctrine

We have completely redesigned our space training and doctrine across all space operations competencies, beginning with publication last year of a foundational doctrine document. Our training has elevated from basic operation of space systems to threat- and target-based advanced space warfare training. Guardian training and doctrine focuses on seven core competency areas, through advanced training and education: orbital warfare, space electromagnetic warfare, space battle management, space access and sustainment, military intelligence, cyber operations, and engineering and acquisition. Our shift in training and doctrine must be complementary to our capabilities and reflect the reality of our current and future missions. Additionally, Space Training and Readiness Command is bringing together training and doctrine to support our tactics, strategies, and theories of victory.

VALUE OF PARTNERSHIPS

An independent Service focused on space has already provided greatly expanded opportunities for partnerships with civil and commercial space organizations within the United States and with allies and partners around the world. Working through the Department of Defense, close cooperation with the National Aeronautics and Space Administration and the Department of State has ensured a unified U.S. voice in discussions about responsible behavior in space with foreign governments. Similarly, through the Department of Defense, we continue to work hand in hand with the Department of Commerce on shared interests including space traffic management, positioning, navigation, and timing programs, applications, and efforts to maintain the space industrial base. We are working to expand cooperation with commercial partners using both traditional and innovative development pathways; seeking means for tighter fusion to take advantage of the enthusiasm and energy in the commercial space sector.

Internationally, our partnerships have historically been built around one-way data sharing agreements with a small number of countries. As the proliferation and importance of space capabilities increases around the world, we are fostering greater cooperation with international partners across the board. For example, a hosted payload agreement with the government of Norway will save us more than \$900 million and helped us get capability on orbit two years faster. We are also working with NATO to further integrate space capabilities and knowledge in that alliance, including the stand-up of the first NATO Space Operations Center within NATO Air Command. Cooperation with allies and partners, on both capability development and operations, continues to provide opportunities to decrease cost and increase speed and innovation.

CREATING A DIGITAL SERVICE

Founded in the Information Age, the Space Force was “born digital.” We are harnessing modern era advancements and tools to accelerate innovation and ensure our military advantages in, to, and from space. Under the leadership of the newly established Technology and Innovation Office, the Space Force focuses on partnering with U.S. government, science and technology industries, and academia to build a digital Service to support Space Force missions and business operations.

Digital Headquarters

Leaders at every echelon of the force require access to data and analytics in order to make informed decisions with speed and precision. A new data analytic environment and automation tools will streamline headquarter processes, enable seamless data sharing, increase decision space, and accelerate warfighting outcomes. Digital transformation is occurring in operational readiness, talent management (recruiting and onboarding), programming and budgeting, and capability development. Incapability development, digital models will enhance analyses of alternatives, iterate requirements decomposition, improve cost estimation fidelity, and ultimately accelerate the planning, coordination, and development of optimum solutions to meet critical warfighter needs.

Digital Operations

Commanders and unit-level Guardians are empowered to innovate inside their mission operations, explore novel concepts for space domain awareness, Joint All-Domain Command and Control, collaborate with small business innovators, and align innovation efforts for transition into operations. This effort includes partnerships with the Joint Artificial Intelligence Center, industry, and academia to advance use of artificial intelligence applications and research.

Digital Workforce

Continuous transformation requires digitally-fluent military and civilian Guardians. Therefore, we are funding software-coding training for military and civilian personnel and leveraging Department-wide digital training efforts to improve digital literacy using industry-leading commercial courseware. To achieve the goal of a digital workforce we must cultivate our collective digital acumen, develop an expert cadre of “Supra Coders,” and equip and empower them to apply agile software practices, use artificial intelligence, and data science. Finally, we must place them strategically across the force to unleash their talent and energy toward inventive, innovative solutions in operations and acquisition.

ACCELERATING CAPABILITY DESIGN, DECISION, & DELIVERY

The Space Force must modernize its architecture to survive and execute spacepower missions in a contested domain and do so at speed. To this end, the Space Force is engaged in an end-to-end transformation of organizations and processes to accelerate delivery of operationally-relevant capabilities. Consistent with our effort to become a “Digital Service,” we will exploit our digital engineering systems as a backbone to connect multiple processes and accelerate capability development activities from analysis to integration, decision, and acquisition.

Integrated Analysis for Optimal Design

The Space Warfighting Analysis Center (SWAC), currently aligned under the Space Operations Command, is leading analysis, modeling, wargaming, and experimentation to generate new operational concepts and force design options for the Department of Defense. The SWAC integrates domain expertise with unique

analytic tools, datasets, and intelligence to develop operational architecture options to fulfill space missions. By driving unity of effort, we reduce cost, duplication of effort, and increase our speed of decision and action

Digital Engineering to Better Inform Requirements

Rather than static reports, the SWAC's design options are digital models, which enable testing of proposed capabilities through simulation in an environment that accurately reflects fast evolving threats and the space domain. The Space Force Strategy and Resources Office (SRO) integrates SWAC's design options with the appropriate processes to develop Service capability and programmatic options for presentation to the Joint Requirements Oversight Council and Deputy's Management Action Group. The SRO also ensures digital models generate required data artifacts to inform oversight; Planning, Programming, Budgeting, and Execution; and acquisition actions.

Streamlined Governance for Timely Decisions

In order to support the Assistant Secretary of the Air Force for Space Acquisition and Integration, who will eventually have Service Acquisition Executive (SAE) authority and chair the Space Force Acquisition Council (SAC), the Space Force has established a supporting Program Integration Council (PIC). As a collaborative interagency leadership council, the PIC facilitates cooperation and deconfliction between National Security Space Enterprise stakeholders and ensures planning, alignment, execution, delivery, and optimization of capabilities across all space mission areas. Streamlined coordination across the enterprise via the PIC and SAC improves collaboration and better enables timely decisions by the SAE. The Assistant Secretary of the Air Force for Space Acquisition and Integration is an essential element of this approach and we look forward to implementing this congressionally-directed change as quickly as permitted by law.

Consolidated Space Acquisition Enterprise for Agility

Finally, in the summer of 2021 the Space Force will stand up the Space Systems Command (SSC) to provide for cooperation across space acquisition within the Department of the Air Force. Initially comprised of the former Space and Missile Systems Center (SMC) and the Service's launch enterprise, SSC will also have a limited administrative support relationship with the Space Rapid Capabilities Office (SpRCO) and—as of the beginning of FY23, per statute—the Space Development Agency (SDA). By aligning three organizations with a pedigree in traditional acquisition, disruptive acquisition, and commercial acquisition, the Department of the Air Force can access best-of-breed solutions. Because SSC acquirers will receive digital models with traceable requirements, Program Managers and Program Executive Officers will be equipped to make faster, more agile decisions and trades. In addition, the space acquisition enterprise will continue to improve both commercial and allied integration.

MISSILE WARNING AND MISSILE TRACKING

Strategic and theater missile warning and missile tracking capabilities provide indications and warning to protect the homeland, joint forces and allies abroad. The evolution of threats to on-orbit systems force us to re-think both how we protect and defend our strategic assets, and how future strategic capabilities should be designed to mitigate threats. The Space Force is partnering with combatant commands, the Missile Defense Agency, National Reconnaissance Office, and the Space Development Agency to design and build a resilient missile warning architecture for the collective defense of our nation, joint force, and allies.

Next-Generation Overhead Persistent Infrared (OPIR)

We are designing and developing the future architecture for missile warning and missile tracking. Next-

Generation Overhead Persistent Infrared (OPIR) will succeed the current Space Based Infrared System (SBIRS) and will provide increased missile warning, missile defense, battlespace awareness, and technical intelligence capabilities with resiliency and defensive features to counter emerging threats.

The ground system for Next-Gen OPIR, also known as Future Operationally Resilient Ground Evolution (FORGE), migrates satellite command and control to the Space Force's Enterprise Ground Services, modernizes Mission Data Processing to implement an open framework, and upgrades Relay Ground Stations to meet United States Space Command's operational requirements. We are using Middle Tier Acquisition authorities to rapidly prototype solutions. This pathfinder approach delivers the first resilient geosynchronous satellite and associated ground system in FY25 and the first polar satellite in FY28.

POSITIONING, NAVIGATION, AND TIMING

The Global Positioning System (GPS) remains the "gold standard" for positioning, navigation, and timing for the United States and the world. GPS underpins the global economy and our way of war. Adversaries have long recognized our dependence on GPS and have proliferated technologies to degrade, deny, and spoof GPS signals for civil and military users. We are pursuing modernization efforts across the entire GPS architecture to include upgrades in space, ground, and user segments. The Space Force's future GPS architecture provides more robust positioning, navigation, and timing to the joint force, ensuring at least one technical generation advantage over any adversary.

GPS Space Segment

The Space Force is pursuing significant satellite enhancements to our GPS constellation, including higher-power military signals, new civilian signals, upgraded nuclear detection system payloads, and hosted search-and-rescue payloads. GPS Block III features improved signal strength and accuracy, increased anti-jam power, and a longer expected design life. The next block of GPS, GPS Block III F—available for launch in FY26—will deliver regional military-code protection, a higher power signal in a given geographic area of operation to boost anti-jam capabilities for contested environments.

GPS Operational Control Segment Next (OCX)

Operational Control Segment Next (OCX) will develop and field a modernized ground system required for the command and control of GPS satellites. The OCX program is on track to meet current Acquisition Program Baseline cost and schedule milestones. OCX provides expandable, robust information assurance architecture to significantly improve cyber resiliency, enabling the latest military and civilian GPS signals, improving cyber protection, and allowing the system to evolve to combat emerging threats. We have completed product test, are currently progressing through segment integration, and will transition to operations in FY22.

Military Global Positioning System User Equipment (MGUE)

Military GPS User Equipment (MGUE) will modernize user equipment to enable precision fires, safe navigation, and time coordination across multiple platforms in GPS-degraded environments. Military-code receiver cards embedded in weapon systems enable cyber-secure, anti-jam, and anti-spoof precision, navigation, and timing for the joint force and our partners. MGUE Increment one (1) completed developmental testing of the Army and Marine Corps lead platforms in FY20. MGUE efforts support finalization of card design, testing, and integration with Navy and Air Force lead platforms. MGUE Increment two (2) leverages the MGUE Increment one (1) technology to the maximum extent while addressing the production of M-Code integrated circuits far into the future.

COMMAND AND CONTROL (C2)

Our top priority is to develop a Joint All-Domain Command and Control System to ensure United States Space Command and their joint and coalition warfighting partners have the capability they require to command and control in a contested domain. We have made considerable gains this year, fully integrated in, and helping lead, the Advanced Battle Management System (ABMS) effort. In recognition that legacy space command and control capabilities are insufficient for us to prevail in future conflict, we have prioritized the delivery of space command and control capabilities using a development, security, and operations (DevSecOps) approach to acquisitions. Leveraging the agile approaches of commercial software developers, we are rapidly developing cyber-resilient capabilities that enhance U.S., allied, and partner nation operational-level space warfighting capabilities against the adversary.

The initiatives below build and sustain the infrastructure required to connect sensors to shooters using machine-to-machine planning and tasking of warfighting capabilities.

Unified Data Library (UDL)

The Space Force built and delivered the Unified Data Library (UDL), a cloud-based, cyber-accredited, multi-classification data store that facilitates universal data access and serves as the foundational element of the ABMS data architecture in partnership with the Air Force. UDL provides all-domain secure Space Domain Awareness (SDA) data sharing from all Services and sensors to support space- focused Battle Management and Command and Control; it is also extensible to fit the needs of Joint All-Domain Command and Control. This effort adds long-term access to a wide variety of space domain awareness data sources including commercial, allies, and academia. The UDL creates unified, agile procurement of commercial products to bolster Combined Space Operations Center and National Space Defense Center operations. Additionally, it protects satellite tracking data by seamlessly integrating defensive cyber operations.

Space C2 Open Architecture Operational Prototype (SCOOP)

The Space Force has also delivered the Space C2 Open Architecture Operational Prototype (SCOOP) program, a modern cloud architecture that is connected to 40 sites nationwide. Leveraging the Department of the Air Force's prior work on open architecture standards, SCOOP delivers a command and control capability for our most pressing needs, with the ability to connect into other domains, and serves as the foundation of our next generation C2 capability.

Space Domain Awareness (SDA)

Space Domain Awareness (SDA) is the cornerstone of our ability to command and control warfighting capabilities. The Space Force budget invests in new terrestrial radars, optical sensors, and space-based capabilities and commercial partnerships to increase the quantity and quality of space observations. A robust SDA architecture improves our indications and warnings, ensures freedom of action in space, and enables joint and coalition options to defend critical space capabilities. Additionally, investments in secure connectivity and data sharing tools improve our collective understanding of our adversaries' capabilities and intent.

Nuclear Command, Control, and Communications

As part of Department of Defense's efforts to modernize the nuclear triad, the Space Force will provide and modernize the space and mission control segments for worldwide, secure, jam-resistant, and survivable communications. We are pursuing digital development efforts for the future disaggregated strategic and tactical satellite communications systems to meet emerging threats in the 2030- timeframe. Evolved Strategic SATCOM will continue the strategic mission of the Advanced Extremely High Frequency (AEHF) satellite program with improved on-board resilience features, upgraded satellite capabilities, and

cybersecurity features. We are leveraging rapid prototyping demonstrations to speed the delivery of the space segment to meet the warfighter need date in 2032.

Space System Prototype Transition (SSPT)

Space System Prototype Transition (SSPT) is a portfolio of programs that rapidly advance next-generation space capabilities to the warfighter at the speed of relevance. The portfolio leverages the commercial industrial base and demonstrates common defense through partnerships to enhance resiliency. One example is the development and integration of space domain awareness payloads on two Japanese Quasi-Zenith Satellite System spacecraft. The hosted payloads will increase sensor diversity and enable space surveillance and event detection over USINDOPACOM in the geosynchronous orbit regime.

Transition to Enterprise Ground System (EGS)

Enterprise Ground System (EGS) will enable the transition from a family of legacy stovepiped satellite C2 systems to an improved, open, resilient, and common platform. The effort funds modernized system interfaces, virtualization, and the translation of mission applications to ensure rapid response to emerging threats and integration of new capabilities. We continue to develop a Minimum Viable Product for foundational services and infrastructure to provide an initial Enterprise Capability. EGS will integrate multiple new mission partners within the Space Warfighting Construct & Missile Warning mission threads, scale multiple services for existing mission partners, and integrate them at one or more of three EGS locations. Continued investment provides foundational services and infrastructure to deliver enterprise-wide command and control services to all Space Force satellite programs. We are on track to deliver a fully integrated system by 2028.

ASSURED ACCESS TO SPACE

National Security Space Launch (NSSL) provides assured access to space for the nation's most critical warfighting and intelligence capabilities. To meet the full set of National Security Space requirements, we must continue to competitively invest in domestic launch providers' development of new launch systems. The Space Force, National Reconnaissance Office (NRO), and the National Aeronautics and Space Administration have a coordinated strategy to certify new entrants to launch payloads, and continue to work with different launch providers to reliably meet our national requirements. The Space Force recently completed a five-year strategy to bolster a commercially competitive market and transition to domestic launch systems by awarding the NSSL Phase Two procurement contract.

Leveraging this strategy, we are pursuing five National Security Space Launches to deliver warfighting capabilities on time. Following the outcomes of our Phase Two launch procurement strategy, we will continue to engage with industry partners regarding emerging launch requirements and technologies to invest in continued assured access to space.

National Security Space Launch (NSSL) Enabling Investments

We are investing in multiple public-private partnerships to develop enabling technologies for future space access, mobility, and logistics. Targeted investments in orbital transfer, on-orbit servicing, digital engineering, and novel on-orbit propulsion technologies will increase U.S. access and freedom to operate in space. We will continue to invest in providers of domestic launch services enabling our transition from non-allied space launch engines to domestic rocket propulsion systems. We will also continue technical maturation, risk reduction, and public-private partnership investment to expand domestic and cost-effective solutions for assured access to space. Additionally, the Space Force's research and development standards must reflect both the mission areas and the threat environment. The Space Force is building a

more defensible and resilient space defense architecture by disaggregating on-orbit capabilities. We are building agile and threat responsive systems to complicate targeting. Additionally, we are building redundancy and resiliency countermeasures into the spacecraft and payload designs of our systems.

WAY FORWARD

Congress established the Space Force to ensure freedom of action for the United States in, from, and to space. This Department of the Air Force Posture Statement builds on FY21 efforts in strengthening our ability to deliver flexible capabilities and strategic options at operationally relevant speeds to outpace emerging and dynamic threats. The Service's streamlined and integrated organizational design also creates new military options with the joint force, inter-agencies, industry, and our partners and allies. We are eager to work with Congress to build a common understanding of both the strategy and the investments needed to secure our Nation's vital interests.



BIOGRAPHY

UNITED STATES AIR FORCE



JOHN P. ROTH

Mr. John P. Roth is the Acting Secretary of the Air Force. In this role, Mr. Roth leads the Department of the Air Force, comprised of the U.S. Air Force and U.S. Space Force. He is responsible for organizing, training, and equipping Air and Space Forces and for the welfare of 697,000 active duty, Guard, Reserve, and civilian Airmen, Guardians, and their families. As the Department's senior leader overseeing an annual budget of more than \$205 billion, Mr. Roth directs strategy, policy, acquisitions, technology, personnel, and risk management. He implements decisions of the President and Congress and fulfills Combatant Commanders' operational requirements.



Mr. Roth served as the Assistant Secretary of the Air Force for Financial Management and Comptroller from January 2018 to May 2020. As the Department's comptroller and chief financial officer, he was the principal advisor on all financial matters to ensure the effective and efficient utilization of the Department's financial resources. Mr. Roth oversaw the budgeting, auditing, cost estimating and financial operations that support Air Force priorities, in accordance with Congressional, Secretary of Defense and Secretary of the Air Force Direction.

From June to October 2019 and May to December 2020, Mr. Roth performed the duties of the Under Secretary of the Air Force.

Mr. Roth entered the Senior Executive Service in 1990 and has held several key leadership positions within the Office of the Under Secretary of Defense (Comptroller). Most recently, he served as the Deputy Comptroller (Program and Budget), the most senior career financial manager in the Department of Defense, responsible for the development and execution of a \$550 billion annual budget. In addition, from January 2017 through May 2017, Mr. Roth performed the duties of the Under Secretary of Defense (Comptroller) and Chief Financial Officer. He is a past President of the American Society of Military Comptrollers.

EDUCATION

- 1974 Bachelor of Arts, University of Virginia, Charlottesville
- 1977 Master of Science, Administration, the George Washington University, Washington, D.C.
- 1987 Executive Excellence Program, Federal Executive Institute, Charlottesville, Va.
- 1991 Senior Managers in Government, Harvard University, Cambridge, Mass.
- 2000 National Security Leadership, Syracuse University, Syracuse, N.Y.

CAREER CHRONOLOGY

1. July 1974–September 1977, Budget Analyst, Norfolk Naval Supply Center, Norfolk, Va.
2. October 1977–February 1984, Budget Officer, Naval Data Automation Command, Washington, D.C.
3. February 1984–July 1990, Budget Analyst, Office of the Under Secretary of Defense (Comptroller), the Pentagon, Arlington, Va.
4. July 1990–February 1994, Associate Director for Investment, Office of the Under Secretary of Defense (Comptroller), the Pentagon, Arlington, Va.

5. February 1994–November 2001, Deputy Director for Investment, Office of the Under Secretary of Defense (Comptroller), the Pentagon, Arlington, Va.
6. November 2001–December 2017, Deputy Comptroller (Program and Budget); Office of the Under Secretary of Defense (Comptroller), the Pentagon, Arlington, Va.
7. June 2014–November 2015, Acting Principal Deputy Comptroller, Office of the Under Secretary of Defense (Comptroller), the Pentagon, Arlington, Va.
8. January 2017–May 2017, performed the duties of the Under Secretary of Defense (Comptroller) and Chief Financial Officer (CFO), Office of the Under Secretary of Defense (Comptroller), the Pentagon, Arlington, Va.
9. January 2018–May 2019, Assistant Secretary of the Air Force for Financial Management and Comptroller, Headquarters U.S. Air Force, the Pentagon, Arlington, Va.
10. June 2019–October 2019, performed the duties of the Under Secretary of the Air Force, Headquarters U.S. Air Force, the Pentagon, Arlington, Va.
11. October 2019–May 2020, Assistant Secretary of the Air Force for Financial Management and Comptroller, Headquarters U.S. Air Force, the Pentagon, Arlington, Va.
12. May 2020–December 2020, performed the duties of the Under Secretary of the Air Force, Headquarters U.S. Air Force, the Pentagon, Arlington, Va.
13. January 2021–present, Acting Secretary of the Air Force, Department of the Air Force, the Pentagon, Arlington, Va.

AWARDS AND HONORS

2000 Distinguished Civilian Service Medal
 2005 Meritorious Executive Presidential Rank Award
 2012 Distinguished Executive Presidential Rank Award
 2017 Distinguished Civilian Service Medal
 2019 Defense Exceptional Civilian Service Medal

(Current as of January 2021)



BIOGRAPHY

UNITED STATES AIR FORCE



GENERAL CHARLES Q. BROWN, JR.

Gen. Charles Q. Brown, Jr. is the Chief of Staff of the Air Force. As Chief, he serves as the senior uniformed Air Force officer responsible for the organization, training and equipping of 689,000 active-duty, Guard, Reserve and civilian forces serving in the United States and overseas. As a member of the Joint Chiefs of Staff, the general and other service chiefs function as military advisers to the Secretary of Defense, National Security Council and the President.

Gen. Brown was commissioned in 1984 as a distinguished graduate of the ROTC program at Texas Tech University. He has served in a variety of positions at the squadron and wing levels, including an assignment to the U.S. Air Force Weapons School as an F-16 Fighting Falcon instructor. His notable staff tours include Aide-de-Camp to the Chief of Staff of the Air Force; Director, Secretary of the Air Force and Chief of Staff Executive Action Group; and Deputy Commander, U.S. Central Command. He also served as a National Defense Fellow at the Institute for Defense Analyses, Alexandria, Virginia.



Gen. Brown has commanded a fighter squadron, the U.S. Air Force Weapons School, two fighter wings and U.S. Air Forces Central Command. Prior to serving as the Air Force Chief of Staff, Gen. Brown was the commander of Pacific Air Forces, Air Component Commander for U.S. Indo-Pacific Command.

Gen. Brown is a command pilot with more than 2,900 flying hours, including 130 combat hours.

EDUCATION

- 1984 Bachelor of Science, Civil Engineering, Texas Tech University, Lubbock
- 1991 U.S. Air Force Fighter Weapons School, Nellis Air Force Base, Nev.
- 1992 Squadron Officer School, Maxwell AFB, Ala.
- 1994 Master of Aeronautical Science, Embry-Riddle Aeronautical University, Daytona Beach, Fla.
- 1997 Distinguished graduate, Air Command and Staff College, Maxwell AFB, Ala.
- 2000 Air War College, Maxwell AFB, Ala.
- 2004 National Defense Fellow, Institute for Defense Analyses, Alexandria, Va.
- 2008 Air Force Senior Leadership Course, Center for Creative Leadership, Greensboro, N.C.
- 2012 Joint Force Air Component Commander Course, Maxwell AFB, Ala.
- 2014 Joint Flag Officer Warfighting Course, Maxwell AFB, Ala.
- 2015 Pinnacle Course, National Defense University, Fort Lesley J. McNair, Washington, D.C.
- 2017 Leadership at the Peak, Center for Creative Leadership, Colorado Springs, Colo.

ASSIGNMENTS

1. May 1985 - April 1986, Student, undergraduate Pilot training, 82nd Student Squadron, Williams Air Force Base, Ariz.
2. May 1986 - July 1986, Student, lead-in fighter training, 434th Tactical Fighter Training Squadron, Holloman AFB, N.M.

3. August 1986 - March 1987, Student, F-16 training, 62nd Tactical Fighter Training Squadron, MacDill AFB, Fla.
4. April 1987 - October 1988, F-16 Pilot, 35th Tactical Fighter Squadron, Kunsan Air Base, South Korea
5. November 1988 - April 1991, F-16 Instructor Pilot, wing electronic combat officer, and wing standardization and evaluation flight examiner, 307th and 308th Tactical Fighter Squadrons, Homestead AFB, Fla.
6. April 1991 - August 1991, Student, U.S. Air Force Fighter Weapons Instructor Course, Nellis AFB, Nev.
7. August 1991 - August 1992, F-16 Squadron Weapons Officer and Flight Commander, 307th Fighter Squadron, Homestead AFB, Fla.
8. September 1992 - October 1994, Weapons School instructor, and standardization and evaluation flight examiner, F-16 Division, U.S. Air Force Weapons School, Nellis AFB, Nev.
9. October 1994 - July 1996, Aide-de-Camp to the Chief of Staff, Headquarters U.S. Air Force, Arlington, Va.
10. August 1996 - June 1997, Student, Air Command and Staff College, Maxwell AFB, Ala.
11. June 1997 - September 1997, Student, Armed Forces Staff College, National Defense University, Norfolk, Va.
12. September 1997 - November 1999, Air Operations Officer, Current Operations Division, Operations Directorate, U.S. Central Command, MacDill AFB, Fla.
13. November 1999 - June 2003, F-16CJ Instructor Pilot and assistant operations officer, 79th Fighter Squadron; Weapons and Training Flight Commander, 20th Operations Support Squadron; Operations Officer, 55th Fighter Squadron; and Commander, 78th Fighter Squadron, Shaw AFB, S.C.
14. July 2003 - June 2004, National Defense Fellow, Institute for Defense Analyses, Alexandria, Va.
15. June 2004 - June 2005, Deputy Chief, Program Integration Division, Directorate of Programs, Headquarters U.S. Air Force, Arlington, Va.
16. July 2005 - May 2007, Commandant, U.S. Air Force Weapons School, 57th Wing, Nellis AFB, Nev.
17. May 2007 - May 2008, Commander, 8th Fighter Wing, Kunsan AB, South Korea
18. June 2008 - May 2009, Director, Secretary of the Air Force and Chief of Staff Executive Action Group, Headquarters U.S. Air Force, Arlington, Va.
19. June 2009 - April 2011, Commander, 31st Fighter Wing, Aviano AB, Italy
20. May 2011 - May 2013, Deputy Director, Operations Directorate, U.S. Central Command, MacDill AFB, Fla.
21. May 2013 - February 2014, Deputy Commander, U.S. Air Forces Central Command; Deputy, Combined Force Air Component Commander, U.S. Central Command, Southwest Asia
22. March 2014 - June 2015, Director, Operations, Strategic Deterrence, and Nuclear Integration, Headquarters U.S. Air Forces in Europe - Air Forces Africa, Ramstein AB, Germany
23. June 2015 - July 2016, Commander, U.S. Air Forces Central Command, Air Combat Command, Southwest Asia
24. July 2016 - July 2018, Deputy Commander, U.S. Central Command, MacDill AFB, Fla.
25. July 2018 - July 2020, Commander, Pacific Air Forces; Air Component Commander for U.S. Indo-Pacific Command; and Executive Director, Pacific Air Combat Operations Staff, Joint Base Pearl Harbor-Hickam, Hawaii
26. August 2020 - present, Chief of Staff of the U.S. Air Force, the Pentagon, Arlington, Va.

SUMMARY OF JOINT ASSIGNMENTS

1. September 1997 - November 1999, Air Operations Officer, Current Operations Division, Operations Directorate, U.S. Central Command, MacDill AFB, Fla., as a major
2. May 2011 - May 2013, Deputy Director, Operations Directorate, U.S. Central Command, MacDill AFB, Fla., as a brigadier general
3. July 2016 - July 2018, Deputy Commander, U.S. Central Command, MacDill AFB, Fla., as a lieutenant general

FLIGHT INFORMATION

Rating: command pilot

Flight hours: more than 2,900, including 130 combat hours

Aircraft flown: F-16A/B/C/D and 15 additional fixed and rotary-wing aircraft

MAJOR AWARDS AND DECORATIONS

Defense Distinguished Service Medal with one oak leaf cluster

Distinguished Service Medal

Defense Superior Service Medal

Legion of Merit with three oak leaf clusters

Bronze Star Medal

Defense Meritorious Service Medal

Meritorious Service Medal with two oak leaf clusters

Aerial Achievement Medal

Joint Service Commendation Medal

Air Force Commendation Medal with two oak leaf clusters

Combat Readiness Medal

National Defense Service Medal with bronze star

Armed Forces Expeditionary Medal

Global War on Terrorism Expeditionary Medal

Global War on Terrorism Service Medal
Korea Defense Service Medal
Nuclear Deterrence Operations Service Medal
NATO Medal
Republic of Korea Order of National Security Merit (Samil Medal)

PUBLICATIONS

"Developing Doctrine for the Future Joint Force: Creating Synergy and Minimizing Seams," Air University Press, September 2005

"No Longer the Outlier: Updating the Air Component Structure" Air University Press, Spring 2016

EFFECTIVE DATES OF PROMOTION

Second Lieutenant Feb. 28, 1985

First Lieutenant Feb. 28, 1987

Captain Feb. 28, 1989

Major Aug. 1, 1996

Lieutenant Colonel July 1, 1999

Colonel June 1, 2005

Brigadier General Nov. 20, 2009

Major General July 3, 2013

Lieutenant General June 29, 2015

General July 26, 2018

(Current as of January 2021)



BIOGRAPHY

UNITED STATES SPACE FORCE

JOHN W. "JAY" RAYMOND

Gen. John W. "Jay" Raymond is the Chief of Space Operations, United States Space Force. As Chief, he serves as the senior uniformed Space Force officer responsible for the organization, training and equipping of all organic and assigned space forces serving in the United States and overseas.

Gen. Raymond was commissioned through the ROTC program at Clemson University in 1984. He has commanded at squadron, group, wing, numbered air force, Major Command and Combatant Command levels. Notable staff assignments include serving in the Office of Force Transformation, Office of the Secretary of Defense; the Director of Plans, Programs and Analyses at Air Force Space Command; the Director of Plans and Policy (J5), U.S. Strategic Command; and the Deputy Chief of Staff for Operations, Headquarters U.S. Air Force.



Gen. Raymond deployed to Southwest Asia as Director of Space Forces in support of operations Enduring Freedom and Iraqi Freedom. Prior to leading establishment of the U.S. Space Force and serving as the first Chief of Space Operations, Gen. Raymond led the re-establishment of U.S. Space Command as the eleventh U.S. combatant command.

EDUCATION

1984 Bachelor of Science, Administrative Management, Clemson University, Clemson, S.C.
 1990 Squadron Officer School, Maxwell Air Force Base, Ala.
 1990 Master of Science, Administrative Management, Central Michigan University, Mount Pleasant
 1997 Air Command and Staff College, Maxwell AFB, Ala.
 2003 Master of Arts, National Security and Strategic Studies, Naval War College, Newport, R.I.
 2007 Joint Forces Staff College, Norfolk, Va.
 2011 Combined Force Air Component Commander Course, Maxwell AFB, Ala.
 2012 Joint Flag Officer Warfighting Course, Maxwell AFB, Ala.

ASSIGNMENTS

1. August 1985–October 1989, Minuteman Intercontinental Ballistic Missile Crew Commander; Alternate Command Post; Flight Commander and Instructor Crew

- Commander; and Missile Procedures Trainer Operator, 321st Strategic Missile Wing, Grand Forks Air Force Base, N.D.
2. October 1989–August 1993, Operations Center Officer Controller, 1st Strategic Aerospace Division, and Executive Officer, 30th Space Wing, Vandenberg AFB, Calif.
 3. August 1993–February 1996, Chief, Commercial Space Lift Operations, Assistant Chief, Current Operations Branch, Headquarters Air Force Space Command, Peterson AFB, Colo.
 4. February 1996–August 1996, Deputy Director, Commander in Chief's Action Group, Headquarters AFSPC, Peterson AFB, Colo.
 5. August 1996–June 1997, Student, Air Command and Staff College, Maxwell AFB, Ala.
 6. June 1997–August 1998, Space and Missile Force Programmer, Headquarters U.S. Air Force, the Pentagon, Arlington, Va.
 7. September 1998–April 2000, Chief, Expeditionary Aerospace Force Space and Program Integration, Expeditionary Aerospace Force Implementation Division, Headquarters U.S. Air Force, the Pentagon, Arlington, Va.
 8. April 2000–June 2001, Commander, 5th Space Surveillance Squadron, RAF Feltwell, United Kingdom
 9. June 2001–July 2002, Deputy Commander, 21st Operations Group, Peterson AFB, Colo.
 10. July 2002–June 2003, Student, Naval War College, Newport, R.I.
 11. June 2003–June 2005, Transformation Strategist, Office of Force Transformation, Office of the Secretary of Defense, the Pentagon, Arlington, Va.
 12. June 2005–June 2007, Commander, 30th Operations Group, Vandenberg AFB, Calif. (September 2006– January 2007, Director of Space Forces, Combined Air Operations Center, Southwest Asia)
 13. June 2007–August 2009, Commander, 21st Space Wing, Peterson AFB, Colo.
 14. August 2009–December 2010, Director of Plans, Programs and Analyses, Headquarters AFSPC, Peterson AFB, Colo.
 15. December 2010–July 2012, Vice Commander, Fifth Air Force, and Deputy Commander, 13th Air Force, Yokota Air Base, Japan
 16. July 2012–January 2014, Director of Plans and Policy (J5), U.S. Strategic Command, Offutt AFB, Neb.
 17. January 2014–August 2015, Commander, Fourteenth Air Force (Air Forces Strategic), AFSPC, and Commander, Joint Functional Component Command for Space, U.S. Strategic Command, Vandenberg AFB, Calif.
 18. August 2015–October 2016, Deputy Chief of Staff, Operations, Headquarters U.S. Air Force, the Pentagon, Arlington, Va.
 19. October 2016–December 2019, Commander, AFSPC, Peterson AFB, Colo.
 20. December 2017–August 2019, Commander, Joint Force Space Component Command, Peterson AFB, Colo.
 21. August 2019–August 2020, Commander, U.S. Space Command, Peterson AFB, Colo.

22. December 2019–present, Chief of Space Operations, U.S. Space Force, the Pentagon, Arlington, Va.

SUMMARY OF JOINT ASSIGNMENTS

1. June 2003–June 2005, Transformation Strategist, Office of Force Transformation, Office of the Secretary of Defense, Arlington, Va., as a colonel
2. July 2012–January 2014, Director of Plans and Policy (J5), U.S. Strategic Command, Offutt Air Force Base, Neb., as a major general
3. December 2017–August 2019, Commander, Joint Force Space Component Command, Peterson AFB, Colo., as a general
4. August 2019–August 2020, Commander, U.S. Space Command, Peterson AFB, Colo., as a general

MAJOR AWARDS AND DECORATIONS

Distinguished Service Medal with oak leaf cluster
 Defense Superior Service Medal with oak leaf cluster
 Legion of Merit with oak leaf cluster
 Meritorious Service Medal with four oak leaf clusters
 Air Force Commendation Medal
 French Order of Merit

OTHER ACHIEVEMENTS

2007 General Jerome F. O'Malley Distinguished Space Leadership Award, Air Force Association
 2015 Thomas D. White Space Award, Air Force Association
 2016 Peter B. Teets Government Award, National Defense Industrial Association
 2017 James V. Hartinger Award, National Defense Industrial Association

EFFECTIVE DATES OF PROMOTION

Lieutenant July 20, 1984
 First Lieutenant July 20, 1986
 Captain July 20, 1988
 Major July 1, 1996
 Lieutenant Colonel July 1, 1999
 Colonel July 1, 2004
 Brigadier General Aug. 1, 2009
 Major General May 4, 2012
 Lieutenant General Jan. 31, 2014
 General Oct. 25, 2016

(Current as of August 2020)

SPACE ACQUISITION ISSUES

Ms. MCCOLLUM. Thank you.

For questions this round, I will go first, and then Mr. Calvert will go second. And I thank you for your testimony.

I want to be very clear in my questioning that the Air Force, better than just about any other branch of service, should understand what is involved with setting up a new service line. My father served in the Army Air Corps, so the Air Force was birthed out of that. So, the Air Force understands what needs to happen and how it needs to happen quickly.

So, as I said in my opening statement, I am very concerned about the lack of progress with fixing these longstanding problems of space acquisition that are now in the Space Force. For years, GAO and others have written reports about the challenges within space acquisition. Our committee staff—I have seen them—have bookshelves of such reports.

Recently, the GAO identified budget shortfalls, cost growth, or delays in the GPS space, ground, and user equipment segments of the program, and budget shortfalls for missile-warning satellite launch vehicle integration, as well as concerns about other ongoing programs.

To the Secretary and General Raymond: Cost growth and delayed schedules, they are serious problems. You are aware of that. I believe that they are a symptom of a larger fundamental problem. What have you identified as the core fundamental issues that cause cost growth and schedule delays on space programs? And what are the steps you are taking to address these issues?

And, on that, I pointed out in my testimony that Congress established an Assistant Secretary position to focus on space acquisition, to serve as the space acquisition executive. Now, that post has yet to be filled. It wasn't filled by the previous administration, and we are only a few months into the new administration. But this is very important. That position is to oversee and direct space acquisition units of the Department, such as the Space Rapid Capabilities Office and the Space and Missile Systems Center.

Now, this individual is going to be responsible for making acquisition decisions, and they will have a responsibility to make decisions on the budget and to align the resources with those acquisitions.

When can we expect to see this position filled?

Gentlemen?

Secretary ROTH. Yes. Okay. I will start with talking about the position, and then I will hand off to General Raymond to talk a little bit about space acquisition.

I share your concern, Chair. The position ought to be filled. Probably should have been filled, you know, last year as well, but for reasons beyond our control, they were not filled at the time. So that position needs to be filled as soon as possible. And so, I assume, anytime, shortly, that further nominations will be coming in to fill the remainder of the political positions we have here in the Air Force. That is a key position. I agree with your assessment completely.

Now, we haven't sat on our hands. We have taken a look at that office and we have organized it in a way that whoever comes in can hopefully, you know, for lack of a better word, hit the ground running and start out. But that person will obviously need to influence where we go forward.

I will note that that position will not become the space acquisition executive until 1 October 2022. And that is part of the problem and perhaps one of the reasons why it wasn't filled last year as well.

We would actually suggest that perhaps we ought to propose some legislation to amend that a little bit to say that it won't be filled until no later than 1 October 2022 so that the person, once they are up to speed, can perhaps start taking on some of the SAE kinds of responsibilities. But, again, right now, as the Authorization Act directed, that position will not become the space acquisition executive until 1 October of 2022.

In terms of general management, cost, schedule, and performance are the keys to any acquisition program. And it is just—it is a management imperative. We have had issues on both the Air and Space side, as you allude to, in terms of staying on schedule and performing. And so, it just takes attention.

And so we, across the enterprise, across the Department of the Air Force enterprise, are taking a new approach, a new modern, more aggressive, more accelerated approach, to try to eliminate bureaucracy and try to focus people on goals, coming up with meaningful metrics, and making sure we manage risk in a way that makes some sense. Because, too often, we overpromise and underperform, and we need to fix that. We are committed to doing so.

As you say, Mr. Kendall is an acquisition executive, has an enormous amount of experience in this area, so I would expect him to bring that to this position.

Let me stop and pause and hand off to General Raymond as well.

General RAYMOND. Yes.

Chair, thank you very much for the question.

We have got to go faster in modernizing our space capabilities and delivering capabilities and putting them in the hands of the warfighter.

From a chief's perspective of a service, I have pieces of this, and it is the whole capability development process that we have built.

It starts with force design. We have established an organization called the Space Warfighting Analysis Center that is doing that force design, and is doing that force design with other acquisition authorities across the Department to drive unity of effort.

It also, then, moves into requirements. And as the service chief, I am responsible for requirements. By elevating space to an independent service, I have a direct link to the JROC and participation in the JROC, which strengthens that position in requirements, and we have streamlined that process.

Acquisition-wise, we have reorganized the acquisition organization, called Space and Missile Systems Center. And, upon confirmation of a commander, hopefully this summer—nomination and confirmation of a commander, hopefully this summer, we will establish Space Systems Command, which is a very flat organization with more delegated authorities pushed down to them, with partner-

ships with other acquisition agencies, in order to go fast, drive unity of effort, and reduce cost.

And, finally, for the first time ever, we have developed a space testing program, which we haven't had before, to accelerate and have an integrated testing program, from contractor testing to developmental testing, to operational testing, all with one organization. And that will be established later this year as well.

And so, all the pieces are in place. I could not agree more that we need to have an Assistant Secretary for Space Acquisition and Integration, and I look forward to getting them on board soonest.

Ms. MCCOLLUM. So, if I am hearing you correctly, with what you have put in place with the testing, you have looked at, you have had staff look at the GAO reports, and you are implementing some of those suggestions? Could you get back to the staff with what you are implementing—

General RAYMOND. Certainly.

Ms. MCCOLLUM [continuing]. And the timeframe and what it is going to be doing, and, with that, your expectations?

General RAYMOND. I absolutely will.

Ms. MCCOLLUM. We have expectations for the airmen and for the guardians. We need to have expectations for those who, you know, let out the contracts and oversee the contracts, that they meet their prescribed deadlines.

General RAYMOND. I absolutely will, ma'am. I look forward to it.

Ms. MCCOLLUM. Okay. Thank you.

Mr. Calvert.

SPACE FORCE MISSION PLAN

Mr. CALVERT. Thank you, Madam Chair.

I share your concern on these acquisition issues. I have been, as you know, concerned about that for a long time, and especially now that the commercial enterprises, quite frankly, are much further ahead than our military. And we need to understand how to integrate commercial enterprise with our own programs.

And I have always talked about this so-called valley of death. I recommend a book to everyone called "Kill Chain" that goes through the problems which industry has with doing business with the Department of Defense. Quite frankly, they just don't trust them, especially in protecting their intellectual property.

The whole reason that we have the Space Force is to be disruptive, to create change as rapidly as possible. The Chinese, as you know, have a turnaround of about 2 to 3 years on their satellite program, and some of our satellites are taking up to 20 years, especially some of our legacy satellites—which are very important, I get it, but we can no longer rest on that relatively old technology.

I would like to hear how the Space Force is going to do things differently. And, as you know, status quo is not acceptable. How can we align our resources and our acquisition strategies to work with industry to capture their enthusiasm and motivation?

And I use Elon Musk as an example, and SpaceX, you know, often because he was a disrupter. You know, obviously, Boeing and Lockheed didn't like that too much, but he did what he had to do, and it has worked out to the benefit of the United States.

So, General Raymond, where are we going with this?

General RAYMOND. So, first of all, sir, thanks for the question.

We have a great opportunity. And the opportunity that we see in the Space Force are twofold: partnerships with our allies and partners, and partnerships with commercial industries, as you just highlighted.

Commercial industry is doing in months what it is taking the government to do in years. It all begins with force design and designing the architecture of space with a new business model in mind and with protection in mind.

And so, we are building a force design that will allow us to capitalize on that commercial capability. Once that force design is done later this summer, we are going to have an industry day, lay that force design out to the industry and have them understand it and then compete to participate in the building of that force design.

We have got to capitalize on commercial industry and leverage them to greater advantage than what we have done to date.

Mr. CALVERT. And I would agree.

Another thing is people, of course, General. You know, I get, you know, we are in a political world and we have to make changes, but, you know, I don't think, for instance, Will Roper had a political bone in his body, quite frankly. And he was a very valuable resource to the United States Government.

I was somewhat distressed that he was sent away, because that is the type of individuals that you need to attract people who are going to be smart, obviously, and disruptive and force change, both in the traditional Air Force and the new Space Force. Because, obviously, we are going to have to contend with China in this one. I don't think Russia has the resources or the capability of doing what China is already doing.

I hope you can continue to share with us how we are going to invest in these systems and how we are going to maintain our edge in space, because we are quickly losing our edge. And so, we don't have the time. I would hope that you could put together this as quickly as possible.

SPACE FORCE OPERATIONAL CAPABILITY

And let me ask this question. What is the Space Force doing to ensure that this is similarly supported and developed in the operational capability? In other words, what are you doing right now to bring confidence to the warfighter that you are able to deliver today, if necessary?

General RAYMOND. Well, first of all, we are the best in the world at space. We remain the best in the world at space. But that superiority gap is shrinking. And so that is why we established the Space Force; that is why we established U.S. Space Command on the operational side. And we are all about going fast and moving at speed.

We exercise with our warfighting partners. We train, we war-game with those partners. We develop our infrastructure with them in mind and have them help us build that in a way that gives them information. Our main goal is to provide the capabilities to our joint and coalition forces at the time and tempo that they need to do so. That is what we are committed to doing.

The challenge today, though, is that is not good enough, because there is an active threat in the domain. And you can't just launch capabilities without also understanding how you have to protect and defend it.

And so, there is this balance. There are really four things that we are balancing: getting capability onto orbit fast; being able to protect and defend that capability; shifting and modernizing to a more defensible architecture, because the capabilities that we have in space today are not that defensible; and then, fourth, what other new missions should transfer to space because space provides an opportunity to do it better.

Mr. CALVERT. Well, you have a big challenge ahead of you, and I hope we have the budget to support that challenge. And, you know, I think the squeeze we have in the budget is unfortunate, because we need to make sure you have the resources to make sure that you maintain your lead in space.

With that, I will yield back, Madam Chair.

Ms. MCCOLLUM. Thank you, Mr. Calvert. We need to make sure that every penny is spent wisely with this budget, don't we?

Mr. Cuellar and Mr. Rogers.

PILOT SHORTAGE

Mr. CUELLAR. Thank you, Madam Chair and Ranking Member. Again, thank you all for your service.

What I want to do is, by the way, I associate myself, also, to the remarks of the Chairwoman and the Ranking Member. We have to be a little bit more agile. I know we have an advantage, but that advantage, in our opinion, I think, is shrinking.

What I want to talk about is about the shortage of pilots. As you know, the airline industry takes a lot of the Air Force pilots. We have known that for many years. I think before the COVID-19 reached the U.S., the Air Force had a deficit of more than 2,000 pilots. The pandemic temporarily paused the airline hiring, reducing the pilot losses to the Air Force. But, still, COVID-19 hampered our pilot training, which—pretty much, the overall shortage didn't really change much.

My question is, and I know you are working on it, but we have to have something to address that issue of the pilot shortage that we have. We have been talking about it for a long time, and we have to see some sort of change on that.

RUSSIA AND CHINA IN LATIN AMERICA

The second thing I want to ask you is, tell me what your knowledge is of what the Chinese and the Russians are doing in Latin America. I think we have asked this of the other departments. I am a little concerned about what the Russians but especially the Chinese are doing.

For example, there is a listening post, or I think they call it a tracking station, that they have in Argentina and I think one other place, somewhere out there in Africa. But I am a little concerned that in our own backyard we are seeing the Chinese and the Russians, especially the Chinese, in Latin America.

Those are my two questions, and I appreciate your responses.

PILOT SHORTAGES

General BROWN. Representative Cuellar, thank you for the question.

And when we look at the pilot shortage, you are right, we have made some progress over the course of the past year, where we shortened the gap by about 200 over the course of the past year. Part of that was due, as you described, to the pandemic. But, also, what I would also tell you is, our goal was to get to 1,500 a year, and even throughout the pandemic, instead of—we didn't drop down. We actually were able to maintain the same level we had the year prior.

A real testament to our airmen and our operators and our maintainers, to maintain the capacity and not slide back due to COVID. It is a combination of production and retention, and we are working both sides of that.

We have several initiatives that we are working, from increasing our introductory flight training, to our pilot training next, to how we work with our civilian sim instructors to free up more of our uniformed members to increase our production.

At the same time, we are looking at some commercial options. We just sent out the request for information that we are analyzing now on commercial options to help that as well.

RUSSIA AND CHINA IN LATIN AMERICA

To your second question, you know, one of the things that we talk about with the combatant commanders is that China is not just an Indo-Pacific problem; it is a global problem. And maybe less so from a military aspect, but more so from an economic aspect and the influence they have done with their One Belt, One Road and how they come into various countries with quite a bit of money and influence in areas.

And so they can have, what I would call, slight inroads into different parts of the world, including South America, Latin America, that we need to be paying attention to, as a Nation, to make sure that we have a good understanding of what is going on and the impact, so it doesn't happen just insidiously and we are in a position where we are at a disadvantage.

Mr. CUELLAR. Well, I have a little bit of time, so I will yield back, but I, you know, want you to make sure you all really pay attention to—I know they are a problem all over the world. I understand that. But I just don't want to wake up one of these days and realize that they really have a strong presence in Latin America, in our own backyard. So just remember what happened in the 1980s when we woke up and we saw the Sandinistas and the Russians in Nicaragua. I don't want that to happen.

Otherwise, thank you so much for all three of you all on your service. Thank you.

Thank you, Madam Chair. I yield back.

Ms. MCCOLLUM. Thank you, Mr. Cuellar.

Mr. Rogers and then Mr. Kilmer.

SPACE AGENCIES MISSIONS AND COOPERATION

Mr. ROGERS. Thank you, Madam Chair.

There are several big-time players in this topic that we are discussing this morning. Let me set the stage to perhaps deconflict the various agencies that are involved from each other.

We have the regular Air Force, we have NASA, we have now the new Space Force, as well as the commercial or private enterprises, all of them dealing with a piece of space. Help us deconflict those agencies and how they relate to each other and to the main mission.

General RAYMOND. Yes, sir.

There are three segments of space across our Nation. One is civil space. That is NASA. They do science exploration, planetary exploration. And that is the civil part of space.

There is a national security space. That is now the Space Force. That has transitioned out of the Air Force into the Space Force, and that is what we do. We are about organized training and equipping and operating capabilities for the defense of our country.

And then there is commercial space. And commercial space is just like in any other domain where you have commercial industry that is conducting operations. We have a commercial space industry. It is alive and well. It is flourishing. It is a great national strength for us.

Historically, what has been commercially viable were commercial launches and large communication satellites. Today, because the cost of launch has gone down, largely because of commercial launch, and because satellites that are smaller are more operationally relevant, we see a full expansion across all mission sets that are now commercially viable.

There are three separate segments: civil, military, and commercial.

Mr. ROGERS. Why do we need a Space Force? Why is not the regular Air Force program just as effective or more so?

General RAYMOND. Well, as we mentioned just a little bit ago, the capability gap is shrinking between us and our closest competitors. They are catching up on us. And the Nation decided to take an opportunity, before it was too late, to stand up a service that was purpose-built for this domain.

And we have already seen the benefits of that elevation. We are attracting greater talent. We have a stronger voice in requirements. We have a stronger voice with our allies and partners. In fact, after we established the Space Force, France, U.K., Australia, and Japan have all elevated space in their departments as well. We have a stronger link with commercial industry to be able to better capitalize on that commercial industry.

PILOT SHORTAGE SOLUTIONS

So, across the board, we have seen a critical elevation of capability since we have established the Space Force.

Mr. ROGERS. Mr. Cuellar touched on this briefly, about the shortage of pilots. Now, with the shortage becoming very acute, what do you suppose we should be doing to be sure we have enough pilots to man our mission?

Mr. Secretary.

Secretary ROTH. Well, again, I think, as General Brown responded here before, we actually are making some progress. I

mean, we are not hitting the 1,500, but last year we did about—I think it was 1,263, which was better than we have done in the past.

We have a number of initiatives that we are trying to improve our so-called organic capabilities. We have something called Undergraduate Pilot 2.5, which is trying to take more modern kinds of approaches to how we approach pilot training. We are also trying to take a look at leveraging things like simulators and better use of simulators. And also trying to look at, are there some ways that we can leapfrog the system, in terms of bringing in pilots from the civilian world and not making them go through every step and perhaps getting them into a cockpit sooner, and those kinds of things.

Let me hand off again to General Brown. But we are actually taking it seriously. He mentioned the fact that we are looking at some commercial opportunities to see if there is some synergy there as well.

General BROWN. And just to build on what the Secretary said, so we do have some initiatives for increased introductory flight training, which decreases the number of students that wash out.

We are looking at how we do our helicopter training. Instead of going to fixed-wing and then to helicopters, we are going straight to helicopters, which frees up a number of different slots that can produce fixed-wing pilots.

As he also described, we are collaborating with those that already have civilian training, to bring them in a bit faster; at the same time, working with universities that have aviation programs to accelerate and shorten the time that they are going through our Air Force pilot training to help increase our production as well.

Mr. ROGERS. Well, it is going to get a lot more complicated, because, as the economy recovers and grows, there will be a larger demand, even, on pilots from the commercial world that you will be competing against. It is best we put our best efforts forward quickly and assuredly on the problem.

Madam Chairman, I yield back.

Ms. MCCOLLUM. Thank you. A good question. And this is a problem that all our agencies are facing, pilot shortage. So it is not just in the military; all of our agencies are facing this. It is something we need to look at.

Mr. Kilmer and then Mr. Cole.

THE NATIONAL SECURITY SPACE LAUNCH PROGRAM

Mr. KILMER. Thank you, Madam Chair.

And thanks to our witnesses for being with us today and for your service.

General Raymond, it was great speaking with you earlier this week. I would like to revisit a topic that we discussed. The National Security Space Launch program is the program that enables the acquisition of launch services, with the goal of ensuring continued access to space for critical national security missions.

And I know the program is managed by the Space and Missile Systems Center and that the Space Force is the service branch responsible for awarding the domestic launch service contracts for the program. And, last summer, the Space Force awarded the launch service contracts for phase two of the NSSL and selected

two providers. I understand that phase two covers launch service orders through 2024, with phase three likely to begin in 2025. And, during our recent conversation, you mentioned that the Space Force is currently doing research to inform phase-three specifics.

I have three questions here.

One, is the team evaluating the benefits of selecting more than two providers for phase three?

And, two, as the NSSL missions become more frequent and diverse, do two providers afford you enough launch options?

And then, finally, I know the Air and Space Forces have used a streamlined acquisition strategy to reduce NSSL launch costs. Do you think adding another provider for phase three could reduce costs further?

General RAYMOND. First of all, it was great talking with you on the phone. I appreciated that opportunity, and appreciate the opportunity to discuss this again with you.

We have three priorities in launch. First is assured access to space. It is nationally critical. It is a national imperative. The second is to increase competition. And what we have seen over the course of the last 8 or so years is, that increased competition has saved about \$7 billion out the National Security Space Launch budgets. And then the third is to get off the RD-180 engine, which is a Russian engine.

That strategy has gone very well. We have assured access. We have increased competition; the costs have gone down. And we will be off the RD-180 engine and won't even have to buy anywhere near as many as we were allowed to buy. So that is going well.

Now, we have started investing some dollars in some technology maturation, if you will, for a phase three. We are just in the very early stages of those phase two launches, and as we progress towards the timeline when we would have to make that decision, we will look at what the launch industry looks like, we will look at the manifest, the projected manifest, if you will, for the numbers of launches that will have to be launched, and then we will make that decision at that time.

I am all for competition, and if the manifest shows that we need additional providers, we will do that.

LOW-EARTH ORBIT RISK

Mr. KILMER. General, I also wanted to touch on, during our conversation earlier this week, you mentioned that advances in technology have also allowed greater access to space and a dramatic increase of satellites in orbit. You know, obviously, this increase in objects in orbit poses some risk to space activities in the national security and defense and commercial and civil sectors. The main concern now is congestion in low-Earth orbit, but in the near future we may be faced with increased congestion in lunar orbit too.

The Space Force, it seems, can be a leader in resolving some of these issues associated with space congestion. You mentioned to me that you are in communication with other countries who are interested in partnering with the U.S. as we, sort of, forge some of these policies collectively.

Are there currently internationally-agreed-to, kind of, rules of the road for space activities in low-Earth orbit? And are those rules

governing the de-orbiting of satellites and the removal of spent rockets to declutter low-Earth orbit? And, finally, what measures is the Space Force pursuing in that arena?

General RAYMOND. Thanks.

It is clear that space is contested, congested, and competitive. And on the congested side, we track about 30-something-thousand objects, 30,000 objects roughly, every single day. We take about 400,000 observations of all those objects in space each and every day.

We do all the analysis—our U.S. Space Command does all the analysis to make sure that two objects don't collide in space and create more debris. And so we act as the space traffic control for the world. If any two objects are going to collide, even if it is a China object about to collide with a piece of debris that they created, we will warn them, because we want to keep the domain safe.

That job is a full-time job, and it is becoming even more demanding.

So what do you do? First of all, you quit creating debris in the first place. You develop standards that satellites don't break apart when they are towards the end of their life. You develop standards so, when launch vehicles launch, you don't litter the domain with debris. You act in a safe and professional manner—which those rules haven't been defined. And you partner with your allies to develop those.

So I will tell you that low-Earth orbit and space in general is the wild, wild West. Basically, two rules: You can't put weapons of mass destruction in space, and you can't build a base on a planet. Other than that, it is largely the wild, wild West. We have got to put some norms of behavior in place, and we have got to make sure that we can keep this domain safe for everybody to use into the decades ahead of us.

Mr. KILMER. Thanks so much, General.

Madam Chair, I yield back.

Ms. MCCOLLUM. That is a timely question. USA Today reports the Chinese rocket is reportedly falling uncontrollably to Earth, mostly burnt up, the Chinese Government reassured the world on Friday. It is taller than the Statue of Liberty.

Mr. Cole.

FUNDING PRIORITIES

Mr. COLE. Thank you very much, Madam Chair.

And, Mr. Secretary and General Brown, General Raymond, thank all of you for being here. Thank you for your service.

Two quick questions. One, my observation, we have only seen obviously the skinny budget so far, but I think your budget is going to need to go higher. We have obviously departed from what Secretary Mattis and Secretary Esper laid down as what they thought the appropriate growth rate of 3 to 5 percent was. So, in the event you got more money, Mr. Secretary, where would the focus be? What would be the top priorities?

MANUFACTURING

The second question, I will just get it in now. Obviously, we talk a lot about acquisition, but if you represent a district that has Tin-

ker Air Force Base, you worry a lot about maintenance of the capabilities that we have. We have a lot of these legacy systems hosted here, and some of them are so old it is extraordinarily difficult for us to get parts and to have those parts manufactured. I mean, we are talking about KC-135s built in the 1950s and 1960s that are still being maintained here.

I am curious as to what the plans are to beef up depot ability to, you know, manufacture parts, things like additive manufacturing and 3D printing manufacturing, those type of things. What are we thinking of in terms of increasing the capabilities? Because we are going to have a legacy force for a while. That is why we call it that. And, again, we are sort of reaching the point in some areas where we literally have outlived our supply chain.

FUNDING PRIORITIES

Secretary ROTH. Thank you, Mr. Cole, for the question. In terms of the top line, the way I would approach the answer to that is that the top line we have, we have said all along—and in some of the opening statements you all alluded to that—you know, as we go forward, we are going to have to probably make some hard choices and some difficult decisions concerning trying to invest in the future versus continuing to support some of our legacy systems. And so, we have actually been talking about that for 2 or 3 years, in terms of focusing on the future and taking some additional risks with some of the current systems and some of our legacy capabilities.

My sense is the budget you will see is a balanced budget that can support the National Security Strategy with some reasonable risk, and there is always risk involved as well. And so you will see, you know, the service chiefs, by law, will provide you with an unfunded priorities list, and that will give you a sense of where that next dollar might go in terms of their priorities.

But I want to continue to emphasize the fact that we need to focus on investing in technology for the future. And regardless of where the top line is, we are going to have to make sure that we make some focused decisions about continuing to respond to today's demands and try to manage that in the best way we can.

As both generals have indicated, we are falling behind, and so we need to go fast, we need to catch up, we need to invest in the future. And so that is really the focus of our budget, regardless of where the top line actually is.

MANUFACTURING

In terms of Tinker and all, we actually have a number of initiatives to try to improve the supply chain and try to improve our capabilities, everything from adaptive manufacturing to other kinds of things. We have what we call a Strategic Alternate Sourcing Program, where we assist vendors to come in and do business with us and try to provide additional capabilities we don't have today.

And taking a note from the acquisition world, we actually now have a Rapid Sustainment Office as well, in addition to a Rapid Capabilities Office. And their focus is on the supply chain, and their focus is on logistics and supplies and the like. And so we are looking and making sure that we are taking advantage and taking

a look at diminishing manufacturing sources and other kinds of things to make sure that we are well postured with the supply chain. We are as worried as you are to make sure that our supply chain stays as healthy as can be.

I hope that answers your question.

IMPORTANCE OF OLD PLATFORMS

Mr. COLE. Thank you very much. Yes, it is. Thank you, Mr. Secretary, and I know we will have a continued dialogue about this.

Just one more point in the few seconds that we have left. And I know you will do this, but I just want to state it. I remember a number of years ago during the Obama administration, the decision was made to eliminate the reserve AWACS wing, which actually is at Tinker. 28 of the 32 AWACS fly out of there. It was a big mistake, not because we don't need new systems; we do. Those are old platforms, 707 bodies. But if we had not had that capability, you know, it would have really eaten into our ability to wage air warfare.

It was a big fight, and we won the fight. The planes are still there. Love it that we developed an alternative or a new platform. But as you are doing this, again, I am supportive, I know you have sometimes got to make changes to reinvest, but please don't give up capabilities that you might need in the immediate future. It is a very dangerous world, as you know better than me, and sometimes you are going to need those legacy systems.

So, anyway, thank you, Madam Chair. I yield back.

Ms. MCCOLLUM. Thank you. That is a good question.

And would you please provide for the committee a list of what you are calling legacy systems. You have only provided the committee a definition.

Thank you very much, Mr. Cole.

Mr. Aguilar, and then Mr. Womack.

CONSOLIDATION OF ACQUISITIONS

Mr. AGUILAR. Thank you, Madam Chair. And thank you to the witnesses for being here and for their continued service.

General Raymond, good to chat with you again. I appreciated our conversation earlier this week.

As we talked about earlier this year, the Space Force announced that the Space Systems Command, one of the Space Force's three major commands focused on acquisition, will be headquartered at Los Angeles Air Force Base. You previously stated that this is crucial, that the Space Force act quickly to both acquire and launch space systems.

How will the consolidation of acquisitions within SSC ensure that Space Force can effectively and efficiently field new technology to keep base with our near-peer adversaries? And the second part of that is, what future investments can we expect at Los Angeles Air Force Base if Space Force supports this goal?

General RAYMOND. So, yes, thanks for the opportunity to talk earlier in the week, and I appreciate the opportunity here today.

As I mentioned before, we have got to go faster in space. One of the things that Congress highlighted in the years leading up to the establishment of the Space Force was 65 different organizations

that had a hand in space acquisition. And so now that we have established a Space Force, we are bringing unity of effort across the Department towards that end, from force design, to requirements, to acquisition. We have to reduce duplication of effort. We have to all roll in the same direction, if you will, and we have to reduce costs, and we have to do it at speed.

And so when we established—or planned and designed the Space Systems Command, it was to do that, to be a very flat organization. Back just a few years ago, there was one PEO for space. Today, we have distributed that much more broadly so there is not a bottle jam. We have delegated authorities down to the lower level so program managers can manage their programs, not managing the Pentagon bureaucracy. We have established something called the Program Integration Council here at the Pentagon to streamline the processes once it gets into the Pentagon. So there has been a lot of advances over the course of this year.

We are delivering our capabilities on schedule. The next-gen OPIR has met every milestone, has been on budget as it has been planned. And so what the organization of SSC allows us to do out in Los Angeles will also allow us to align that major acquisition organization with some disruptive innovators. The Space RCO focused on our nationally critical protect and defend mission. The Space Development Agency focused on harnessing commercial space in greater details, and have competition between those three arms.

The critical part of being in Los Angeles is that commercial industry is all right there. And so by having that relationship right there next to the commercial industry, it really will continue to pay advances for us.

Thank you.

DIVERSITY IN THE WORKFORCE

Mr. AGUILAR. Appreciate the answer. And I know that if I wouldn't have asked the question, Mr. Calvert would have in a future round.

I appreciate your written testimony on the emphasis for building digitally fluent cadre to support the Space Force. This cadre will include civilian workforces, as we discussed too. What types of outreach do you plan to do to develop a diverse civilian workforce, including individuals from underrepresented and minority communities?

General RAYMOND. It is a great question, and it is a priority for us. We have an opportunity to start with a clean sheet of paper, to build this service from scratch the way we need to have it to have the people and the capabilities that we need to accomplish our mission.

If you look at the career field that came into the Space Force, it is operation to acquisition, engineering, intelligence, and cyber. That is it. Now, all of the support career fields remain in the Air Force do not increase our bureaucracy. We are just solely focused on space superiority. Unfortunately, those career fields are the least diverse of the career fields that were in the service, and so we are developing university partnership programs with colleges

and historically Black colleges, for example, and universities, like North Carolina A&T, and we are working to attract that talent.

Space has always been a leader in that. NASA has been a leader in that for decades, and we want to capitalize on that. There is a lot of excitement across our country about space. We have more people knocking on our door wanting to get into our force than we have positions for by a long shot, and we have a great opportunity to handpick those people that we need to accomplish this mission which is so critical for our country.

THE ROLE OF SPACE FORCE

Mr. AGUILAR. Thanks, General.

Just in the remaining seconds that I have, you know, we talked just briefly about the Long March Chinese rocket reentering our atmosphere. You know, how do we coordinate this? What is the role of Space Force, you know, moving forward as this potentially becomes more likely in the future? And what can the public expect to hear from you in the next 36 hours as this develops?

General RAYMOND. Our role in this, sir, is we operate centers around the globe to track all this. Our operators are on console globally with radars and optical telescopes, if you will, tracking every bit of every object that is in space that is big enough to track.

U.S. Space Command is the one that does the domain awareness of warning, if you will. My role is to provide the capabilities, to have the operators that can track all that. We feed the information to the U.S. Space Command. They are tracking that very closely and will provide warning once they get a little bit more fidelity on where it will reenter.

Mr. AGUILAR. Thank you.

Thank you, Madam Chair. I yield back.

Ms. MCCOLLUM. Thank you, Mr. Aguilar.

Mr. Womack, and then Mrs. Bustos.

Mr. WOMACK. Thank you, Madam Chair. Thanks, gentlemen, for your testimony today.

BUDGET DEFICIT AND NATIONAL SECURITY

Mr. Secretary, in response to Mr. Cole's question a few minutes ago, you referenced the budget, and I believe you used the word "balanced" with it. I would suggest that maybe you use the word "okay" or "sufficient" to meet the National Defense Strategy, because we all know that the budget is anything but balanced. And as a former chairman of the House Budget Committee, I would be remiss if I didn't point that out, because I still consider the deficit and the debt on this country, more so now than ever before, to be an existential threat to national security, primarily because of the fact that this Congress has not had any appetite at all to get control of mandatory spending, which continues to put the discretionary budget under intense pressure, and I regret that. And it is, obviously, forcing a lot of hard decisions and increasing some risk.

MINUTEMAN-III ROCKET SYSTEM

General Brown, good to be with you today. I had a question about the NCAA tournament and the Razorbacks and Texas Tech,

but I am not going to get into much there on that, but games up, General, and thank you for your service.

I want to ask my question about the Minuteman-III Rocket System. Its already extended service life is coming up in the near future. There are some out there that feel we can just do another service life extension program rather than buying new. We know that any SLEP would be extremely costly and only keep the current capabilities. And then yesterday, the 576 Flight Test Squadron At Vandenberg was forced to ground abort an unarmed Minuteman-III that was about to be test-fired.

Can you describe for the committee how another SLEP, even if it was cost effective, would endanger the credibility of a very important ground based deterrent that we have been proud of all these years?

General BROWN. Well, thank you, Representative Womack, and appreciate you recognizing the Red Raiders there.

What I look at, particularly for a nuclear portfolio, it has got to be safe, secure, reliable, and deter. And one of the key aspects I look at also with that is a threat and deterrence at value of our nuclear portfolio as I look at Russia is modernized and China continues to build its capability.

When I think about the Minuteman-III, as you described, it is already probably 40 years past its initial service life, and the life extended, you would only be able to extend it for a short period of time. The challenge we have now is that you have, not just a missile which you would have to go back and do the propellant, you don't have vendors to redo the parts, and you basically have to, you know, reverse engineer the parts, and so very few ways to maintain it. On top of that, the infrastructure that it is in was built back in the 1960s.

And so, with the GBSD, the ground based strategic deterrent, what you will get then is something that is more safe, more secure, more reliable, and then also, paces the threat we are up against to arrive at that deterrence value. The reason why we actually have the ICBM in the first place is to provide that nuclear and strategic deterrence.

And so, it is important that we do modernize that aspect of our nuclear portfolio with the other parts of the portfolio, but that is the reason why, because it is going to deter, for one, but it is going to be more safe, secure, and reliable, number two.

SPACE FORCE RESERVES AND SPACE GUARD

Mr. WOMACK. General Raymond, we heard from General Hokanson, Chief of the Guard Bureau, on Tuesday, and he mentioned that you would be meeting to discuss formation of Space Force Reserves and the Space Guard. Can you tell how those discussions are going and when you expect to meet with Secretary Austin regarding the way ahead for these components of the service and how vital they would be?

General RAYMOND. Yes, sir. For 25 years, the Air National Guard and the Air Force Reserve have provided critical space capabilities to our Nation. They operate in seven different States and one territory. They conduct space electronic warfare missions, command and control missions, intelligence missions, missile warning missions.

And so, when the law was passed that established the United States Space Force, Congress gave us a homework assignment and said, hey, why don't you go out and study how best to integrate these capabilities into a service that is purpose built for space that needs to go fast. And so, we have completed that study. We have done that in partnership with the National Guard and the Air Force Reserve. We have put together our proposal. The Secretary of the Air Force has signed that proposal. We are waiting to get on the calendar with Secretary Austin. I imagine that will happen in a matter of days. And then once that report is blessed, it will be submitted through OMB to Congress.

We are excited where we landed. Air National Guard and Air Force Reserve are critical to us in the past and they are going to remain critical to us in the future.

Mr. WOMACK. Thank you, General.

Thank you, gentlemen.

I yield back.

Ms. MCCOLLUM. Thank you, Mr. Womack. Interesting question.

Mrs. Bustos, and then Mr. Aderholt.

AIR NATIONAL GUARD C-130S

Mrs. BUSTOS. All right. Thank you, Chairwoman McCollum. And I also want to thank Ranking Member Calvert for this important hearing that you are holding today.

General Brown, General Raymond, Acting Secretary Roth, thank you for your service. Thank you for your leadership.

We, of course, have not seen the President's budget request, but I know that you all have your work cut out for you in balancing the readiness for today's fight and modernization to deter future threats.

General Brown, I agree in what you said earlier, that we have to accelerate change or lose, but we can't ignore the threats that are immediately in front of us. I am not the only member on this subcommittee that really is deeply concerned with the Air Forces' plans to decrease our military's flexibility and responsiveness, to decrease the number of our tactical airlift workhorses in the inventory, the C-130s of our Air National Guard.

I am very, very proud to be able to represent the citizen airmen of the 182nd Airlift Wing in Peoria. These Illinoisans consistently provide the highest mission-capable rates in the entire Air National Guard C-130 community. Very proud of that. But they are concerned the Air Force is going to ask them to park their aircraft in the boneyard while the Air Force continues to seek divestment over modernization.

The 2018 Mobility Capabilities and Requirements Study said we need 300 C-130s to meet the National Defense Strategy. The Air Force says we need 255. Now we hear that the newest study, that is not yet released, has changed the recommendation to match the Air Force's request of 255.

My feeling, this doesn't make any sense, considering where we are now as compared to 2018. We are demobilizing from Afghanistan. We continue to respond to massive wildfires, to floods, to hurricanes, tornadoes. Our Nation is reeling with the response to civil unrest, and we have got the National Guard standing watch over

the Nation's Capitol. And more than half of the 26,000 National Guard members who responded to the attacks on January 6 came to Washington, D.C., on no notice, in the Air National Guard mobility aircraft. So to quote the Chief of the National Guard Bureau, the homeland is no longer a sanctuary.

So, my question. My office has been briefed that no Air National Guard wings will lose their C-130 involuntarily. Acting Secretary Ross and General Brown, could you please confirm for this subcommittee that this is the case, that no Air National Guard wing will involuntary lose their C-130s?

General BROWN. First of all, I appreciate the question, and also the fact of what our Air National Guard contributes, not only here in the homeland, but all around the world with our C-130s and all the other mission sets that they use.

As you described, the analysis that has gone on between the mobility capabilities readiness study that was done back in 2018, as well as the one that is ongoing right now, does look at numbers. But I also look at the capability between both our C-130Js and our C-130Hs. And our intent, as we work through this, is to work very closely with the Air National Guard as we make decisions whether the C-130Js or any other platform to ensure we are doing, you know, a good analysis with General Hokanson, as well as our director of the Air National Guard, and with the adjutant generals of each of the States as we work through the process of going forward.

Our intent, to the best of our ability, is to ensure that we work with the Guard so they have the capability as we look at the C-130 as well. But as we said earlier, we do have to make some tough decisions, and what I want to be able to do is commit that we are going to work very closely with the Guard as we start to make decisions going forward with our C-130s.

Secretary ROTH. The other thing that I would add to that, and it is not so much that we would guarantee a particular C-130, but we do not intend to close any units. And so if, in fact, C-130s were to move, we would look at other missions and other capabilities. And an example of that just very recently is down in Montgomery, Alabama, lost a C-130 mission, and we very quickly have identified them, given them a mission as a training site for our newest helicopter, the MH-139.

So, again, we will work very hard to make sure that no units get closed, and we will look for other capabilities or other missions for those units to do.

Mrs. BUSTOS. Okay. I had a follow-up question, but with 15 seconds left, I won't have the time to ask that. But, again, I want to commend our airmen out of the 182nd in Peoria. They have just done remarkable work, and I am going to do everything I can to make sure that we are fighting for them. So thank you very much for your time.

With that, Madam Chair, I yield back. Thank you.

Ms. MCCOLLUM. Thank you.

We are very proud of our Air Guard and Reserves all over the country.

Mr. Aderholt, and then Mrs. Kirkpatrick.

INSPECTOR GENERAL REVIEW OF REDSTONE

Mr. ADERHOLT. Thank you. Thank you, Madam Chair. And thank you all for your service and for appearing today for this hearing to help us prepare for the 2022 budget process.

There are a lot of important topics and programs today that we haven't discussed, and I have two or three questions about the space operations.

Acting Secretary Ross, let me address the first one to you. As you know, there is much anticipation regarding the sitting of the Space Command, and it has been my privilege since 1997 to represent District 4 in north Alabama, which is adjacent to Redstone Arsenal located in District 5. With over 20 years of visits from personnel there and having more with many commands located there at Redstone, I am not surprised that, not once but twice, Alabama has done very well in terms of Air Force reviews conducted to select the best site for the space command. Building, sustaining, and expanding Space Force will be a long-term process. Alabama offers a very favorable budget profile, as you know.

What some persons around the country may be surprised at regarding Redstone, but, of course, it is not a mystery to the review team, is the large number of military, government civil personnel, and private sector persons who have outstanding experience and knowledge regarding space operations.

My question, Secretary Roth, is, I believe the reviews by the Inspector General's Office and the GAO will clarify what has been muddled somewhat in the press. Do you have any idea of when those reviews may be concluded?

Secretary ROTH. I do not have a timeframe when they will conclude, and let me come back to it. Let me be clear on what the decision is that has been made. We identified, as you indicated, because we went through our strategic basing process, we identified Huntsville as our preferred location. And so, what we have embarked on now is the legally required environmental review, which will take place over the next year or so and will be concluded sometime in mid to late 2022. And at that point, given whatever the results are of the environmental review, we will make, then, the final decision concerning Huntsville. But for the time being, as you indicated, Huntsville is the preferred location based on our strategic basing process.

Both the General Accounting Office and the DOD IG are reviewing our decision-making process, and they are engaged as we speak. I don't have particularly a timeframe. I understand the DOD IG may finish by the fall of this year, and I don't have a good feel for when GAO. I understand that they will probably take a bit longer. But the DOD IG in particular I think is intending to wrap up their review by the fall of this year.

AIR FORCE REVIEW TEAM

Mr. ADERHOLT. And, you know, my next question as a followup, do you still have confidence in the thoroughness and the methodology of the work that is done there by the Air Force review team?

Secretary ROTH. Yes, absolutely. My approach to this was, frankly, to invite outside review. Okay. I think—we have done the stra-

tegic basing process since 2009. It has withstood outside review. We think it is an analytically based process, and so I am happy to have them come review. We are cooperating with them. We will give them all of the data and documentation that they need to review, and then we will take it from there and see where they take it any further. But, yes, we are cooperating with them, and I am, at this stage, very confident in our process.

Mr. ADERHOLT. Okay. And, General Raymond, thank you for your call this week. I enjoyed having the chance to chat with you on the phone.

WORKING GROUP ON DEVELOPMENT FUNDING

I have got a suggestion or a request. As you know, I serve as ranking member of the CJS Subcommittee on Appropriations, and with regards to the National Security Space Launches, I think it would be beneficial for Space Force and NASA to have an ongoing working group to track the development funding being invested into launch-provider companies, and for NASA and the Air Force to ensure that they are not, in effect, each paying for the same capability developments.

For one rocket in use, I see a price on the company website of \$90 million. Going back to last summer, the Air Force has agreed to a contract price of one launch at over \$300 million, and NASA has also agreed to pay over \$300 million for a separate launch. Maybe your next launch will be lower than \$300 million, but that does not mean you will stop getting asked for development funds by that same company. And Air Force development funding together now adds up to billions. The U.S. Government should get the same price advertised for the private sector as the foreign customers, and that is how it should happen now and so I just wanted to call your attention to that since commercial launch has really started over 10 years ago.

General RAYMOND. Yes, sir. We have a very close relationship with NASA. We have standard meetings with NASA. I will dig into on this specific piece, and we will report back to you. But I have already reached out to the new Administrator, Bill Nelson, to set up a meeting. That partnership pays us huge dividends, and I will make sure that we focus on the aspect that you just talked about, and I will report back to you.

Mr. ADERHOLT. Thank you. I appreciate that.

I yield back.

Ms. MCCOLLUM. Excellent question.

Mrs. Kirkpatrick, and then Mr. Carter.

A-10 WING REPLACEMENT PROGRAM

Mrs. KIRKPATRICK. Thank you, Madam Chair. I appreciate your having this hearing today. It is very informative.

General Brown, thank you for being here to discuss the role the Air Force plays in our national security. I appreciate the time you took in February to meet with me and some of the Arizona delegation at Davis-Monthan Air Force Base.

As you know, Davis-Monthan is a vital asset to my district. The community of Tucson is very supportive of the mission on the base, in particular the A-10. In last year's budget, the Air Force re-

quested and received funding for the A-10 wing replacement program. You also forecasted similar requests in fiscal years 2022 and 2023.

Can you give us now a status update on the execution rate of the fiscal year 2021 funds and therewing program in general? And do you anticipate the fiscal year 2022 request reflecting what was forecasted last year?

General BROWN. Again, I appreciate your hospitality when we came to Arizona. On the rewing program, right now with the \$100 million for this fiscal year, we have obligated about 20 percent. I would expect to be about 55 percent obligated by the end of the year. It is not just on the wing itself, but it is also some of the installation, the engineering changes that go with that, and the other government costs and effects that typically go as we modernize an aircraft. As we modernize and rewing the A-10, this will keep the A-10 as a viable platform for the United States Air Force here into the future.

As we look at the budget, not having the budget quite yet, but our intent here is to continue on the path to rewing the A-10s as we submitted in the 2021 budget. And so you can expect that is kind of what we are—that is the theme we are on, and that is the path we are headed on as we rewing the A-10, but at the same time, make sure that we look at our entire flight portfolio to make sure we right size our fighter fleet going forward.

Mrs. KIRKPATRICK. Thank you.

TACAIR STUDY UPDATE

My next question is also for you, General. You have recently discussed a TacAir Study the Air Force is conducting to identify what blend of legacy fourth generation and fifth generation fighter aircraft is needed to meet a range of mission sets. You also discussed ensuring the Air Force doesn't overutilize assets meant for high-end flights and low-end conflicts to mitigate higher sustainment costs or the risk of assets not being available when we need them.

Can you provide us with an update on the TacAir Study the Air Force is conducting and what you believe you will learn from it? And when do you anticipate the results of the study will be reflected in budgeting decisions?

General BROWN. Thanks again for the question. Our TacAir Study, it is not just with—it is something we are doing internally through the Air Force, but we are also working in cooperation with the Joint Staff and OSD. With the study, the intent here is to take a look at the fighter portfolio that we do have today with the seven different fighter fleets and what is the best mix of capability as we go to the future.

And when I look at the—we need to have a range of fighters to do both the high end and low end. Right now, our high end—our highest end fighters are F-35s, and we do not have the full complement of F-35s yet. And so, we have got to balance the mix of how we use those F-35s as we continue to build that fleet. And I don't want to—until we actually have a broader aspect, and that we are building; matter of fact, right now, the F-35 is our second largest fleet now as of this week behind the F-16. And so, it is a

mix of capability as we start to bring on F-35 and how we balance the use of that capability today, also as we go toward the future.

And the last part I would add is, you know, the intent here is to look at the study of range of options of what the right mix should be as we look at the threat for the future as part of what that study is going to provide us. So it won't necessarily give us an answer; it will give us a range of answers to take a look at a threat to make sure we have done the analysis to inform ourselves but also inform our key stakeholders, including this committee.

THREAT OF GROUND-BASED LASERS

Mrs. KIRKPATRICK. Thank you. I appreciate that. I appreciate the work that you are doing.

My next question is for General Raymond. Both the Department of Defense and intelligence community have publicly acknowledged the threat that ground-based lasers pose to low Earth orbit satellites. One defense intelligence agency public report stated that China will likely field a ground-based laser weapon that could destroy low orbit space-based sensors by the mid to late 2020s.

Because much of our commercial space activities and sensor satellites reside in the low Earth orbit, this threat is significant. How is the Space Force working with the government agencies to ensure the United States has a coordinated strategy encountering these types of threats?

Ms. MCCOLLUM. If I could—excuse me. I am going to interrupt for a second.

If you could give a brief taste of the answer and then a more robust answer submitted back to the committee, we would appreciate it. So if you could briefly touch on this and then respond back to the committee fully.

Thank you, Mrs. Kirkpatrick.

General RAYMOND. I will. Thank you.

We work very closely with the intelligence community and other interagency partners. We also work very closely with commercial industry to share data, and we are working across all the organizations that do space acquisition to design our force structure in a way that is less susceptible to a threat. The threat is real today and concerning.

Ms. MCCOLLUM. Thank you. And anything more you would like to add to the committee, please do.

Next we have Mr. Carter, and then Mr. Ryan.

GPS JAMMING

Mr. CARTER. Thank you very much, Madam Chairman, for recognizing me.

Gentlemen, welcome. I am really glad that you are here to help us. It has been very informative.

I want to give a shout-out to General Brown. I am a Red Raider of 1964, class of 1964, so I am very proud of you, and I am sure our university is proud of you.

One thing I have worried about personally is GPS jamming. And I want to talk to you, General Raymond, about GPS jamming and how significant that would be for a warfighter. How important is the M-code capacity? What have been the issues delaying this in

this capacity? What part of GPS modernization is Space Force responsible for, and why does it take so long to develop this field of future responsibility?

General RAYMOND. Thanks for the question, sir. GPS is critical, not just to our military, but it is critical to our society. The timing signal of GPS underpins this information age that we are in, and it is absolutely critical, not just to us, but all Americans.

When you look at modernizing GPS, you have to modernize three components. You have to modernize the satellite portion of that, and we have done that with GPS III. We have launched those satellites, several of those satellites into orbit, and we have enough satellites on orbit now to do GPS M-code.

You also have to have a command and control capability called—and in the case of GPS, it is called GPS OCX. There had been delays in that program over the years. We worked on an interim solution to be able to use it, and that M-code capability and GPS OCX is on track now and will deliver the capability that we need.

The third part of this is you have to have receivers with chips in them. And we are responsible for designing the chip and integrating them into one receiver, and then the services are responsible for integrating those into all of the capabilities that they have.

It is a three-part problem. We have to modernize GPS. It is critical to our Nation and critical to our joint and coalition forces.

Mr. CARTER. And I assume there is a civilian equivalent, or does everybody operate under the same GPS satellite?

General RAYMOND. Yeah. Sir, it is one satellite. I mean, there are many satellites on orbit, but it is one satellite that provides capability for, not just our military, but for every American.

Mr. CARTER. You know, I am not sure my kids can find their way to the bathroom without GPS, and so the real world is, I have been with trucking companies, they depend on GPS. Every targeting we do in the military depends on GPS. Everything we are doing in the supply chain depends on GPS. It is a critical thing. And the Chinese are now developing killer satellites, and it looks like to me that would be our number one target. What are we doing about something like that?

General RAYMOND. Actually, the threat that we are concerned about with GPS is jamming. The GPS satellites are in orbit, in medium Earth orbit or a little bit higher. We have got—of all of our constellations, it is the largest constellation that we currently operate. And so, really, the main threat is against jamming. We have increased power in GPS III and M-code to really get after the ability to operate through jamming, but it is still a threat, and it is still something that we have got to be concerned about as a Nation, and we have got to look how we are going to diversify that further as we go further down the road.

THREATS IN SPACE

Mr. CARTER. Well, I have a real concern in this area. And I thank you very much for all that you do.

What do you feel, is there a real threat that space might carry us into the next war? It might begin in space?

General RAYMOND. Absolutely, sir. It is clear that both China and Russia are developing capabilities to deny our access to space. They know that they can't beat us on the ground, they can't beat us in the air, they can't beat us on the sea unless they take away our space capabilities. All of our other services, all the force structure of all the other services is built around assured access to space. That is not a given anymore. And if you were to lose space, you couldn't afford the bill of robbing all the other services. We have got to protect this capability for our Nation. That is why the Space Force is so important. That is why U.S. Space Command is so important. And we are going to stay ahead of this growing threat.

Mr. CARTER. Well, you will be in my prayers. Thank you for your service. I thank all of you for your service.

Ms. MCCOLLUM. Thank you, Mr. Carter.

Next we have Mr. Ryan, and then Mr. Diaz-Balart. And, members, we will not be able to do a second round of questions, so great attendance today.

Mr. Ryan.

AIR FORCE'S C-130J BASING STUDY

Mr. RYAN. Thank you, Madam Chair.

Welcome, gentlemen. Thank you for your service to our country.

Acting Secretary Ross and General Brown, I am very interested in the Air Force's C-130J basing study, specifically as it relates to the Youngstown Air Reserve Station. The Air Force has consistently told me that they can't complete the study until the station has eight aircraft assigned.

Can you please tell me why that is? It doesn't make a whole lot of sense to me.

Secretary ROTH. Yes. I will start the answer, and General Brown can fill in some details as well.

I mean, the basic, to be simplistic about it, is eight aircraft—that with anything less than eight aircraft, you end up with a mixed unit, and a mixed unit is not advantageous either operationally or logistics. At the time—for the time being, we don't have eight aircraft. We have approximately five aircraft, and so because of that, then we stopped the study. And, you know, if and when there are additional aircraft that become available, we will restart the study and go on from there. But for the time being, anything less than eight aircraft isn't optimal from an operational perspective.

General Brown.

General BROWN. Yes. Representative Ryan, typically, as the Secretary described, which it is not optimal to actually have a split organization. We usually typically try to convert an entire unit from one model of an airplane to another. It creates an additional challenge for us if we end up splitting the unit as far as between, for example, an H model and a J model C-130, not only for ops, but also for maintenance and also for logistics and supply. And so, our intent there is to convert each unit, you know, convert it as a unit, not as we get individual airplanes, and that is what drives our decisionmaking.

AIR RESERVE IMPORTANCE

Mr. RYAN. Well, I have heard from a number of you, including General Scobee when we talked, and he was telling me exactly how critical the Air Reserve—the facilities that we have, the aerial spray unit that we have, really how critical the station is for both the Air Force Reserve and the Air Force, not to mention the fact that we had two airplanes, the funding for them diverted a couple of years ago for the wall.

Do we know when this is going to get done? Do we have any idea?

Secretary ROTH. At this stage, I do not have a timeframe because there aren't aircraft that are obviously available right now.

Mr. RYAN. Well, we would like to get the money back that went to the wall that is not being used. We would like to get that back for two more of those C-130Js, and then we can work with the committee, you know, to try to get what else is needed. We will be reaching out to you on those issues.

HEALTHY FOOD AT MILITARY INSTALLATIONS

Let me move on here as the clock ticks.

Secretary Roth, I just want to get this on your radar screen, and I will ask some questions for the record. We had a conversation a couple of weeks ago regarding the healthy eating in the military installations. We pay a good deal of money out in outlays on healthcare. We see higher rates of diabetes, higher rates of obesity, and we have got a lot of work to do, and it starts with the kind of food that we are feeding and having accessible to the men and women of the Air Force.

I do want to congratulate you because I think the Air Force is really ahead of the curve on this, but I don't think we are doing enough. A couple of programs I want to mention just quickly and then submit a question for the record. The name brand food effort is something I support. I want to get this ramped up even quicker. And then the whole idea, I wrote a letter to the Secretary of Defense requesting the establishment of a food transformation cell to focus on modernizing the food system. You will be getting questions on that.

MANUFACTURING STRATEGY AND SPACE FORCE

And then, lastly, to General Raymond, I know the DOD is releasing the Additive Manufacturing Strategy. We house America Makes in Youngstown, Ohio, which is really helping on the cutting edge of the additive manufacturing, helping bring businesses with the public sector.

Can you tell me how the Space Force is planning to utilize these tools, in the next 29 seconds?

General RAYMOND. Sir, we are using them—

Mr. RYAN. The chairwoman has been very generous, so she may give you another 15 seconds. So be anxious to hear.

General RAYMOND. We are using them today. As we talked about throughout this hearing, we are going to have to leverage commercial industry. Commercial industry and our government contractors are using this. It helps reduce the cost to launch. It helps reduce

manufacturing variability. It helps improve our reliability. We are using them today, and I would expect that we will continue to use those into the future in even greater ways.

Mr. RYAN. Fantastic.

Thank you, Madam Chair. Thank you, gentlemen.

Ms. MCCOLLUM. Members, we are going to be sending out a memo from Mr. Bigelow about the money that is being returned from the wall. The Department of Defense is not going to be getting any money returned to it. You will get a memo that explains why. So there is not money that we will be seeing that can be respent.

Mr. Diaz-Balart, and then we will end with the gentlewoman from Ohio, Ms. Kaptur.

Mr. Diaz-Balart is trying to log back in. We will go to Ms. Kaptur.

Mr. Diaz-Balart, if your staff is listening, we will take care of you if you get on before we adjourn, and we won't adjourn until 2:00.

Ms. Kaptur.

REDUCTION OF FUEL USE

Ms. KAPTUR. Thank you very much, Madam Chair.

Secretary Ross and Generals Brown and Raymond, thank you so very much for joining us today.

I come from a place in America that first flew a bio-fueled aircraft out of the 180th Fighter Wing of our Air National Guard unit. We are very proud of that here in western Ohio, and my questions initially relate to energy.

Can you tell me what efforts and at which locations the Air Force is making improvements in its engines or developing other technologies to reduce fuel usage or to replace it since it represents 70 percent of your energy utilized, not counting your bases? You spend about 70 percent of your fuels budget on—and energy budget on operations and about 30 percent on buildings. And I am just curious as to how you are thinking about energy as we move forward.

Secretary ROTH. Well, I will start, and then I will look for help from my chiefs as well.

Ms. KAPTUR. Secretary, let me interrupt you just one second. May I just note? And who do you task with this responsibility in your office?

Secretary ROTH. Well, we actually—we have an organization. We have actually an organization that is Installations and Energy that manages that in general, and we have had—over time, you know, we are sensitive to that as well, because we are by far the largest user of fuel in the Defense Department. We are two-thirds of the fossil fuel bill in the Department. So, clearly, as we go forward and as we look to have a more agile combat capability, particularly in the Western Pacific, reducing our logistics footprint would be advantageous to us from a readiness perspective, and one of the larger pieces of our logistics footprint is fuel. And so if we could reduce that footprint, that would be advantageous.

So the Air Force Research Lab has some initiatives looking for alternative technologies that might work in terms of aircraft power, power plants, and those kinds of things. As we reengine aircraft, for example in the B-52 program, it is going through a reengining process, we will look to have the new engine be anywhere from 20

to 30 percent more fuel efficient. As we go to next-generation aircraft, we would look perhaps to see if we could also invest in technologies there to make the new generation of aircraft engines more fuel efficient as well.

So we have a stake in that. We have a motivation in that, and we would like to pursue that as best as possible.

In terms of our bases, the resilience of our bases is important to us as well. We fight from our bases. So we are looking for also—about 7 percent of our energy use at our bases is already renewable energy, and so, clearly, there is room to grow there, and we would look to grow in that area as well.

So managing our energy footprint is a high priority for us going forward, in terms of managing our logistics—our logistics posture and our logistics requirements. And as we go forward with new generations of airplanes, I would think that one of the criteria would be that they be more fuel efficient.

Ms. KAPTUR. Well, I thank you, Mr. Secretary. This is really important, and I need to know who are your leaders around the country, which bases, which companies. I would like to know where the engine was actually retooled in terms of energy use and what advances that you have made in the service in hybrid engines, such as hydrogen fuel cells, where is that housed? Is that at AFRL, or do you provide the companies to do it?

Secretary ROTH. There is an effort at AFRL into hydrogen power plants. We will get back to you. We owe you an answer on that, and we will give you a more fulsome answer than I have right now.

NUCLEAR MODERNIZATION

Ms. KAPTUR. All right. I would appreciate that very much.

And then, General Brown, I wanted to ask you, your fiscal year 2022 request for nuclear modernization, can you elaborate for the committee how you are thinking about nuclear modernization in the context of the Air Force's budget?

General BROWN. Sure. And as I mentioned earlier in one of the questions, you know, the key part to that—there is three real key parts to our nuclear modernization. One is our ground based strategic deterrent and keeping the design of that on track so that helps provide options and modernize that leg of the triad.

The second is the B-21, and that program is also doing what—both our GBSD and B-21 programs are both—are priorities.

And then the last associated with this is nuclear command and control and communications, our NC3, because the Air Force has about 75 percent of that portfolio.

So those are the areas in our budget as we look to the future of where the United States Air Force is focused on our nuclear modernization.

Ms. KAPTUR. Thank you very much. My time has expired. Thank you all very much.

CLOSING REMARKS OF CHAIR MCCOLLUM

Ms. MCCOLLUM. Mr. Diaz-Balart, are you able to join us? We understand you are kind of half logged in.

I am going to go to the summary questions that I normally have, Mr. Calvert, and we will see if there is a little bit of time left for Mr. Diaz-Balart to join us.

We have some standard questions—somebody has left their microphone on.

We have some standard questions that we have been asking all the services on COVID, extremism, and sexual assault, so the committee staff will be forwarding that. We also will be asking a question on your missile warning satellites, and then we have some questions on F-35s we will be submitting, as well as I would like to hear from the Air Force and Space Force what they are doing and particularly with climate change with resilience in the bases. We know that you had severe damage with Michael's devastation to Tyndall Air Force Base in Florida, what all that cost, what your plans are in resilience for the air bases.

I had an opportunity to read the Air Force's strategic report on the Arctic, and so we are going to be following up with questions on training, equipment, and infrastructure gaps with Arctic operations. And then a question, especially for the Air Force and for the Space Force, is weather surveillance, weather satellites, and monitoring climate change in the region. But also, flying and launching space, accurate weather information becomes very important, and, you know, I don't want to hear about the European model anymore. I want to know how you are working with other agencies to make sure we are hearing about the best, the best, weather information from the U.S. Weather Service.

We will look forward to those questions and getting back to the committee.

Not having seen Mr. Diaz-Balart come on, Mr. Calvert, at this time, I would think I would look to thanking our testifiers—he is back on?

Mr. Diaz-Balart, can you get your video up? If you can't get your video up, we know it is really you, and if you want to ask a question, we would love to hear it.

Mr. Calvert, I had my fingers crossed, and it doesn't seem to be working. Should we proceed with adjourning the meeting?

Mr. Diaz-Balart popped back up again.

Mr. Diaz-Balart.

Mr. CALVERT. I would suggest that Mario get his questions maybe in writing if he doesn't come up here in the next minute or so.

Ms. MCCOLLUM. Okay. So he just signed off.

Mr. CALVERT. Okay.

Ms. MCCOLLUM. How frustrating for him to have this happen to him again.

Gentlemen, thank you for your service. It has been challenging doing it under the circumstances we have had with COVID and then with COVID standing up the Space Force. We appreciate all of the work that you do and those who serve with you, as well as your families. And we wish every mission to be successful and carried out safely so that you can come home.

So thank you again, gentlemen, for your service and for your attention in responding back to the staff in the upcoming days and all the questions you are going to get on the budget shortly.

With that, this meeting stands adjourned.

[The information follows:]

[Answers to submitted questions for the record follow:]

The Honorable Betty McCollum
Appropriations Committee, Subcommittee for Defense
Questions for the Record

Question One: What are you [CSO] implementing with the GAO identified budget shortfalls, cost growth or delays in the space acquisition programs? What is the timeframe, what is it going to be doing, what are your [CSO] expectations?

Answer: Improving space acquisition remains a focus area of the Space Force and Department of the Air Force. The impending stand up of Space Systems Command and transfer of the Space Development Agency in October 2022, as well as empowerment of the Space Acquisition Council and supporting Program Integration Council, will foster a more focused approach to enterprise architecture, systems integration and establishing budget priorities. Congressional direction to create a second Service Acquisition Executive for space acquisition on 1 Oct 2022 will only strengthen this approach.

Improving acquisition however, is only part of the solution. Establishment of Space Warfighting Analysis Center to introduce a broader force design function will introduce analytical rigor to architectural options for the first time, ensuring programs and systems decisions are data driven. Further a threat-informed Test & Evaluation enterprise will ensure fielded capabilities are suitable and effective across the spectrum of conflict.

It will take the entire Department to implement this approach, but this wide-ranging approach is required to deliver resilient, effective space capabilities at a pace demanded to the strategic environment.

Question Two: Would you please provide for the committee a list of what you're calling legacy systems? You have only provided the committee a definition.

Answer: The future force must exist as a highly connected family of capabilities for all domains: agile, persistent, and resilient enough to win in a great power competition fight. If we are to modernize to address the emerging peer threat, we must shift away from legacy platforms and weapons systems that are decreasing in relevance today and will be irrelevant in the future.

In our current discussions inside the Air Force, we use the term “legacy” to refer to platforms, equipment, and capabilities that will not be relevant in peer competition in 2030 and beyond. In the FY22 President’s Budget, the Air Force is beginning divestment or right-sizing of legacy fleets including RQ-4 Block 30, E-8 JSTARS, A-10, F-15C/D, F-16C/D, KC-135, KC-10, and C-130H.

Similarly, for the Space Force, in the FY22 President’s Budget, divestment has begun to right-size legacy systems such as Milstar/Advanced Extremely High Frequency (AEHF) and Global Positioning System (GPS) III. Other legacy systems include Upgraded Early Warning Radar (UEWR), Defense Satellite Communication System (DSCS), Wideband Global SATCOM (WGS), Defense Meteorological Support Program (DMSP), Defense Support Program (DSP), Space-Based Infrared System (SBIRS), and JSPOC Management System (JMS).

The Honorable Tim Ryan
Appropriations Committee, Subcommittee for Defense
Questions for the Record

Witnesses:

Acting Secretary Roth and General Brown:

Question One: Secretary Roth, I'd like to follow-up on a topic we discussed a few weeks ago when we met. As I mentioned in our meeting, improving access to and incentivizing airmen and their families to eat healthier food on our military installations is of great concern to me and many of my colleagues on both sides of the aisle. This can best be achieved by wholesale transformation of the installation food system, which will eliminate needless and costly competition among the current array of on-base providers and ensure that food is available when and where needed across the installation. The growing cost of ever-increasing obesity rates among the military community that is fueled by the proliferation of fast food on base manifests itself in the increasing cost of military and veteran healthcare, and in reduced military readiness. We must deal with this problem now.

That being said, I am aware that the Air Force began a base Food Transformation Initiative a little over a decade ago. My staff has recently been briefed on the progress to date and your plans for the future. I have to say, Mr. Secretary, while I applaud the Air Force's service-leading initiative in this area, I don't believe you are doing enough. To date, your investments and effort have largely been focused on the dining facilities, which impact a narrow, though important, segment of the overall base community. Your campus dining program to allow airmen with a meal card to eat outside the dining facility is a great step forward, but it only gives them access to a couple of other venues on base. Food transformation must encompass the entire base and community, not just dining facilities and a few snack bars. In addition, this represents a perfect opportunity to engage more with off-base partners to expand access to healthier foods even further.

One program briefed to my staff that I am particularly interested in is your healthier Name Brand Food effort. I wholeheartedly endorse bringing popular brands with healthier menus on base for the benefit of both airmen on a meal card and the community at large. What is the status of that effort and when can I visit one of these new establishments?

Answer: The Department of the Air Force remains committed to piloting the Name Brand Food program, recognizing the need for quality, healthy, reasonably priced food options on our installations. Our efforts are not without significant risk in the short-term. The unprecedented impacts of the COVID-19 pandemic have substantially impacted the Air Force's Nonappropriated Funds, and therefore our ability to invest in new programs while simultaneously sustaining the community focused morale, welfare, recreation and resiliency programs our Airmen, Guardians and their families rely upon.

We continue to collaborate with industry partners on innovative ways to bring nationally and regionally recognized brands to select installations, reduce initial investment costs, and

integrate emerging industry trends into the food service portfolio. The Name Brand Food effort is a Nonappropriated Fund initiative that we regret needing to pause under the current business conditions to ensure we have mitigated risk to the MWR program as we continue to fight for customer feedback on what our members and families want in the food arena and what they will support.

As the Nation continues to make strides mitigating the pandemic, and as participation and traffic on Air Force bases returns to pre-pandemic levels, we will continue to look for Name Brand Food program opportunities. We will keep you abreast of our progress and look forward to inviting you to one of these establishments in the future.

Question Two: When we spoke recently, I mentioned to you that I had sent a letter to the Secretary of Defense requesting that he establish a Food Transformation Cell to focus on modernizing the base food system. You indicated to me at that time that you were aware of that letter. So, tell me, what are your plans to address my recommendations to SECDEF? Also, what steps will you be taking to alleviate my concerns about your future food transformation efforts as currently planned and briefed to my staff?

Answer: The Department of the Air Force continues to support Secretary Austin's priorities for the Department, and we look forward to working with his office and our sister services on collectively caring for our Nation's warfighters and their families. The Department of the Air Force is steadfast in our determination to continually improve its food system.

Over the past decade the Air Force has led the DoD in food service modernization efforts, and I'm happy to report the same holds true today. Our transformation efforts now span 27 installations, resulting in a great variety of, and increased access to, healthier food options. We've seen entitlement utilization rates among our most junior members increase by more than 20% on average at transformed Food 2.0 bases, while at the same time driving down per plate operational costs.

The Department of the Air Force continues to streamline processes, reduce costs and test new approaches, and while we have made significant strides in modernizing our food system, there is significant work still to be accomplished. In addition to existing, fruitful partnerships with industry titans such as the National Restaurant Association Educational Foundation, Culinary Institute of America and leading foodservice providers, we continue to pursue new opportunities for partnerships, while ensuring maximum competitive opportunities, to maintain the Department's place at the forefront of military foodservice.

Question Three: The Air Force's Research Lab's Secure Live Virtual Constructive (LVC) Advanced Training Environment (SLATE) technology demonstration yielded a ready LVC technology back in Sept 2018 – complete with extremely successful demonstration of the capability.

Three years later we're no closer to getting those LVC training benefits to the squadrons. The current Air Force vector, which has NO program of record for a LVC air combat training system, does not lead to readiness for the peer/near-peer fight.

I believe you have a real opportunity to begin fielding an LVC training capability to your combat air forces within the next 18 months. When does the Air Force intend to direct an air combat LVC Business Case development, supported by industry estimates that incorporates both costs and offsets, and then develop LVC requirements documentation and fund a program of record?

I understand the Navy is conducting a critical LVC flight demonstration this Fall at Pax River. I'd encourage you gentleman to attend in order to get a sense for this capability and hope to see you there.

Answer: The Air Force participated in the 2018 Secure Live Virtual Constructive (LVC) Advanced Training Environment (SLATE) Advanced Technology Demonstration (ATD), which successfully demonstrated a robust live, virtual, constructive (LVC) capability for 4th Generation aircraft. The concern was on the ability to integrate SLATE or other LVC technologies with the F-35 Fusion engine. Air Combat Command (ACC) needs a 5th Generation LVC solution; therefore, until the fusion engine interoperability concerns are properly addressed, the ACC Commander (COMACC) directed ACC to refrain from pursuing further LVC requirements. A three part fusions study has been initiated to address those concerns, with Part 1 (white paper) complete and parts 2 (Software Integration Laboratory demo) and 3 (live fly demo) currently unfunded.

ACC is tracking the upcoming Navy led SLATE demonstration and is eager to observe the advancements achieved over the past three years. ACC maintains regular contact with Navy counterparts on the Tactical Combat Training System (TCTS) -II program and are tracking progress on this effort, but until the F-35 fusion study concludes with positive results, Air Force LVC requirement development will remain "on hold".

While the Air Force P6 program does not have LVC requirements, any Navy LVC efforts implemented into their TCTS-II will be included in the P6 system, as both services will maintain the same baseline for P6/TCTS II to ensure interoperability. TCTS-II will be an LVC capable system that will be able to implement future LVC capabilities for Air Force airframes.

Question Four: Attributable aircraft, which provide multi-mission capabilities at missile-like cost, have the potential to be a substantial force multiplier for US Air Forces in future theaters, especially the Pacific. Given the evolving airspace denial capabilities of potential adversaries, how critical are low-cost attributable aircraft to the United States maintaining strategic capability in contested environments?

Answer: We expect that low-cost attritable aircraft will play a key role in our theory of victory, especially in the Pacific. These aircraft provide us the ability to generate combat power to counter potential adversaries' rapidly increasing capacity and capability. We continue to invest in the underpinning architecture that enables the autonomous flight and sensor employment on these low-cost platforms. This will accelerate our decision-making, even when communications links are degraded. We are also working with industry to advance airframe, engine, network, and sensor technology to make these aircraft affordable and survivable. This future family of systems shows great promise in increasing our capacity and reducing risk to manned aircraft.

Question Five: Research and development of offensive and defensive hypersonic weapons systems has skyrocketed in the last several years, with the service aiming at delivery to the warfighter in early 2020s. Ongoing development of these systems is critical if we are going to maintain parity with China and Russia. Recently, there has been increasing interest in hypersonic flight, for both military and commercial applications, as the next step of development.

- a. What is the state of our hypersonic testing infrastructure? What additional investments are needed to ensure that we can accommodate the testing needed across the spectrum—from expendable weapons systems to hypersonic aircraft?

Answer: The national hypersonic testing infrastructure is operating at maximum capacity. Currently, the Department of the Air Force can adequately test existing hypersonic prototypes to include the Air Force AGM-183A Air-launched Rapid Response Weapon (ARRW). Continued investment is needed to meet future hypersonic acquisition program requirements and science and technology (S&T) needs across the spectrum—from expendable weapons systems to hypersonic aircraft. The future testing needs are being addressed through the Test Resource Management Center's (TRMC) strategic planning process. The TRMC process, in coordination with the Services, allows the DoD to anticipate the increased demand for testing hypersonic systems and prioritized \$768 million (FY21 President's Budget) to address the most important hypersonic test infrastructure capability and capacity needs. In addition, the DoD is considering an additional investment of \$548 million to support the acceleration of expendable hypersonic weapon systems. Investments under consideration include increased capability and capacity at important ground test facilities, airborne test instrumentation platforms to improve flight test data collection, and additional long-range flight test corridors to augment the existing Trans-Pacific corridor.

- b. Many of the technologies developed for expendable hypersonic weapons, like materials and hypersonic test facilities, have crossover applicability to hypersonic flight. Others, like propulsion, require unique development activities. In the near-term, what steps are being taken to transfer expendable weapons program gains into high Mach flight programs? And what can this committee do to better support continued research and testing progress on technologies unique to high-Mach flight?

Answer: We are working with OSD(R&E) and NASA to develop a national strategy for High Mach and Hypersonic Aircraft. That strategy is directly leveraging today's investments in expendable weapon design, aerodynamics, gas turbine propulsion, scramjet propulsion, endothermic fuels, high temperature materials, and high temperature structures to develop the future technologies required for reusable hypersonic flight. Additionally, the Air Force is collaborating with DARPA and NASA to develop hypersonic combined-cycle propulsion technologies for hypersonic flight that are benefiting from past technology advancements in expendable, supersonic turbine engines and hydrocarbon-fueled scramjets.

- c. Service leaders have been discussing responsive space access for many years, looking to rapidly reconstitute critical space-based assets degraded by an adversary in a conflict. Yet the primary challenge remains—we have a limited number of rockets to launch from a limited number of sites. Recently there has been increasing conversation in the public and private sector about the utility of hypersonic aircraft to act as the first stage of a launch to low earth orbit. Can you discuss the potential of hypersonic aircraft-based space launch and steps you are taking to ensure research efforts are appropriately funded and policy and regulatory issues are being addressed?

Answer: The primary challenge to rapidly reconstituting critical space-based assets degraded by an adversary remains the nation's limited number of rockets to launch from a limited number of sites. Recently, there has been a renewed interest in both the public and private sector on the utility of hypersonic aircraft for responsive space launch. A hypersonic aircraft can serve as the first stage of a two-stage-to-orbit launch system to deliver up to 20,000 pounds of payload to low earth orbit. The benefits of an aircraft-based space launch include more flexible basing, fail-safe launch abort capability, and improved airspace integration. We are working with OSD(R&E) and NASA to develop a national strategy for High Mach and Hypersonic Aircraft that will provide technologies for aircraft-based, responsive space launch by 2040.

Question Six: I was pleased to see this Subcommittee, in a bipartisan way, take the initiative and support domestic natural rubber production from dandelion rubber – yes, those pesky weeds in everyone’s front yard. So, we clearly have the ability, but the question is do we have the will to produce our own rubber or at least off-set supply chain disruption?

I understand that this initiative is being supported and contracted through the Air Force Research Lab and Saint Paul-based BioMADE to develop 75 acres for dandelion rubber production and processing in Ohio.

General Brown, the Subcommittee is very interested in this project, but because we are talking about a grown material, seasonal timing is important. Can you get back to us on how things are progressing in terms of contract award and planting the first viable crop this spring? Additionally, what sort of future Air Force Research Lab funding is necessary to ensure program viability and availability for domestically grown dandelion natural rubber?

Answer: The Air Force Research Laboratory efforts are on track to award a contract for research in alternative domestic rubber production in Q4FY21. The award will be made via the newly created BioIndustrial Manufacturing and Design Ecosystem (BioMADE) Institute. The objective of this initial effort is to demonstrate capability to scale domestic natural rubber production via the Russian Dandelion and achieve the desired molecular weight and performance characteristics for aircraft tires while developing processing and extraction techniques to support commercialization. Additional funding amounts necessary to ensure future program viability and availability for domestically-grown, plant-based natural rubber or biosynthesis are not yet known pending success of this initial effort and consensus on final objectives such as rubber properties and quality.

The Honorable Ms. Marcy Kaptur
 Appropriations Committee, Subcommittee for Defense
 Questions for the Record

Witness(s) being Asked (if Multiple):

- Acting Secretary, Mr. John Roth
- General Charles Brown, Chief of the Air Force
- General John "Jay" Raymond, Chief of the Space Force

Question One: General Raymond – This Committee is on record over the last several years in supporting and funding Tactically Responsive Space Launch Operations to enable more rapid and flexible launch of small satellites. What is the Space Force doing to ensure this key mission area is similarly supported and developed into an operational capability?

Answer: The USSF Launch Enterprise is responsive to our customers' needs across the spectrum of large and small launch. I agree we can make it better, and we are working towards that goal. Today, in the area of large, National Security Space Launch (NSSL)-class launches, we have the ability to increase rocket performance less than four months before launch to provide more on-orbit resiliency. Another large launch example is on the NSSL Phase 2 contract, where we have the ability to order and launch a mission in 12 months, if required. In the area of small launch, we have contractual vehicles in-place that can rapidly award launches to eight different vendors, several of which have demonstrated the ability to launch within six months of award. Also, we plan to on-ramp new vendors every year to leverage industry innovation. To pioneer our use of Tactically Responsive Launch, we used the funding provided in the FY20 and FY21 Defense appropriations to demonstrate a less than 30-day rapid launch call-up, including the launch vehicle, satellite, ground system, and operations.

To fully enable responsive launch, we must have a comprehensive strategy to reduce the cycle time across the entire concept of operations. This includes having satellites ready to launch; ground systems and infrastructure adapted to increased response times; and tactics, training, and procedures to match. Therefore, we also need to invest in infrastructure to enable responsive launch. In 2019, RAND assessed the U.S. space launch locations and encouraged the nation to invest in responsive infrastructure at our existing ranges. Along those lines, we've welcomed emerging launch providers at both Vandenberg Space Force Base and Cape Canaveral Space Force Station to bring more responsive capability on-line. We've initiated the Range of the Future to provide the responsive range capabilities needed. These partnerships in launch vehicle systems and satellites, coupled with investment in infrastructure, will dramatically shorten the call-up timeline.

Question Two: General Brown – In 2020 the US Air Force initiated the Agility Prime program that introduced zero emissions aviation via electric vertical takeoff and landing aircraft to the Department of Defense. It also positioned the United States as the global leader in this space. Can you please inform the Committee of the anticipated FY2022 funding level as well as the anticipated DOD resources committed to the Program?

Answer: The FY22 President's Budget requests \$57.467 million for Agility Prime specifically directed toward development of electric vertical takeoff and landing aircraft—the federal government's only electric passenger aircraft effort. In FY20, in addition to the \$25 million of congressional interest item funding, the Department also leveraged \$62 million in Small Business Innovation Research funding to accelerate contracting, airworthiness, and testing to establish a new mode of air mobility for DoD and our nation. During this period, more than 20 companies participated in the air race to certification, three electric passenger aircraft received airworthiness certification, warfighters developed over 20 operational use cases, and the Agility Prime electric aircraft participated in the first operational exercise. Agility Prime aims to begin fielding this capability for military utility evaluation in the 2023 timeframe. The FY21 \$25 million congressional interest item along with the FY22 funding will augment ongoing non-monetary support through technical and programmatic expertise, test range assets, airworthiness expertise, and additional small business funding to ensure America's competitive advantage in the emergent aerospace sector.

Question Three: Hypersonic Flight – Research and development of offensive and defensive hypersonic weapons systems has skyrocketed in the last several years, with the service aiming at delivery to the warfighter in early 2020s. Ongoing development of these systems is critical if we are going to maintain parity with China and Russia. Recently, there has been increasing interest in hypersonic flight, for both military and commercial applications, as the next step of development.

General Brown:

- a. What is the state of our hypersonic testing infrastructure? What additional investments are needed to ensure that we can accommodate the testing needed across the spectrum—from expendable weapons systems to hypersonic aircraft?

Answer: The national hypersonic testing infrastructure is operating at maximum capacity. Currently, the Department of the Air Force can adequately test existing hypersonic prototypes to include the Air Force AGM-183A Air-launched Rapid Response Weapon (ARRW). Continued investment is needed to meet future hypersonic acquisition program requirements and science and technology (S&T) needs across the spectrum—from expendable weapons systems to hypersonic aircraft. The future testing needs are being addressed through the Test Resource Management Center's (TRMC) strategic planning process. The TRMC process, in coordination with the Services, allows the DoD to anticipate the increased demand for testing hypersonic systems and prioritized \$768 million (FY21 President's Budget) to address the most important hypersonic test infrastructure capability and capacity needs. In addition, the DoD is considering an additional investment of \$548 million to support the acceleration of expendable hypersonic weapon systems. Investments under consideration include increased capability and capacity at important ground test facilities, airborne test instrumentation platforms to improve flight test data collection, and additional long-range flight test corridors to augment the existing Trans-Pacific corridor.

- b. Many of the technologies developed for expendable hypersonic weapons, like materials and hypersonic test facilities, have crossover applicability to hypersonic flight. Others, like propulsion, require unique development activities. In the near-term, what steps are being taken to transfer expendable weapons program gains into high Mach flight programs? And what can this committee do to better support continued research and testing progress on technologies unique to high Mach flight?

Answer: We are working with OSD(R&E) and NASA to develop a national strategy for High Mach and Hypersonic Aircraft. That strategy is directly leveraging today's investments in expendable weapon design, aerodynamics, gas turbine propulsion, scramjet propulsion, endothermic fuels, high temperature materials, and high temperature structures to develop the future technologies required for reusable hypersonic flight. Additionally, the Air Force is collaborating with DARPA and NASA to develop hypersonic combined-cycle propulsion technologies for hypersonic flight that are benefiting from past technology advancements in expendable, supersonic turbine engines and hydrocarbon-fueled scramjets.

- c. Hypersonic Space Launch – Service leaders have been discussing responsive space access for many years, looking to rapidly reconstitute critical space-based assets degraded by an adversary in a conflict. Yet the primary challenge remains—we have a limited number of rockets to launch from a limited number of sites. Recently there has been increasing conversation in the public and private sector about the utility of hypersonic aircraft to act as the first stage of a launch to low earth orbit. Can you discuss the potential of hypersonic aircraft-based space launch and steps you are taking to ensure research efforts are appropriately funded and policy and regulatory issues are being addressed?

Answer: As you state, there has been renewed interest in both the public and private sectors for responsive launch—there are many concepts under consideration, to include use of hypersonic aircraft as the first stage of a two-stage system.

The benefits of an aircraft-based space launcher include flexible basing and launching locations, and less restrictive public safety requirements.

The Space Force's Rapid/Agile Launch Initiative is currently leveraging more responsive launch options with the commercial sector, to include subsonic aircraft launch options.

We are working with OSD(R&E) and NASA to develop a national strategy for High Mach and Hypersonic Aircraft that could provide technologies to enable the aircraft-based, hypersonic space launch by 2040.

The Honorable Derek Kilmer
Appropriations Committee, Subcommittee for Defense
Questions for the Record

Witnesses:

Air Force Acting Secretary John Roth

Air Force Chief of Staff General Charles Q. Brown Jr.

Question One: Secretary Roth, in your written testimony, you mentioned that the Department of the Air Force is committed to improving the quality of life for Airmen and Guardians. I share that commitment and would appreciate your thoughts on an issue impacting folks in my neck of the woods.

Right now, as in the rest of the country, the housing market in the Pacific Northwest is booming. This squeeze on housing availability is affecting anyone looking to buy or rent a home — not just service members. However, unlike many civilians, service members are ordered to move and are unable to control when this happens or where they will be stationed.

What can the Air Force do when service members cannot afford to rent or purchase a house at their new duty station? Does the Basic Allowance for Housing (BAH) increase to compensate for a competitive housing market?

Have you received any reports that service members are unable to find any available off-base homes or apartments? Do you know approximately what percentage of Department of Air Force members live off base? Is the Department researching ways to increase the numbers of on-base housing options?

Answer: Basic Allowance for Housing (BAH) rates for all services and locations are updated and published each January by OSD, so they have the potential to adjust annually. Rates are calculated using the median cost for rent, plus the average cost for utilities in the local market to cover ninety-five percent of the housing cost. The Military Housing Offices at the various locations work with OSD to identify the available local market rental properties, during the OSD data collection window, to ensure housing allowances continue to reflect changing housing market dynamics. OSD sets the same rate for all services and locations rather than each service doing so independently.

We have not received any reports where service members have not been able to find housing within the DoD prescribed market area (20 miles or 1-hour commute during peak traffic). Tyndall AFB, FL is the one exception after Hurricane Michael in 2018, however, the market area is improving. Tight markets exist in certain areas, such as Eielson AFB, AK. Even in these tight market situations, we have not received any reports of members not being able to secure housing.

Question Two: General Brown, the Army's 4th Infantry Brigade Combat Team (Airborne) of the 25th Infantry Division is currently utilizing commercial off-the-shelf non-medical-grade biometric wearable sensors to map soldiers' readiness. Specifically, the ongoing study is designed to examine data such as HRV, sleep quality, and circadian alignment to better understand readiness during high-stress activities unique to military training. The study will also investigate how to proactively respond to psychological and situational factors to combat suicide, PTSD, and domestic abuse while promoting positive behavioral changes.

I understand the Air Force is conducting a similar effort to better understand fatigue (Sleep Quality); readiness (Heart Rate Variability); and mental or physical stress (Individual Stress levels). This work could help to improve readiness within the force during cycles of training and operations while improving our understanding of how transitions between those cycles impact Air Force personnel mentally and physically.

Does the Air Force have additional plans to deploy commercial off-the-shelf non-medical-grade biometric wearable sensors throughout the force, particularly during basic training, when understanding the transition from civilian to military life seems to be very valuable?

Answer: There are 262,550 Active Duty members that reside off base; this accounts for 80% of the Active Duty population.

At this time the Air Force is not actively seeking to increase the number of on-base housing options. OMB scoring rules, as well as Military Housing Privatization Initiative (MHPI) legislative requirements can limit the Air Force's ability to secure additional end state privatized housing. Any increase in existing MHPI end state would require OSD and OMB approval, as well as Air Force upfront budget authority in the total amount of any private and/or public debt necessary to build the additional housing.

Yes, the Department of the Air Force is currently engaged in research and pilot trials of wearable technology to address both health and medical readiness issues with a plan to scale use of these capabilities to the Department. Working with industry partners, the effort includes both novel and off the shelf capabilities.

The Honorable Cheri Bustos
Appropriations Committee, Subcommittee for Defense
Questions for the Record

Witnesses:

General Brown / Honorable Roth

I remain deeply concerned with the Air Force's plans to divest Air National Guard C-130H aircraft. The Air National Guard insists the C-130 is valuable to the homeland defense mission as well as meeting overseas tactical requirements. The flexibility and readiness of the National Guard will be negatively impacted by any reduction in C-130's and we urge the Air Force to focus C-130 efforts on modernization and recapitalization.

The 2018 Mobility Capabilities and Requirements Study (MCRS) noted a need for 300 C-130's to meet the National Defense Strategy. The Air Force continues to push for a reduction to 255. A new MCRS is expected in June and it's probable the noted need for C-130's will match the USAF advertised plan for 255. This does not make sense considering the threats that face our nation in 2021 verse those of 2018. Namely, we are actively demobilizing from Afghanistan, we continue to respond to massive wildfires, floods, hurricanes and tornadoes, our nation is reeling with response to civil unrest and we've got the National Guard standing watch over the Nation's Capitol. More than half of the 26,000 National Guard members who responded to the attacks on January 6th, came to D.C. on no notice in Air National Guard mobility aircraft. To quote the Chief of the National Guard Bureau, "The Homeland is no longer a sanctuary!"

Question One: During the hearing I asked if any Air National Guard wings will involuntarily lose their C-130 mission. While you stated that no units would be outright closed, your answer to my specific question was not clear. We have been briefed by Air Force A8 that no ANG wing will involuntarily lose their C-130 mission. Please confirm or explain what is being briefed by A8.

Answer: In terms of the tactical airlift mission, both C-130H and C-130J aircraft are considered legacy airframes. The strategic decision to begin reducing C-130s from 300 TAI to 255 TAI was made in support of the FY21 Budget Development Process. The FY21 NDAA approved the first year's reduction to 287 TAI. In an effort to "Accelerate Change or Lose" the DAF is focused on modernizing the force at the cost of legacy capabilities to ensure our nation is ready to fight and win in the future. The DAF has taken a measured amount of acceptable operational risk in force structure to appropriately align available resources, inherently increasing aircraft readiness rates and allowing for utilization of fiscal resources on the remaining aircraft to maintain or further improve readiness. The near-term divestment of a number of C-130s aims to meet current operational needs while simultaneously investing in technologies that support and advance our concept of victory. As part of the DAF's C-130 solution, we have proposed converting an existing Guard C-130 Wing to a Cyber Warfare Wing. Accelerating to the future requires converting from legacy to modern capabilities. Air Force is committed to maintaining all current Air National Guard C-130 units. If any units do transition out of the C-130, we will ensure transition to a mission that supports the future force and has long term viability. Any transition will be mutually agreed upon by the Air Force, the Air National Guard, and the State.

Question Two: Last year, the Air National Guard flew 600 air mobility missions with 75 aircraft from 16 states for domestic operations. It is my understanding the MCRS does not include these domestic operations of the National Guard in the analysis. Please confirm whether National Guard domestic requirements are included in the MCRS analysis.

Answer: Yes, National Guard domestic requirements are included in the Mobility Capability and Requirements Study analysis. It should also be noted that the C-17 is an excellent tactical airlift platform and there are six state units equipped with 48 aircraft that can also perform Defense Support to Civil Authorities (DSCA) missions. We must consider all available airlift assets in both the Regular Air Force and the Air National Guard. Failure to do so threatens the capability, capacity, readiness, and modernization across all of our missions.

Question Three: If the Air Force does not believe the current fleet of C-130's are needed in a high-end fight with a near-peer adversary and the National Guard insists C-130's are instrumental to their protection of the homeland, does it make more sense to recapitalize ANG C-130H's with the active component C-130J fleet? It seems this would allow for reduction in the overall fleet number while also meeting the National Guard's homeland response requirements.

Answer: In terms of future near-peer competition, both C-130H and C-130J aircraft would be considered legacy capability.

A 255 aircraft tactical airlift fleet provides sufficient capacity for the Joint Force while maintaining a manageable level of operational risk. Air Force analysis shows that 163 C-130Js (8 pallet positions, improved range/speed over C-130H) and 92 C-130Hs (6 pallet positions), supported by 222 C-17s when available, are capable of executing Joint Force tactical airlift.

The Department of the Air Force (DAF) is divesting a limited number of C-130Hs, and modernizing the remainder with Avionics Modernization Program Increment II and extended service life center wing boxes, at a combined investment of ~\$12M. This balances operational risk and funding as DAF transitions to the future force. Retaining additional C-130H aircraft and/or further recapitalization of C-130H with C-130J aircraft diverts limited resources from higher priority National Defense Strategy focused recapitalization and modernization efforts. The DAF plans to modernize C-130J with Block 8.1 at a cost of ~\$6M per aircraft and is currently developing modernized self-defense capabilities. A newly procured C-130J (to include Block 8.1, spares, government furnished equipment, and addressing issues related to diminishing manufacturing sources) is currently anticipated to cost \$114.3M per aircraft, but this is only a planning factor as contract pricing is not currently established.

The battlefield of the future requires investment in new tactical airlift capabilities like self-protection, runway independence, battlespace awareness, minimized ground-times, and signature management, all of which enable the generation of combat power into highly-contested environments. The DAF's plan to reduce some legacy force structure and modernize the remainder is the most cost effective and budget conscious means to meet the operational challenges of today while also focusing on future competition.

The Honorable Ann Kirkpatrick
Appropriations Committee, Subcommittee for Defense
Questions for the Record

Question One: How is the Space Force working with the government agencies to ensure the United States has a coordinated strategy in countering [ground-based laser weapons on low-earth orbit sensor] threats?

Answer: The need for space domain intelligence continues to increase in the face of changing missions and emerging threats. The U.S. Space Force will continue to strengthen its partnerships across the Intelligence Community, especially with the Defense Intelligence Agency, National Geospatial-Intelligence Agency, National Reconnaissance Office, and National Security Agency. Current cooperation is largely focused on the mission to protect and defend assets. Today, we jointly man and operate the National Space Defense Center to ensure the effective defense of the Nation's on-orbit assets; we are developing a U.S. Space Command-U.S. Space Force-National Reconnaissance Office Protect & Defend Framework to enable greater synergies across a range of areas spanning from organize, train, and equip activities to war-time command and control; and we are co-developing, fielding, and operating Space Domain Awareness systems like Silent Barker. Together, we will continue to grow operational collaboration in the future, building deeper alignment across multiple agencies through development and expansion of shared strategies that synchronize national security space capabilities and operations to detect and characterize threats, defeat attacks, and respond to aggression.

The Honorable Tom Cole
Appropriations Committee, Subcommittee for Defense
Questions for the Record

Question One: As you know, Tinker Air Force Base hosts the headquarters of the AF Sustainment Center as well as the Oklahoma City Air Logistics Complex. They maintain, overhaul, and repair the Air Force's most sophisticated weapons systems and supporting systems. Some of the aircraft and engines overhauled at Tinker are among the oldest (but most accomplished) in the USAF inventory. It follows then, that they are very susceptible to critical obsolescence issues – inadequacy of sources and supply of needed parts, high prices, and slow delivery. We need to reduce the cost of acquisition of legacy parts, manifesting itself in time, money, and down time for essential equipment.

Part of the solution should be increased investment in reverse engineering capabilities and enhanced additive manufacturing technologies to generate needed replacement components and maintain combat readiness. This year, the DoD established a mandate to integrate and align 3D-printed/Additive Manufactured capabilities across both DoD and the industrial base.

Can you speak to the value and need for these capabilities?

I am proud to say that Tinker already effectively utilizes some of this capability, but it will require investment in laboratory and testing facilities, additional equipment, and personnel with the appropriate education and experience to fully meet existing needs and realize the full potential of these approaches for the warfighter.

•Would you and your team be willing to work with me to evaluate opportunities to solve these problems and maximize support for our airmen through our depot system?

Answer: Yes. The Air Force's Alternative Sourcing Program Office and the Rapid Sustainment Office are just two of the key organizations working to improve sustainment outcomes. We recognize additive manufacturing, artificial intelligence, robotics, and cold spray are just a few of the technologies that will help increase our readiness. We welcome the opportunity to work with you to evaluate opportunities to address our sustainment challenges and better support our Airmen through the depot system.

Question Two: Getting sufficient electrical power to off-the-grid and remote locations is a substantial operational challenge to our military, and it points to shortcomings of our industrial ability to respond to adverse situations. It is my understanding that – across DOD – there is a need to enhance the mobility and delivery of higher-energy power supply for forward operating bases (FOBs), for emergency replacement services, and for newer electric and hybrid powertrains. Some such locations have limited access to fuel, so future mobile power systems need to be able to create electricity in additional or alternative ways.

Considering this, at least from the Air Force perspective, how do you view the significance of these challenges and what can be done to ensure the availability of high-density,

near-term power requirements? In addition to communications and other infrastructure at FOBs, some types of vehicles and high-power autonomous flight vehicles could benefit?

Answer: The Department of the Air Force (DAF) understands the criticality of refining requirements for power at contingency locations, whether they be related to weapons systems, ground support equipment, vehicles, or any other aspects of the mission. There are two challenges that highlight the need for mobility and supply chain requirements – transporting fuel and water to contingency locations.

DAF is looking to facilitate energy and water improvements at contingency locations, through several efforts. For example, the Air Force Institute of Technology has incorporated the engineering of contingency base energy systems, with a focus on optimizing the systems performance and cost, into some courses. The intent is to provide an in-depth look at austere location energy requirements including those that result from flight operations, security, billeting and water purification, and then examining current and future methods for meeting those requirements.

DAF's Advance Power and Technology Office demonstrated a Forward Operating Base (FOB) of the Future concept at Basic Expeditionary Airmen Skills Training (BEAST) at Lackland AFB, TX. The concept demonstrated the feasibility of individual equipment and advanced energy technologies to reduce FOB reliance on diesel fuel in order to improve energy security, such as LED Tent Lighting that reduced energy and heat load by 80%. This project played a critical role in changing the way forward deployed forces will power missions in the future, and DAF intends to help create a totally deployable, self-sustaining power system.

Question Three: Secretary Roth and General Brown, you have stated before and repeated clearly in your written testimony today that the U.S. Air Force is committed to the F-35 program and that it is the “cornerstone” of the Air Force’s tactical fighter fleet.

Can you elaborate further on the nature of its importance for air superiority, maintenance of capability advantage over near peers? What important capabilities does it provide the Air Force that cannot be easily replicated?

Answer: The Air Force is absolutely committed to the F-35 as the cornerstone of our and many other nations’ combat air forces for decades to come. Highly-competitive Chinese and Russian environments, supported by novel operational concepts and rapid weapons development timelines, define the warfighting challenges we need the F-35 to solve in order to be an effective cornerstone. The current Block 3F F-35 provides a significant capability improvement over 4th generation aircraft and effectively counters the threats it was designed to counter. We know this to be true based upon our experience in operational test, and from combat operations conducted by the United States and Allies within the Syrian Integrated Air Defense System. Therefore, we need Block 4 F-35 modernization, enabled by Technical Refresh-3 (TR-3) hardware, on competition-relevant timelines to ensure continued F-35 relevance against China or Russia. Full Block 4 capability increases our ability to prosecute targets, increases survivability, advances interoperability, and improves sustainment. In short, Block 4 ensures F-35 relevance in a high-end fight against either peer competitor.

Question Four: General Raymond, I appreciated your written testimony about the military importance of technological advantage derived from new generations of GPS. An additional important, relevant aspect is the survivability of these systems in terms of resilience and/or redundancy.

Can you please speak to our ability to protect these vital systems and strategies to reconstitute or supplement them if necessary?

Answer: The GPS modernization effort includes a number of improvements to the resilience of the GPS enterprise beyond M-code. These include improvements to the resilience of the control segment, cyber security improvements across the enterprise, and the ability of the space segment to operate in a contested environment. These improvements represent not only a significant improvement over legacy systems, but provide a platform for future development planned for GPS IIF.

In addition, the DoD is engaging in multiple efforts to develop alternative Positioning, Navigation, and Timing (PNT) sources that can augment, complement, and potentially backup GPS. The specific details of how these alternatives could be used to reconstitute a PNT service for the joint warfighter would need to be shared in a classified response. As required by the FY21 NDAA Section 1611, the Secretary of Defense is providing Congress with a report summarizing the DoD's current plans for implementing alternative PNT.

Question Five: General Raymond, this Committee is on record over the last several years in supporting and funding Tactically Responsive Space Launch Operations to enable more rapid and flexible launch of small satellites.

What is the Space Force doing to ensure this key mission area is similarly supported and developed into an operational capability?

Can you also briefly update us on efforts to contain the proliferation of lost and abandoned materials (i.e. "space junk") in orbit and the current state of threat they present to both military and civilian space operations?

Answer: The USSF Launch Enterprise is responsive to our customers' needs across the spectrum of large and small launch. I agree we can make it better, and we are working towards that goal. Today, in the area of large, National Security Space Launch (NSSL)-class launches, we have the ability to increase rocket performance less than four months before launch to provide more on-orbit resiliency. Another large launch example is on the NSSL Phase 2 contract, where we have the ability to order and launch a mission in 12 months, if required. In the area of small launch, we have contractual vehicles in-place that can rapidly award launches to eight different vendors, several of which have demonstrated the ability to launch within six months of award. Also, we plan to on-ramp new vendors every year to leverage industry innovation.

To pioneer our use of Tactically Responsive Launch, we used the funding provided in the FY20 and FY21 Defense appropriations to demonstrate a less than 30-day rapid launch call-up, including the launch vehicle, satellite, ground system, and operations. To fully enable responsive launch, we must have a comprehensive strategy to reduce the cycle time across the entire concept

of operations. This includes having satellites ready to launch; ground systems and infrastructure adapted to increased response times; and tactics, training, and procedures to match. Therefore, we also need to invest in infrastructure to enable responsive launch. In 2019, RAND assessed the U.S. space launch locations and encouraged the nation to invest in responsive infrastructure at our existing ranges. Along those lines, we've welcomed emerging launch providers at both Vandenberg Space Force Base and Cape Canaveral Space Force Station to bring more responsive capability on-line. We've initiated the Range of the Future to provide the responsive range capabilities needed. These partnerships in launch vehicle systems and satellites, coupled with investment in infrastructure, will dramatically shorten the call-up timeline.

Turning to the discussion on efforts to contain the proliferation of lost and abandoned materials in orbit, the Department is continuing to work with our partners at the Department of Commerce, as well as investing heavily in the Space Domain Awareness (SDA) mission area to develop and field resilient and diverse sensors for tracking these materials. SDA data exploitation, including commercial and international partnerships, will remain pivotal to the SDA architecture.

The Honorable Robert Aderholt
Appropriations Committee, Subcommittee for Defense
Questions for the Record

Question One: I think it would be beneficial for Space Force and NASA to have an ongoing working group to track the development funding being invested into launch provider companies. And for NASA and the Air Force to ensure that they're not, in effect, each paying for the same capability developments. What details could you provide on the U.S. government getting the same price advertised for the private sector and foreign customers?

Answer: The National Security Space Launch Phase 2 contracts with SpaceX and United Launch Alliance provide commercial-like pricing for commercial-like launch services and segregates Government-unique requirements and costs into a separate, fixed-price budget line. This separate budget line ensures other DoD launch customers pay commercial-like launch prices, and keeps our industry partners competitive in the international launch market by negating the need to amortize Government-specific costs into their commercial pricing.

The USSF architecture is designed such that the launch vehicle inserts most of our satellites directly into challenging “higher energy” orbits that require more performance from the launch vehicle, rather than inserting them into “lower energy” orbits that most commercial satellites use. The resulting launch vehicle performance is higher than those typically needed by commercial satellites, but this provides the capability the nation needs, brings tremendous resiliency, and increases satellite life. Because the USSF extends the performance of commercial launch vehicles, we can launch commercial-like satellites with commercial-like launch prices while achieving substantial cost savings on the “higher energy” orbits used most often.

The USSF and NASA coordinate closely across mission areas, including launch, to avoid duplication of effort. The USSF and NASA have not duplicated investments in the same capability developments for launch vehicles.

The Honorable Mario Diaz-Balart
Appropriations Committee, Subcommittee for Defense
Questions for the Record

Witnesses:
General Raymond
General Brown

Question One: I'd like to know how much you're currently spending – and your projected future spending - on things that are not directly focused on readiness, lethality, modernization, etc (for example, non-traditional military issues such as environmental concerns or global warming).

Answer: Our team is currently working an in-depth data analysis effort to address this question. We will get back to you with a more detailed response once the data becomes available.

Question Two: General Raymond, you mentioned that the Space Domain is now a contested domain and we need the help of allies and partners to counter the threats posed by Russia and China. Can you briefly describe some of the support you've garnered with our partners and allies to help defend this domain?

Answer: The Space Force is an active participant in the longstanding Combined Space Operations initiative, alongside Australia, Canada, New Zealand, the United Kingdom, France, and Germany. We discuss the current and future space environment, coordinate on policy, global operations, and capabilities, and address challenges and opportunities that have arisen in the previous year. We are partners in national security space operations and stewards for seeking to protect and defend against hostile space activities in accordance with international law.

We are also working with the Japanese Self Defense Force as they build out an indigenous Space Domain Awareness capability, to integrate that work with our own.

We are working with NATO to further integrate space capabilities and knowledge in that alliance, including the stand-up of the first NATO Space Operations Center within NATO Air Command. Allies adopted a NATO space policy and recognized space as an operational domain, framing NATO's approach to space to best support Alliance operations in areas such as communications, navigation, and intelligence. NATO's expanding efforts in the space domain complement the mature and developing space cooperation efforts between the U.S. and NATO allies. NATO's recognition of space as an operational domain was an important step in continuing to ensure vital Allied capabilities will always be available, even in times of conflict.

In the USSF Combined Space Operations Center we include embeds from: Australia, Canada and the United Kingdom. We are also working with like-minded allies and space-faring nations to discuss and review how we can align our operations in space to develop and

promulgate concepts for Responsible Space operations. We use efforts such as the Schriever Wargame Series to test these principles in the face of rapid changes in technology helping to ensure the practices we would like to see adopted as guiding principles will endure in the coming years and decades. For this year in wargames, we have participation from Australia, Canada, France, Germany, Japan, New Zealand, and the United Kingdom and U.S. participants from all Services.

Lastly, we currently have six space courses available to multiple allies and partners. This past year in a half, we provided 26 International Students the Orbital Mechanics Online course and the Director of Space Forces (DS4) course. With the establishment of the Space Force, the interest from our allies and partners for space course has grown substantially.

Question Three: General Brown, you have previously stated that the U.S. Air Force is committed to the F-35 program and that it is the “cornerstone” of the Air Force’s tactical fighter fleet. Can you confirm for the committee that the U.S. Air Force remains committed to the F-35 program? How is F-35 the “cornerstone” of the fighter fleet and what important capabilities does it provide the Air Force?

Answer: The Air Force is absolutely committed to the F-35 as the cornerstone of our and many other nations’ combat air forces for decades to come. Highly-competitive Chinese and Russian environments, supported by novel operational concepts and rapid weapons development timelines, define the warfighting challenges we need the F-35 to solve in order to be an effective cornerstone. The current Block 3F F-35 provides a significant capability improvement over 4th generation aircraft and effectively counters the threats it was designed to counter. We know this to be true based upon our experience in operational test, and from combat operations conducted by the United States and Allies within the Syrian Integrated Air Defense System. Therefore, we need Block 4 F-35 modernization, enabled by Technical Refresh-3 (TR-3) hardware, on competition-relevant timelines to ensure continued F-35 relevance against China or Russia. Full Block 4 capability increases our ability to prosecute targets, increases survivability, advances interoperability, and improves sustainment. In short, Block 4 ensures F-35 relevance in a high-end fight against either peer competitor.

TUESDAY, MAY 18, 2021.

**NATIONAL SECURITY AGENCY AND CYBER COMMAND
FISCAL YEAR 2022 POSTURE**

WITNESS

**GENERAL PAUL NAKASONE, DIRECTOR, NATIONAL SECURITY AGENCY,
COMMANDER, U.S. CYBER COMMAND**

[CLERK'S NOTE.—The complete hearing transcript could not be printed due to the classification of the material discussed.]

WEDNESDAY, MAY 19, 2021.

CENTRAL INTELLIGENCE AGENCY FISCAL YEAR 2022

WITNESS

WILLIAM J. BURNS, DIRECTOR, CENTRAL INTELLIGENCE AGENCY

[CLERK'S NOTE.—The complete hearing transcript could not be printed due to the classification of the material discussed.]

THURSDAY, MAY 20, 2021.

**WORLDWIDE THREAT AND FISCAL YEAR 2022 NATIONAL
INTELLIGENCE PROGRAM/MILITARY INTELLIGENCE
PROGRAM POSTURE WITH THE DIRECTOR OF NA-
TIONAL INTELLIGENCE AND UNDER SECRETARY OF
DEFENSE FOR INTELLIGENCE AND SECURITY**

WITNESSES

**THE HONORABLE AVRIL HAINES, DIRECTOR OF NATIONAL INTEL-
LIGENCE**

**THE HONORABLE DAVID M. TAYLOR, PERFORMING UNDER SEC-
RETARY OF DEFENSE FOR INTELLIGENCE AND SECURITY, DEPART-
MENT OF DEFENSE**

[CLERK'S NOTE.—The complete hearing transcript could not be
printed due to the classification of the material discussed.]

TUESDAY, MAY 25, 2021.

**FISCAL YEAR 2022 DEFENSE HEALTH AND MEDICAL
READINESS**

WITNESSES

**TERRY ADIRIM, M.D., ACTING SECRETARY OF DEFENSE FOR HEALTH
AFFAIRS**

**LIEUTENANT GENERAL R. SCOTT DINGLE, SURGEON GENERAL OF
THE UNITED STATES ARMY**

**REAR ADMIRAL UPPER HALF BRUCE L. GILLINGHAM, SURGEON GEN-
ERAL OF THE UNITED STATES NAVY**

**LIEUTENANT GENERAL DOROTHY A. HOGG, SURGEON GENERAL OF
THE UNITED STATES AIR FORCE**

**LIEUTENANT GENERAL RONALD PLACE, DIRECTOR, DEFENSE
HEALTH AGENCY**

OPENING STATEMENT OF CHAIR MCCOLLUM

Ms. MCCOLLUM. This hearing will come to order. This hearing is fully virtual, and we must address a few housekeeping matters. For today's meeting, the chair, or the staff designated by the chair, my mute participants' microphones when they are not under recognition for the purpose of eliminating background noise.

Members, you are responsible for muting and unmuting yourself. If I notice you have not unmuted yourself, I will ask you if you would like the staff to unmute you. If you indicate approval by nodding, staff will unmute your microphone.

I remind all members and witnesses that they have a 5-minute clock that should be on display and that is going to apply. If there is a technology issue, however—and we do have two of them going on right now—we will move to the next member until your issue is resolved, and you will retain the balance of your time.

You will notice a clock on your screen, and if you are in the grid layout, the clock should pop up, and it will show how much time that you have remaining. At 1 minute, it will turn yellow. At 30 seconds remaining, I will gently tap the gavel to remind members that their time is almost expired. When your time has expired, the clock will turn red, and I will begin to recognize the other member.

In terms of speaking order, we will follow the order set forth in the rules of the House, beginning with the chair and the ranking member. When members are present at the time the hearing is called to order, they will be recognized in order of seniority.

And Mr. Womack and Mr. Diaz-Balart have been trying to check in, and so their seniority, if we can get things working, will remain. I see Mr. Womack here in, as having been present when the gavel went down.

Finally, members not present at the time the hearing is called to order will be recognized.

Finally, House rules require me to remind you that we have set up an email address to which members can send anything that they wish to submit in writing at any of our hearings or markups, and that email address has been provided to your staff.

Let's get going. The Subcommittee on Defense is in order. This morning, the committee will receive testimony on defense health programs and medical readiness. And we welcome five witnesses: Dr. Terry Adirim, Assistant Secretary of Defense for Health Affairs; Lieutenant General Ronald Place, Director of Defense Health Agency; Lieutenant General—excuse me—Lieutenant General R. Scott Dingle, Surgeon General of the U.S. Army; Bruce L. Gillingham, Surgeon General of the U.S. Navy; and, last but not least, Lieutenant General Dorothy A. Hogg, Surgeon General of the U.S. Air Force.

Our witnesses have extensive experience in military medicine, and distinguished careers in serving our country. On March 5th, 2020, the subcommittee held its last in-person hearing just prior to the shutdown due to the pandemic, and many of our witnesses were present for that hearing on health defense.

Doctor, this is your first time before the subcommittee, and we welcome you.

Much has changed since March 2020 due to COVID-19, and there are still many pressing issues impacting the Military Health System as it undergoes its most significant changes in decades, reforms that began prior to the pandemic, which we now hope to review in light of the pandemic.

We are holding this hearing days before the anticipated release of the President's budget request for fiscal year 2022, and it should be noted that we have serious questions, and we have concerns on how medical reforms have been accounted for in the previous budget submissions.

We hope to see adequate justifications and details across the spectrum of the Military Healthcare Service, systems requests for medical readiness to benefit care.

By understanding that we do not have yet the 2022 budget request before us, we hope our witnesses will address our questions and concerns to, the extent possible, on the many topics that will be covered today and get back to members and staff promptly, as soon as the budget request is before us.

Given the tight time frame that we have to write the bill, I ask that you really be prepared to respond to members, as I said earlier, on any specific budget questions that are asked today immediately after the full request is submitted.

It would be helpful to hear an update on the execution of the Defense Health Program during the fiscal year, given the protracted shortfall you are facing.

We also look forward to hearing about the many reforms taking place across the military healthcare system. We will want to hear how the experience of COVID-19 has been taken into consideration, as the Department moves towards the implementation of those reforms.

We also look through a broader lens of lessons learned from COVID-19. We want to hear your thoughts on what the Depart-

ment's role is and should be in assisting other Federal agencies in dealing with future pandemic and epidemic outbreaks.

We have the Services Surgeon Generals before us to discuss medical readiness and activities and priorities within each of the military branches. Part of the medical readiness requires that we all have a fit and able-bodied force to serve and deploy as necessary.

Reports have indicated—and it has been recently in the media again—26 percent of 17- to 24-year-olds are qualified to serve in the military, and that one quarter of all youth would be disqualified from serving based on being overweight or obese.

As the Service continues to see recruiting and retention challenges based on weight standards, it would be good to hear whether our panelists see this as a national security concern. And if so, what can be done about it?

As we all know, any future conflict, the military must consider survivability during the war fight against peer or near-peer competitors, and is called the golden hour, and this cannot be an option. It is especially the case if air and ground assets are unavailable to evacuate the wounded.

We would like to hear about how the right composition of medical research, medical education and training, and recruiting and retraining critical casualty care is being addressed.

New questions have also arisen from the hearings over the past few weeks. For example, we have heard approximately 600,000 Guardsmen lack health insurance. We also heard about the possible decrease of medical billets as the service plan to shed those positions in favor of operational billets in support of more lethal force.

If this is the case, where medical positions are being left deliberately unfilled, that would be quite concerning to me and to the members of this subcommittee. We do understand that the past year has presented a number of complicated challenges across the military healthcare system, and I want to thank each of you for working in support of our servicemembers and their families, to ensure that they are protected and provided with the best care available.

And with that, I thank you again for appearing before the committee today to discuss these issues. But I will ask you, as you present, to summarize your statements in a moment. But first I would like to recognize our distinguished ranking member, Mr. Calvert, for his opening comments. Mr. Calvert.

OPENING REMARKS OF MR. CALVERT

Mr. CALVERT. Thank you, Madam Chair. Acting Secretary Adirim, General Place, Surgeon Generals Dingle, Gillingham, and Hogg, welcome and thank you so much for taking the time to meet with us today.

First, on behalf of a grateful Nation, I want to commend you and all the men and women serving under you for the unprecedented efforts you undertook during the pandemic. From the deployment of hospital ships to the rollout of vaccines, the military has been crucial in healing our Nation.

But those efforts require resources, and while Congress can appropriate dollars after the fact, adequately funding base budgets is

the only way to properly resource the Department of Defense for such future contingencies, which is why it is so disheartening that the President is proposing a woefully inadequate budget for defense, one that does not even keep up with inflation.

Unfortunately, we still do not have the President's full budget request, and hopefully we will have it at the end of this week. So we are unable to discuss your resourcing needs for fiscal year 2022.

Instead of specific resource requirements then, I will be interested in hearing from you on some subjects of concern, specifically, lessons learned from the pandemic response, the ways you have utilized new technology in your services, and overall Military Health System.

Even before the onset of the pandemic, the military was struggling with transitioning certain service responsibilities to Defense Health Agency. I will be interested in an update on those efforts. I would also like to hear more about the impact of the pandemic on the provision of healthcare going forward.

For example, whether the return to normalcy will create a spike in funding needed for private sector care, as well as any tactics, techniques, procedures developed during the pandemic that may be retained, such as telehealth appointments and the health protection condition scale for our deployed and afloat forces.

Finally, I would be interested in hearing from you on the overall health and readiness of the force, and whether we are ready to resume normal operation once again.

Again, thank you for joining us today, and thank you for your service. I look forward to your testimony, and with that, Madam Chair, I yield back.

Ms. McCOLLUM. Thank you so much, and I couldn't agree with you more on your statement.

To the witnesses, your full written statements will be placed in the record, and members have had copies made available to them. So I would like to have as much time as possible for members to ask questions.

This is an important hearing, so I would encourage all of you to summarize your statement, and to be complete but succinct in responding to members' questions.

First we will hear from Dr. Adirim. Thank you for being with us.

SUMMARY STATEMENT OF DR. ADIRIM

Dr. ADIRIM. Yes, and thank you. Good morning, everybody. Chair McCollum, Ranking Member Calvert, distinguished members of the subcommittee, I am honored to represent the military and civilian medical professionals in the Military Health System, who are serving around the world and here at home, delivering healthcare in support of our 9.6 million beneficiaries, as well as continuing to provide COVID-19 support to millions of Americans throughout the United States.

My written testimony provided the subcommittee with information on major activities that will inform our budget proposal for the coming fiscal year. The most significant issue looming over all of our projections is the COVID-19 pandemic. Secretary Austin has made clear that the greatest proximate challenge to our Nation's security is the threat of COVID-19.

The Department has, and will continue to, act boldly and quickly to support Federal Government efforts to defeat this disease.

We remain deeply appreciative of the fiscal 2020 supplemental appropriation of \$2.2 billion as part of the CARES Act that covered the significant costs incurred during our initial response.

In fiscal year 2021, however, costs attributable to the pandemic response continue to accumulate. As of March 31st, 2021, our mid-year review of the Defense Health Program identified likely shortfalls as part of the ongoing pandemic response, which we are working within the Department to resolve.

In addition, the financial impacts of our military support to the Federal Emergency Management Agency missions, which remain ongoing, are still be assessed.

The Department continues to pursue efforts focused on internal business process improvements and structural changes to find greater efficiencies, such as further integrating and standardizing the operation of hospitals and clinics, continuing the deployment of MHS GENESIS, modernizing clinical and business processes, and streamlining internal operations.

Furthermore, the Department is not requesting any changes to beneficiary cost-sharing in the fiscal year 2022 budget.

Finally, the Department is grateful for this committee's long-term advocacy and support for our military medical research program. Military medical research advances the state of medical science in those areas of most pressing need and relevance to today's emerging threats, which include the COVID-19 pandemic.

When released, our fiscal year 2022 budget will present a balanced, comprehensive strategy that aligns with the Secretary's priorities to include the ongoing response to the COVID-19 pandemic.

We look forward to working with you over the coming months to further refine and articulate our objectives in a manner that improves value to everyone—our warfighters, our combatant commanders, our patients, the medical force, and the American taxpayer.

Thank you, again, for this opportunity to testify today, and I look forward to your questions and the discussion.

Ms. MCCOLLUM. Thank you so much.

Lieutenant General Place, your testimony, please.

SUMMARY STATEMENT OF GENERAL PLACE

General PLACE. Thank you for the opportunity to appear with the Acting Assistant Secretary of Defense for Health Affairs, Dr. Adirim, and the Service Surgeons General to discuss our budget for the coming year.

It is a privilege to serve with the men and women of the Defense Health Agency, provide integrated health services worldwide on behalf of our Armed Forces.

The Defense Health Agency is actually engaged in the global COVID-19 pandemic response in preventing, diagnosing, and treating COVID-19. On the prevention front, as of this morning, more than 60 percent of our Active Duty have received at least one dose, and 46 percent of the force are fully vaccinated with this number climbing daily.

We have directly administered almost 3.5 million doses to our eligible beneficiaries and coordinated at least another 800,000 doses of vaccine to our TRICARE providers and retail pharmacy networks.

To meet urgent healthcare needs throughout the pandemic, the Department significantly expanded the use of virtual health to meet beneficiary demand while minimizing unnecessary risks for patient and staff.

With our vaccination rollout now reaching our entire population of eligible beneficiaries, and the risk of COVID infection falling rapidly, we are communicating with our beneficiaries who may have delayed or deferred needed, preventive, and routine medical care due to the pandemic to ensure they get timely, high-quality care.

As Dr. Adirim noted, following a brief pause to the pandemic response, the Military Health System has resumed executing the transition of military medical treatment facility administration and management from the Services to the DHA in accordance with the law.

Similarly, the Department submitted its required report to the Congress in February 2020 on our plan to restructure MTFs. The report articulated the DOD's decision to achieve a proper balance between meeting readiness requirements and managing the total cost of health care in the direct and purchase care system.

The Department is revalidating the assumptions made regarding its readiness requirements prior to the pandemic, as well as the assessment of network capacity to absorb additional patients where we intend to proceed with rightsizing plans.

Local transitions will only occur when we are certain that the TRICARE network can provide timely and high-quality access to healthcare for our beneficiaries. If they cannot, we will revise our plans.

Again, thanks for inviting me to speak with you about military medicine, our response to the global pandemic, and our plans to further improve our Military Health System on behalf of uniformed servicemembers and the families we serve.

[The information follows:]

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Prepared Statement

Of

Dr. Terry Adirim, MD, MPH, MBA

Acting Assistant Secretary of Defense (Health Affairs)

And

Lieutenant General (Dr) Ronald Place

Director, Defense Health Agency

REGARDING

THE MILITARY HEALTH SYSTEM

BEFORE THE

HOUSE APPROPRIATIONS COMMITTEE

DEFENSE SUBCOMMITTEE

May 25, 2021

Not for publication until released by the Committee

Chair McCollum, Ranking Member Calvert, distinguished Members of the Subcommittee, I am pleased to represent the Office of the Secretary of Defense to discuss the Defense Health Program (DHP) and its contributions to the health affairs of the Department. I am honored to represent the dedicated military and civilian medical professionals in the Military Health System (MHS), which provides direct support to our combatant commanders and delivers health care for our 9.6 million beneficiaries.

This hearing is occurring in advance of the formal release of the President's FY22 full budget. My testimony will provide the Subcommittee with information on major activities that will inform our budget proposal for FY22 as well as issues affecting FY21 execution. The most significant issue, looming over all of our projections, is the national response to the COVID-19 pandemic. Our national success in reducing the spread of the virus, and vaccinating our population, will affect every aspect of our health care costs. For that reason, my testimony will begin with the current state of the DoD response to COVID-19.

COVID-19 Response

The past fourteen months have represented a unique and challenging period for our Nation as we've confronted and responded to the COVID-19 pandemic. In line with the President's priorities, Secretary Austin has made clear that the greatest proximate challenge to our Nation's security is the threat of COVID-19. The Department has, and will continue, to act boldly and quickly to support Federal government efforts to defeat this disease. The MHS is providing critical health support worldwide to our military forces, supporting other Federal and

state entities as part of a whole-of-government response to this crisis, and continuing to meet other strategic, global mission requirements, while sustaining high quality health services to our military Service members and their families.

Beginning with the declaration of a global pandemic in March 2020, the MHS provided essential crisis response services in support of military leaders and civilian demands. Though this summary is not all-inclusive, I will briefly mention several critical initiatives that contributed to the national response and also generated additional expenditures for the Department.

Surveillance and Laboratory Testing. Soon after the pandemic began, the Secretary of Defense established the DoD Coronavirus Task Force that included a Diagnostics and Testing Line of Effort. The Department grew its laboratory testing capacity from 16 operational laboratories in late March 2020 to 189 operational laboratories by March 2021, and increased on-hand SARS-COV-2 tests from approximately 200,000 to over 1.8 million. To date, the Department has conducted well over 3 million tests and has tests on-hand to conduct more than 100K tests per week. Testing is a key public health intervention that has helped to limit the spread of SARS-COV-2 within the military. Coupled with other public health measures like social distancing and masking, military installations have consistently lower positivity rates than their surrounding communities.

Even as vaccination efforts continue to increase, testing will remain a key pillar of our public health strategy to battle this disease and maintain a ready force. Screening through antigen and PCR testing using a variety of testing strategies in a post-vaccination environment will continue as part of the Department's COVID-19 risk mitigation strategy to drive cases down toward zero. The Department is also committed to whole genome sequencing and

identification of variants of concern and interest and to understanding their prevalence among our Service members and other beneficiaries. The Department has already committed the resources and funding to more than double the number of specimens the Department can sequence and analyze each week.

Clinical Support for Treatment and Therapeutics. Early in the COVID response, the Defense Health Agency (DHA) developed and released the first *DoD COVID-19 Practice Management Guide (PMG)* to provide clinicians and Military Treatment Facilities (MTFs)- our military clinics and hospitals- with a single document on best practices informed by the latest evidence, and guidance across all clinical care specialties. The PMG has been continually updated and rereleased, with the most recent version (Version 7) published in March 2021. The DHA also established a Joint Registry for COVID-19. Using the Joint Trauma Registry as a foundation for this effort, the COVID Registry collects and assesses clinical information on COVID patients, in order to inform our military medical community on the rapidly evolving science behind this disease. In April 2020, DHA also put forth the *Health Protection Condition (HPCON) Guidance in a COVID-19 Environment*, which contained CDC informed guidance to support MTFs in healthcare delivery in response to COVID-19, based on the locally-determined risk level.

In June 2020, DHA began an effort to collect donated units of plasma from patients who had fully recovered from COVID-19 to support development of an effective treatment against the disease. Again, the DHA relied on the COVID-19 registry to identify potential donors, as well as capture the use of, and outcomes from, convalescent plasma on hospitalized COVID patients. In August 2020, after receiving Emergency Use Authorization (EUA) from FDA,

COVID-19 convalescent plasma was made available to MTFs for investigational treatment of COVID-positive patients who met established criteria in accordance with approved protocols.

The MHS worked closely to implement other FDA-authorized treatments for COVID. In September 2020, shortly after Veklury® (remdesivir; first FDA-approved treatment for COVID-19) received an expanded EUA, the medication was rapidly pre-positioned throughout DoD to ensure availability to hospitalized patients with suspected or laboratory-confirmed COVID-19, irrespective of their severity of disease. Similarly, in November 2020, after receiving an EUA from FDA for COVID-19 monoclonal antibody treatment, DHA developed and disseminated specialized guidance to assist MTFs and healthcare providers regarding patient care considerations when administering this treatment for mild and moderate cases.

Individual Medical Readiness. COVID-19 did affect medical readiness within the military. The Department uses a concept called Individual Medical Readiness (IMR) to measure medical readiness, which consists of six elements. These are Dental Readiness, Immunizations, Medical Readiness Labs, Deployment-Limiting Medical Condition (DLMC) Status, Periodic Health Assessment (PHA), and Individual Medical Equipment. In 2015, the DoD Total Force Medically Ready (TFMR) goal was set at 85%. Since 2015, the Total Force has consistently met or exceeded the 85% goal. With COVID-19 pandemic beginning in the 2nd quarter of 2020, TFMR decreased below the Department's 85% goal. As of the 4th Quarter of Calendar Year 2020, TFMR compliance was 82.2%; Active Component IMR compliance was 82.4% and Reserve Component IMR compliance was 81.7%.

The COVID-19 pandemic most affected Dental Readiness and Immunizations. These IMR requirements can only be completed via in-person clinic visits. Of note, throughout the

pandemic, medical readiness for deploying Service Members was prioritized and all personnel are required to be fully medically ready prior to deployment. Capabilities such as virtual and telephonic medical appointments allowed MTFs to continue to provide access to medical readiness support services. We expect IMR rates to quickly recover and return to pre-COVID levels as our vaccination campaign proceeds through spring and summer 2021.

Healthcare Delivery and Deferred Medical Care. In both the direct care system and the TRICARE network, the Department has worked to ensure beneficiaries receive medically necessary and readiness-related care throughout the pandemic and we are currently working to address delayed or deferred care. In addition to guidance for MTFs on standard processes to provide medically necessary care that could not be delayed, the Department significantly expanded the use of Virtual Health (VH) to meet beneficiary demand while minimizing unnecessary risks for patients and staff.

MTFs and Markets are increasing the number of available appointments to meet patient demand for care and schedule previously delayed care. Despite additional workload associated with COVID-related deployments and vaccinations, MTF appointment availability is approaching pre-pandemic levels and access to appointments for routine and follow-up care averages 4.8 days, which is better than the standard of 7.0 days or fewer. Likewise, specialty referrals are up from spring 2020 levels and are approaching pre-pandemic rates. While direct care performance on cancer and other preventive screening is lagging compared to strong pre-pandemic performance, MTF staff members are actively reaching out to beneficiaries to encourage and facilitate screening appointments.

For network care, DHA worked with the managed care support contractors to develop strategies to ensure our beneficiaries' ability to access care in the network, ensured resources were monitored to confirm provider availability, expanded availability of VH and eased beneficiary access to providers by extending referral and authorization limits and adjusting rules impacting beneficiary cost shares.

Public Health Planning. The COVID-19 pandemic has highlighted the importance of integrated DoD and interagency public health planning, which includes conducting realistic exercises with federal, state and local public health partners. However, the MHS pivoted quickly and effectively in responding to the pandemic across a wide range of requirements, both internal to DoD and across the public health universe. In the process, we learned lessons and developed associated recommendations that can have an immediate and sustained impact on the ability of the MHS to support the ongoing pandemic and to prepare for future major public health emergencies. Chief among these actions is developing even tighter integrated coordination with interagency partners within the Departments of Health and Human Services (to include the Centers for Disease Control and Prevention (CDC), the Food and Drug Administration (FDA), the National Institute of Health (NIH), and the Office of the Assistant Secretary for Preparedness and Response), Homeland Security, Veterans Affairs and State, and other organizations regarding global medical surveillance of cases and variants of concern. As a primary partner in the interagency scientific community, DoD shares genetic sequencing findings, seroprevalence information and other relevant surveillance data with interagency partners.

Medical Education & Training. The collaborative leadership efforts of the Medical Enlisted Training Campus and the Services resulted in minimal disruptions in training by maximizing the interoperability and capabilities of alternative learning modalities and

technology adoption. The MHS kept graduation rates on target, and the end-strength of enlisted medical career fields healthy and ready to support Combatant Commanders. Additionally, the MHS expanded support for continuing education credits (CE) for 16 healthcare specialties and awarded over 90 thousand continuing education/medical credits. Continuing education credits are required for health professional licensure and certifications. The Defense Medical Modeling and Simulation Office recognized an opportunity to provide immediate support in meeting COVID-19 related simulation training gaps/needs of the transitioned Markets and associated Military Medical Treatment Facilities.

COVID-19 Vaccine and Immunization Implementation. Since December 2020, the Department introduced a global immunization campaign to deliver expanding supplies of vaccines approved for use under an EUA. In December 2020, DHA issued an Interim Procedures Memorandum to implement instructions, assign responsibilities, and prescribe procedures for the COVID-19 Vaccination Program. DHA continues to publish updates on the coordinated strategy for prioritizing, distributing, and administering the COVID-19 vaccine, with the most recent DoD Vaccination Plan modification (MOD-12) released in April 2021.

As of May 21, 2021, the Department had administered over 3.3 million doses of the three vaccines authorized by the FDA under an EUA. Adapted from the CDC tiered framework for prioritizing individuals for vaccination, the DoD population schema includes persons in critical national security positions and deploying forces in the Tier 1 priorities. Vaccinations are being administered at 369 DoD sites around the world, in addition to access to civilian sources for our beneficiaries. On April 19, 2021, the Department fully opened vaccine appointments to all eligible individuals, consistent with the President's direction to all jurisdictions.

The vaccine remains voluntary for all eligible persons to include active duty Service members. The Department has implemented a comprehensive outreach and communications effort to encourage all eligible persons seek out these highly safe and effective vaccines. We are encouraged by the trends in vaccine acceptance, and are confident that all individuals over the age of 15 who want the vaccine will be fully vaccinated by mid-Summer. On May 14th, following the CDC Director's acceptance of the Advisory Committee on Immunization Practices' recommendation, the Department expanded administration of the Pfizer COVID-19 vaccine to beneficiaries, ages 12-15. As of May 21st, the Department has already vaccinated over 12,000 adolescents in this age cohort in MTFs and through our retail pharmacy networks.

Defense Support to Civilian Authorities. In addition to the comprehensive response in support of the military mission, the Defense Department has provided significant expertise, logistics support, and personnel to civilian communities. Early in the pandemic, the DHA coordinated the delivery of critical inventory from existing strategic reserves to FEMA for redistribution to civilian communities. This support included delivery of five million N-95 masks and over two thousand ventilators. The US Navy deployed the USNS Comfort and USNS Mercy to civilian ports on the east and west coasts to provide hospital bed surge capacity for cities in crisis. Throughout 2020, Army, Navy and Air Force personnel deployed as units to civilian hospitals around the country to augment local staff. Military medical personnel took on key positions with Operation Warp Speed, and infectious disease experts and medical researchers from DoD medical research and development offices collaborated closely with the broader American medical research community.

COVID-19 After Action Review (AAR). The MHS is a learning organization, and we are committed to continuously improving our performance – whether in battlefield medicine, health

care quality and safety, or our COVID response efforts. Consistent with the FY21 NDAA, Section 731, the MHS established a rigorous AAR process, led by the Uniformed Services University of the Health Sciences. This AAR builds on the MHS interim AAR process and report established by the ASD(HA) in May 2020 and completed in January 2021. The Department will submit a substantive, interim report to Congress under Section 731 by 1 June, and submit a final report by the close of 2021.

Effects on the FY21 Budget. We remain deeply appreciative of the FY20 supplemental appropriation of \$2.2 billion, as part of the CARES Act, that covered the significant costs incurred during our initial response.

In FY21, however, costs attributable to the pandemic response continue to accumulate. As of March 31, 2021, our mid-year review of the Defense Health Program (DHP) identified likely shortfalls as part of the ongoing pandemic response, which we are working with the Department to resolve. In addition, the financial impact of our military support to the Federal Emergency Management Agency (FEMA) missions, which remain ongoing, continue to be assessed. The most significant cost drivers include higher than projected Private Sector Care costs; additional laboratory testing; personal protective equipment (PPE) expenditures; and numerous other requirements from public health surveillance to antiseptic cleaning of medical facilities.

While there are opportunities to realign funds to meet the operational imperative of the pandemic response, actions will still create additional risk and financial liability at a later date.

MHS REFORMS and TRANSITION

The FY 2017 National Defense Authorization Act (NDAA) enacted sweeping reforms to the organization and management of military medicine. The over-arching direction from Congress was to centralize and standardize many military health care functions in a way that better integrates readiness and health delivery throughout the Department. Included among these reforms: the expanded authority and responsibility of the DHA to manage MTFs worldwide; and the authority to adjust medical infrastructure in the MHS to maintain readiness and core competencies of health care providers.

Following a strategic pause in transition activities due to the initial COVID-19 pandemic response, which was directed and then lifted by the Secretary of Defense in April and November 2020 respectively, the MHS has continued executing the transition of Military Medical Treatment Facilities (MTF) to DHA management in accordance with the Department's approved, conditions-based execution plan that meets the intent of Section 702 of the FY17 NDAA.

In the coming weeks, we expect to certify all remaining Wave 1 Market Offices (i.e, San Antonio, Colorado, Puget Sound, and Hawaii). The Tidewater market transitioned to DHA at the end of April. These critical markets account for 34 percent of the MHS' dispositions, 48 percent of the MHS's direct care expenditures, and 11 percent of the MHS's purchased care expenditures -- providing tremendous opportunities for continued standardization and optimization. Wave 2 Market Establishment planning is underway, and we plan to institute an intermediate headquarters to manage the remainder of our small hospitals and clinics in early June. There are still outstanding personnel transfer issues to resolve, however, that place at risk our ability to complete this transition by the congressionally established deadline of September 30, 2021.

Section 703 of the FY2017 NDAA directed the Secretary of Defense to submit to the congressional defense committees an implementation plan to restructure or realign military medical treatment facilities. This report was transmitted to Congress on February 19, 2020. The report articulated the DoD's decisions to align MTFs to increase the readiness of our operational and medical forces and achieve a proper balance between meeting readiness requirements and managing the total cost of health care in the direct and purchased care systems.

All restructuring efforts were paused on April 2, 2020 as a result of the resources required to respond to the COVID-19 pandemic. The Department is revalidating the assumptions made regarding its readiness requirements prior to the pandemic, as well as the assessment of network capacity to absorb additional patients where we intend to proceed with right-sizing plans. The DHA will take a conditions-based approach to any transition of medical services. In other words, transition will only occur when we are certain that local TRICARE networks can provide timely and quality access to health care. If they cannot, we will revise our plans.

MHS GENESIS IMPLEMENTATION

The Department continues to proceed with the multi-year implementation of its new, Electronic Health Record (EHR), MHS GENESIS. Although we paused a number of specific, in-person activities during the COVID-19 response, we still delivered the two Waves scheduled for completion in 2020, two currently in 2021, and remain on schedule for enterprise completion in 2023. As of today, MHS GENESIS supports the delivery of safe, high-quality data to patients and providers across 20 MTFs.

The value of MHS GENESIS has become even more apparent during the COVID-19 response. We were able to implement COVID-specific configuration changes in MHS

GENESIS within hours on several occasions that provided senior military and civilian leaders with timely information on COVID laboratory testing results and the health of our force and our beneficiaries; the same changes in our legacy systems took nearly four weeks to implement.

MHS GENESIS' mass vaccination capabilities have produced a significant improved workflow that allows the Military Departments to assess the status of service member inoculations in order to ensure readiness. For example, medical personnel at Twentynine Palms, California successfully screened 700 active duty Marine records within days of going live with MHS GENESIS in September. The process was so successful that Cerner made the solution part of its baseline product for commercial use.

DoD and VA continue to closely collaborate on a fully integrated EHR with the oversight of the Federal Electronic Health Record Modernization (FEHRM) office. The Departments collaborated with the FEHRM to launch the joint health information exchange (joint HIE) in April 2020, creating a single common gateway through which DOD and VA providers can send data to and retrieve data from participating private sector partners. With the FEHRM's leadership, the Departments support a Federal Enclave providing a single, common record with high cybersecurity standards, joint configuration boards to ensure standardized workflows, and shared risks, schedules and lessons learned.

TRICARE 5th Generation Contracts (T-5)

The Department continues to manage the TRICARE Program in a manner that seeks to reduce the growth in health care costs while ensuring our health benefit remains an exceptional tool for recruitment and retention of military personnel and their families. Among the most important strategies we pursue is the development of effective TRICARE contracts that deliver

high-value, patient-centric care designed to seamlessly integrate military and private sector care in support of readiness and health outcomes.

The T-5 contracts represent the next generation of contracts that provide DHA with the flexibility to adjust network requirements, improve professional services support, and adapt care delivery models in support of evolving mission requirements and changes in American health care delivery. After an extensive, multi-year engagement with Department leaders, industry, and other stakeholders, as well as three draft Requests for Proposal (RFPs) shared with industry, the Department issued the T-5 RFP on April 9, 2021. The goals of this procurement support (1) military medical readiness and the readiness of the medical force; (2) beneficiary choice; (3) high value care; and the adoption of Industry Business Standards.

The Department looks forward to healthy competition from industry and the inclusion of new health care delivery models in the coming proposals. As part of the T-5 process, the Department will conduct “Competitive Demonstrations” during the contract’s period of performance. Twenty-one potential markets are identified in geographic areas where MTFs may rightsize, downsize or where DHA provides TRICARE Prime but no MTF exists. The RFP also specifies three innovations: Virtual Value Networks, Advanced Primary Care, and Care Collaboration Tools that will start with T-5 initiation and up to seven other demonstrations are planned during the life of the contract. DHA anticipates receipt of offeror proposals no later than August 13, 2021. The new contracts are planned to begin health care delivery in Calendar Year 2024.

MEDICAL RESEARCH AND DEVELOPMENT

The Department is grateful for the long-term advocacy and support for its military medical research program. The DHP research, development, test, and evaluation (RDT&E) focus is to advance the state of medical science in those areas of most pressing need and relevance to today's emerging threats, which includes the COVID-19 pandemic.

We seek to discover and explore innovative approaches to protect and support the readiness, health, and welfare of military personnel; to accelerate the transition of medical technologies to development and acquisition; and to accelerate the translation of advances in knowledge into new standards of care and treatment that can be applied in the field or in military medical treatment facilities.

In the coming years, we hope to leverage new technologies to include artificial intelligence and machine learning, biotechnology, and autonomous systems. The goal is to accelerate the transition of medical technologies to development and acquisition programs, and to further the translation of new standards of care to support and treatment that can be applied in the field or in military medical treatment facilities. We will seek to mitigate deployment-limiting medical conditions for service members by focusing on disease and injury prevention and rehabilitation.

The MHS continue to employ and strengthen our enterprise-wide performance management systems that provide stakeholders – both medical and line leadership – at all levels of the military with visibility into how we are performing on key metrics. These dashboards show longitudinal performance in measures of readiness, health, access, quality, safety and cost. We monitor critical indicators of quality and safety – – that point us toward high reliability as a system of care. Access to primary care and specialty care are measured along with patient satisfaction to ensure we are meeting patient expectations. We have provided Department leadership, MTF commanders and staff with visibility into COVID-19 specific measures that

include, but are not limited to operational hospital bed capacity and surge capabilities, timely laboratory test results, PPE inventories, COVID-19 vaccine target population and vaccine administration data, as well as important private sector care data.

Our dashboards can be viewed at an enterprise level, by Service, by market, and by individual hospital or clinic. We will continue to adapt this management system as the MTF transition progresses. Commanders can assess their performance against expected benchmarks, against peer institutions, and – where possible – against civilian sector performance as well. These dashboards help us to both assess how we are doing in these areas, and where we need to invest resources, training, or management attention in order to achieve further improvement.

OTHER SIGNIFICANT HEALTH INITIATIVES

There are several other health initiatives that merit comment – chief among these is access to timely, high quality mental health services and related activities to reduce the incidence of suicide among our service members, their families, and all beneficiaries. The Department is committed to the health, welfare and safety of our service members and families and we have undertaken a broad-based campaign encouraging service members to seek mental health treatment when signs or symptoms occur, help service members and their families to identify those signs and symptoms, and to de-stigmatize mental health care overall.

The DoD has invested in a number of programs to increase access to mental health care for Service members who are experiencing symptoms of a psychological health condition. Service members are eligible to receive free, comprehensive behavioral health care (including clinical assessment, psychotherapy, and psychiatric treatment) at their local military medical treatment facilities. We also have programs that embed psychological health providers in

operational units to assist Service members in their everyday work environments. The primary care medical homes provide follow-up when Service members disclose psychological health concerns to their primary care provider. Military OneSource is our 24/7 resource to connect Service members to information about their psychological health, non-medical counseling for stress management, and referrals to healthcare providers.

We have witnessed significant improvements in destigmatization and increased use of behavioral health services. Nonetheless, suicide rates remain unacceptably high. Suicide is a very complex issue with many biological, social, and psychological factors that contribute to suicide. In recognition of this complexity, the DoD implements a comprehensive public health approach to suicide prevention and intervention. The DoD is focused on using every available resource to support our Service members.

For example, Service members are screened for symptoms of psychological health conditions throughout their service. All Service members who are deployed in connection with a contingency operation receive a series of deployment health screenings designed to identify psychological health concerns, including posttraumatic stress disorder (PTSD) that may require referral for additional care and treatment. Additionally, all Service members, regardless of deployment status, receive a mental health assessment upon separation from military service to ensure documentation of any psychological health conditions and arrange for appropriate follow-up.

Currently, the DoD and VA are working together in the development of a single Separation Health Assessment that will include a Mental Health Assessment. This effort will make the separation process more efficient and improve the mental health care of our Service

members. Clinical Practice Guidelines have been formulated for all major clinical conditions in mental health, and Joint VA/DoD Clinical Practice Guidelines (CPGs) for mental health care facilitate delivery of evidence-based mental health care practices and strengthen the ability to maintain mental health readiness.

Beyond individual approaches, the public health approach also includes broader efforts, such as those targeted for our populations of greatest concern (young and enlisted Service members) and developing initiatives to support military families. For example, current efforts include interactive educational pilot programs to teach foundational skills to effectively deal with life stressors and to address help-seeking concerns and encourage use of support resources.

The Department continues to promote initiatives that increase awareness of risk factors for suicide, safe storage of lethal means (e.g., firearms and medications), and communicate how to intervene in a crisis. For example, DoD trained more than 2,000 non-medical military providers to provide Counseling on Access to Lethal Means (CALM) to Service members and families to increase awareness of risk factors for suicide, safe storage of lethal means (e.g., firearms, medications, and other lethal means), and how to *intervene in a crisis*. DoD is expanding on this pilot program for other influencers, such as spouses.

OVERALL FY22 BUDGET

The soon-to-be released budget will prioritize our resource requirements to address the COVID-19 pandemic and also address health care delivery challenges caused by the pandemic.

The Defense Health Program funding level that will be proposed by the Department in the FY 2022 President's Budget re-baselines health care program resources based on FY 2020 execution prior to the onset of COVID. Some residual risks remain, such as the COVID-related

effects of previously delayed care that may return, potentially deleterious impacts on beneficiaries' health due to delaying or forgoing care, unrecognized impacts of COVID-19 among asymptomatic or long-term, persistent disease, and the inherent uncertainty in predicting healthcare costs.

The MHS is not unique in the variability associated with predicting health care costs as all health insurers face these same challenges when forecasting their health expenditures for a given year. Changes in medical practice, demand for services, and new procedures and drugs are hard to predict. COVID has only exacerbated these challenges.

It is important to consider the FY22 budget request in the context of MHS cost control for the last ten years. Over the period of FY 2012 to FY 2018, both private health insurance premiums and National Health Expenditures per capita rose 25% (or 3.7% annually). However, the Department, working with Congress, instituted a series of initiatives that reduced DoD costs well below the rate of civilian growth. A combination of benefit changes, payment savings initiatives, contract changes, and population reductions masked underlying increases in health care costs. Starting in FY 2019, cost patterns returned to normal growth until the COVID pandemic significantly reduced the utilization of health care services beginning in March 2020.

The Department continues to pursue efforts focused on internal business process improvements and structural changes to find greater efficiencies, such as further integrating and standardizing the operation of hospitals and clinics; continuing the deployment of MHS GENESIS; modernizing clinical and business processes; and, streamlining internal operations. The Department is not requesting any additional changes to beneficiary cost-sharing in the FY22 budget.

The Department remains vigilant about variation in year-to-year expenditures, and we are appreciative that Congress continues to grant the Department carryover authority each year. Carryover authority allows DoD to maintain better funding flows to minimize disruption of health care services to our beneficiaries. We are committed to making our health care cost projections even more transparent in the year of execution, providing regular updates to the committee, and providing full visibility to Congress on potential plans for reprogramming funds within the fiscal year should that possibility unfold. Furthermore, we will ensure that available funding is directed toward unfunded medical readiness and health care delivery requirements. Carryover authority is an invaluable tool that provides the Department with needed flexibility to manage issues that emerge during the year of budget execution.

When released, our FY22 budget will present a balanced, comprehensive strategy that aligns with the Secretary's priorities, to include the ongoing response to the COVID-19 pandemic, and continues to fulfill our requirements associated with our congressionally directed transition. We look forward to working with you over the coming months to further refine and articulate our objectives in a manner that improves value for everyone – our warfighters, our combatant commanders, our patients, our medical force, and the American taxpayer.

Thank you for inviting me here today to speak with you about military medicine and our response to the global pandemic, the essential integration between readiness and health, and about our plans to further improve our health system in support of the National Defense Strategy and for our beneficiary population.

Dr. Terry Adirim

Acting Assistant Secretary of Defense for Health Affairs

Terry Adirim, M.D., M.P.H., M.B.A., was appointed Principal Deputy Assistant Secretary of Defense and is currently serving as the Acting Assistant Secretary of Defense (ASD) for Health Affairs. As the Acting ASD, Adirim is the principal advisor to the Secretary of Defense and the Undersecretary of Defense for Personnel and Readiness for all Department of Defense health and force health protection policies, programs, and activities.



Previously, Adirim was Senior Associate Dean for Clinical Affairs, Professor of Pediatrics and Chair of the Department of Integrated Medical Sciences at the Schmidt College of Medicine at Florida Atlantic University (FAU) in Boca Raton, Florida. In her role as Senior Associate Dean, she was responsible for providing leadership over the College of Medicine's clinical enterprise including providing vision, strategy and oversight of patient care, clinical translational research activities and the FAU Medicine faculty practice. As Department Chair, Adirim was responsible for providing leadership, mentoring and strategy for a department comprised of approximately 80 core faculty and 1,100 affiliate, community-based faculty members representing a spectrum of medical specialties.

Prior to FAU, Dr. Adirim served as the Acting Principal Deputy Assistant Secretary of Defense for Health Affairs and Deputy Assistant Secretary of Defense for Health Services Policy and Oversight in the Department of Defense, providing leadership over the Military Health System (MHS) policies and programs. The MHS is a large \$50 billion integrated health system composed of 50 hospitals and hundreds of clinics world-wide and the TRICARE Health Plan serving 9.6 million beneficiaries. She maintains an adjunct academic appointment as Professor at the Uniformed Services University of the Health Sciences in Bethesda Maryland. Previously, Adirim worked in senior leader policy positions at the U.S. Department of Homeland Security, the U.S. Department of Health and Human Services and academic medicine. She continued to practice pediatric emergency medicine for over 25 years.

Adirim earned her M.D. with research distinction at the University Of Miami Miller School Of Medicine, pediatrics residency training at the Children's Hospital of Philadelphia, Pediatric Emergency Medicine fellowship training at Children's National Hospital in Washington, DC and Primary Care Sports Medicine fellowship training at DeWitt Army Community Hospital in Fort Belvoir, Virginia Children's National Medical Center. She has more than 200 journal publications, editorials, oral presentations and invited keynote speaking engagements.

Ms. McCOLLUM. Thank you. And when I was reading your testimony, I did underline from the foxhole to the facility. I thought that that is true in all the branches of service, taking care of folks.

Rear Admiral Gillingham, your statement, please.

SUMMARY STATEMENT OF ADMIRAL GILLINGHAM

Admiral GILLINGHAM. Yes, thank you. Chairwoman McCollum, Ranking Member Calvert, distinguished members of the subcommittee, it is my privilege to update you on Navy Medicine.

I am grateful for your continued support as we execute our medical readiness mission in support of the United States Navy, United States Marine Corps, the world's premier naval force.

The last year has been like no other in our lifetimes as we confronted the SARS-CoV-2 virus and the disease it causes, COVID-19. Throughout the pandemic, Navy Medicine's operational tempo has remained high, protecting the readiness and health of our sailors, marines, and their families, along with making direct contributions to the whole-of-nation response.

I want to assure you that despite these unprecedented challenges, the One Navy Medicine Team remains relevant, ready, and responsive.

We are guided by our strategic priorities—people, platforms, performance, and power—well-trained people working as cohesive teams that optimize platforms, demonstrating high reliability performance, that will project medical power in support of naval superiority.

With the earliest identification of the virus, it was evident that we were battling an adversary whose behavior was highly unpredictable, particularly with respect to its asymptomatic transmission.

Actions and interventions by experts across Navy Medicine during early stages directly impacted our ability to better understand the virus, mitigate and contain its spread, effectively supporting ongoing fleet operations, and preserve Fleet and Marine Corps readiness.

We rapidly applied lessons learned from the early outbreaks on board USS Theodore Roosevelt and USS Kidd, and continually incorporated the latest critical information from the CDC, as well as our Navy Medicine, public health, and R&D experts.

I want you to know that our sailors and marines demonstrated tremendous personal responsibility, resilience, and adaptability in responding to the pandemic. Their work, in concert with a strong commitment from our naval operational leaders, has been instrumental in allowing our ships and personnel to stay mission-capable, despite the pandemic.

Our highest priority remains ensuring that all Department of Navy personnel have access to the vaccine in order to protect themselves, their shipmates, their families, and their community.

As the Navy Surgeon General, I have been very clear in my guidance that these vaccines are for the most effective protection against this deadly virus. The bottom line is that we are getting shots in arms and providing our personnel with what I refer to as biological body armor.

To date, Navy sites have administered nearly one million vaccines, and over 50 percent of sailors and marines are now fully vaccinated.

Navy Medicine continues to answer the call to help our Nation. Navy and Marine Corps personnel are now currently deployed around the country to assist with vaccination administration in community vaccination centers.

I recently had the opportunity to see firsthand the significant impact they are making in the lives of our fellow citizens affected by the virus.

In summary, the Nation depends upon our unique expeditionary, medical expertise to support our naval forces. The Navy Medicine team, some 63,000 strong, is privileged to be entrusted with these responsibilities. Again, thank you, and I look forward to your questions.

[The information follows:]

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THE HOUSE APPROPRIATIONS COMMITTEE

STATEMENT OF

REAR ADMIRAL BRUCE L. GILLINGHAM
MEDICAL CORPS, UNITED STATES NAVY

SURGEON GENERAL OF THE NAVY

BEFORE THE

SUBCOMMITTEE ON DEFENSE

OF THE

HOUSE APPROPRIATIONS COMMITTEE

SUBJECT:

DEFENSE HEALTH PROGRAM

MAY 25, 2021

NOT FOR PUBLICATION UNTIL RELEASED BY
THE HOUSE APPROPRIATIONS COMMITTEE

Chairwoman McCollum, Ranking Member Calvert, distinguished Members of the Subcommittee, it is my privilege to update you on Navy Medicine. The last year has been like no other in our lifetimes as we confronted a deadly adversary, the SARS-CoV-2 virus and the disease it causes, COVID-19. The battle continues today. Throughout this global pandemic, the operational tempo of Navy Medicine remains high, as we protect the readiness and health of our Sailors, Marines and their families, along with making direct contributions to the whole of Nation response to help our fellow citizens in need. I want to assure you that despite these unprecedented challenges, the One Navy Medicine team remains relevant, ready and responsive. I am grateful for your continued leadership, support, and confidence as we execute our medical readiness mission in support of the United States Navy and United States Marine Corps, the world's premier Naval Force.

Aligning Strategy, Priorities and Resources

Foundational to Navy Medicine's mission effectiveness is full synchronization with the strategic direction articulated by the Chief of Naval Operations and Commandant of the Marine Corps in their seminal documents *CNO Navigation Plan 2021* and the *Commandant's Planning Guidance 2019*, respectively. This guidance, along with the Tri-Service Maritime Strategy (2020), details the way forward in meeting current and future challenges posed by a dramatically changing international security environment. We in Navy Medicine recognize that our lines of effort must be vectored to support these strategic imperatives. Our four priorities – People, Platforms, Performance and Power – ensure important readiness linkages to our Marines and Sailors: Well-trained People, working as cohesive teams on optimized Platforms, demonstrating high value Performance that will project medical Power in support of Naval Superiority.

To help ensure that we execute these critical priorities, I have added additional analytical rigor and alignment to our strategic planning process through a series of directive-type memoranda for our key program investments. Each must align with one or more of the Navy Medicine priorities. This process is critical as we shape our decision making; including, guiding our resource allocations, assessing organizational capacity and capability, and assessing performance. Overall, I am encouraged that these priorities are taking hold at all levels within Navy Medicine. Our personnel recognize that Navy Medicine is a team sport; and as such, everyone, collectively and individually, is performing an impactful role in contributing to mission success.

In FY2021, additional Defense Health Program (DHP) resources were realigned to the Department of the Navy (DON) to support medical readiness activities which occur outside of military medical treatment facilities (MTFs). These resources are important to DON's efforts to execute non-MTF responsibilities in direct support of medical readiness. We are grateful for the passage of the Consolidated Appropriations Act of 2021, as well as the supplemental funding that was provided last year in response to the COVID-19 pandemic. I want to assure you that inherent in our business practices is the application of sound fiscal stewardship of the resources entrusted to us.

Responding to the COVID-19 Pandemic

With the earliest identification of the SARS-CoV-2 virus, it was evident that we were battling an adversary whose behavior was highly unpredictable. While all of us in military medicine are trained to respond to medical emergencies and crises, we quickly recognized that protecting our personnel in this public health emergency, along with maintaining operational effectiveness, would be our primary mission. Actions and interventions by experts from the Navy Medicine

Public Health and Research and Development enterprises during the early stages, directly impacted Navy Medicine's ability to better understand the virus's behavior, mitigate/contain the virus spread, effectively support ongoing Fleet operations, and preserve Navy and Marine Corps readiness. To illustrate, using state-of-the-art technologies and research-use only assays for COVID-19, personnel from the Navy Medical Research Center deployed to USS THEODORE ROOSEVELT (CVN-71) providing the first COVID-19 detection onboard a Navy ship, and filling a critical gap in COVID-19 in the Fleet prior to the Food and Drug Administration (FDA) issuing Emergency Use Authorization (EUA) for COVID-19 diagnostic devices available onboard ships.

This work continued as we learned how to deal with the virus from the early outbreaks on THEODORE ROOSEVELT and USS KIDD (DD-661), particularly regarding its asymptomatic transmission. Rapidly applying lessons learned from these ships and continually incorporating the latest critical information from the Centers for Disease Control and Prevention (CDC) and Navy Medicine experts, Navy leadership quickly operationalized this guidance for the Fleet in the Standardized Operational Guidance (SOG), currently in its fourth update. SOG incorporates the most current scientific and public health information to include testing, restriction of movement, isolation/quarantine, physical distancing, face coverings, contact tracing, and vaccinations. This direction is critical for both individual and unit health protection and is impactful in preserving operational readiness while protecting shipmates, installation and communities from COVID-19 transmission. Our Sailors have demonstrated tremendous personal responsibility, resilience and adaptability in responding to the pandemic. More than a year from the onset of the initial outbreak, the SOG, along with other key lines of efforts

throughout the Navy, have been instrumental in allowing our ships and personnel to stay mission capable despite the pandemic.

In an effort to gain more insight into SARS-CoV-2 virus, Navy Medicine conducted two important studies, both of which were published in the New England Journal of Medicine on November 11, 2020: (1) *An Outbreak of COVID-19 on an Aircraft Carrier* analyzed epidemiological data from the outbreak of SARS-Cov-2 onboard THEODORE ROOSEVELT in order to understand the transmission and impact of SARS-CoV-2 on the crew. This work provides a better understanding of the behavior of the virus shipboard and supports the development of updated guidance for the Fleet to mitigate future outbreaks. (2) *SARS-CoV-2 Transmission among Marine Recruits during Quarantine* reports on the COVID-19 Health Action Response for Marines (CHARM) which took place at Marine Corps Recruit Depot Parris Island and examined asymptomatic and symptomatic transmission in a young adult population. A follow-on study with the initial Marine volunteers, CHARM 2.0, is currently underway. This research is important for Naval Forces but also reaffirms our commitment to widely contribute to further the understanding of the SARS-CoV-2 virus both nationally and internationally.

An important epicenter for actionable information is our Navy Medicine Scientific Panel, comprised of Navy Medicine scientists, clinicians and public health experts. They advise leadership and work directly with operational medical personnel to facilitate rapid consultation and enable high velocity learning with respect to COVID-19. In addition, their work is reflected in the widely disseminated Navy Medicine Weekly COVID-19 Public Health Report that provides current and timely scientific, clinical and surveillance updates.

In addition to Navy Medicine's work efforts in support of Navy and Marine Corps unique requirements, collaboration with the DoD COVID-19 Task Force, the Joint Staff, the Defense

Logistics Agency, the DHA, the other Services, Uniformed Services University of the Health Sciences (USUHS), interagency partners, and many others have been important to the pandemic response. This work provides the needed coordination, standardization, and unity of effort in critical areas impacting all the Services including diagnostics and testing, therapeutics, contact tracing, personal protective equipment, COVID-19 convalescent plasma, vaccinations, logistics, technology and other key areas. Within the Military Health System (MHS), a compelling example of the synergy that comes from this collaboration across our clinical communities is reflected in the development and publication of the DoD COVID-19 Practice Management Guide (version 7), an excellent resource that contains practice guidelines and studies for our providers.

We also recognize the tremendous work by General Gustave Perna, United States Army, who led the federal response for accelerated development, manufacturing and distribution of vaccines. These efforts have resulted in the FDA issuing EUAs for three vaccines, and likely more to follow. Currently, our highest priority remains ensuring that all Sailors, Marines, and all DON personnel have access to the vaccine in order to protect themselves, their shipmates, their families and the community, consistent with the DoD prioritization schema. As the Navy Surgeon General, I have been clear in my guidance that inoculation with these vaccines, which is currently voluntary, is the most effective protection against this deadly virus.

Navy Medicine continues to answer the call to help our fellow citizens through medical surge support and vaccination support. In the early stages of this public health emergency, at the request of the Federal Emergency Management Agency (FEMA), Navy deployed both hospital ships, USNS MERCY (TA-H 19) and USNS COMFORT (TA-H 20), as well as personnel assigned to our expeditionary medical facilities, to support overwhelmed civilian hospitals, clinics and skilled nursing facilities in several states. Applying lessons learned, Navy Medicine

quickly developed new adaptive capabilities with smaller acute care teams and rapid rural response teams, which proved effective in augmenting staff at smaller hospitals in medically underserved locations including Texas, New Mexico, and Arizona. Navy and Marine Corps personnel are now currently deployed to assist with vaccinations as part of the DoD Community Vaccination support. These personnel are administering vaccinations to fellow citizens in state-run, federally-funded community vaccination centers around the country. I had an opportunity to visit several of these teams and see firsthand the impact they are making in the lives of our fellow citizens most affected by the virus. To date, Navy Medicine has deployed over 6,000 active and reserve component personnel in support of operational COVID-19 missions.

Projecting Medical Power

Navy Medicine's COVID-19 response continues to project medical power. It is marked by grit, resolve and an unbreakable spirit. While battling the pandemic remains our primary line of effort, we remain fully engaged in all aspects of our mission; directly focused on improving our readiness and enhancing capabilities to increase survivability. These efforts include leveraging all dimensions of people, platforms, performance, and, power.

People: Recognizing that our dedicated and diverse workforce is our greatest strength, Navy Medicine published its Human Capital Strategy (2020 – 2025). This strategic framework provides a pathway to help ensure that our Force, active and reserve component personnel and Navy civilians, is structured to meet the requirements of evolving operational demands. It also requires us to optimize and align our talent management efforts placing right people in the right place with the right training at the right time.

Overall manning in each of active and reserve component officer Corps (Medical, Dental, Medical Service and Nurse) remains good; however, we continue to focus on shortfalls in critical

wartime and readiness specialties to ensure we can meet our operational requirements in support of the National Defense Strategy. This emphasis is important given the need to assess and realign our uniformed personnel requirements and platforms to better support medical capabilities of the Naval Forces with the transition to Distributed Maritime Operations (DMO) and Expeditionary Advanced Base Operations (EABO). We are also prioritizing the need to increase mental health specialists assigned to the Fleet and Fleet Marine Force, and to quickly provide full spectrum force health protection in response to public health emergencies.

We must invest in recruiting, training and retaining our personnel. Continued accession and retention incentives are critical to the success of these efforts. Student accession programs are vital, considering Navy relies on USUHS and the Health Professions Scholarship Program for the vast majority of new Medical Corps accessions each year. We thank Congress for continued assistance in this area, including the authorities contained in the FY2021 National Defense Authorization Act (NDAA) for increased special and incentive pays for officers in the health professionals.

For the Hospital Corps, manning for active and reserve component is at 99 percent and 95 percent, respectively. Similarly, efforts are targeted to shortfalls in critical wartime specialty Navy Enlisted Classifications (NECs), including Independent Duty Corpsmen (surface, submarine, dive and Fleet Marine Force reconnaissance). These highly trained independent providers are vital to delivering expeditionary medical support to Naval Forces operating forward. To this end, we launched a campaign to highlight the professionally rewarding opportunities in these challenging NECs and expanded the eligibility pool for qualified candidates. We also increased retention bonuses. In addition, USUHS approved the

Independent Duty Corpsmen curricula for incorporation in their College of Allied Health Sciences which will allow these Sailors to earn college credits.

Navy Medicine civilians, a highly skilled workforce of approximately 11,500 professionals, are essential to our mission. They can be found throughout our world-wide enterprise delivering essential health care services – clinical care, research and development, public health and disease surveillance, logistics, and administration and much more. In addition to providing mentorship and training to our military personnel, they also provide much needed continuity in our facilities. We recognize that we face formidable competition with the private sector in attracting talented, highly qualified candidates, and we must work to recruit and expeditiously onboard these personnel. Expanded direct hire authorities provided in 2020 increased the number of specialties from nine to 27. Currently almost 55 percent of our civilian workforce is covered under these authorities which allows use of additional flexibilities for hard-to-fill health care positions. Again, we appreciate the support in helping us recruit the best and brightest. To date, Navy Medicine has transferred 40 Navy civilians to the DHA under transfer of function provision. We anticipate 150 additional employees will transition later this year.

Our priority is to have ready and confident personnel, with the knowledge, skills and abilities gained by experience and high velocity learning. The Navy Medicine Training and Education enterprise is critical to preparing our personnel for their warfighting mission. In spite of challenges posed by the SARS-CoV-2 virus, Navy Medicine maintained these capabilities and developed innovative solutions to mitigate interruptions, delays, and cancellations. Training commands, staff education and training departments, and operational training sites maximized use of virtual learning platforms, medical modeling and simulation, partnerships, cross-training, and blended learning to sustain ready medical forces. In 2020, we graduated 2,905 Hospital

Corpsmen from basic “A” school and 1,235 students from advanced “C” schools, while 1,252 Hospital Corpsmen completed Field Medical Battalion Training. Directly supporting our maritime readiness, experts from the Navy Medical Modeling and Simulation Training program developed a mock shipboard training environment onboard the Medical Education Training Campus (METC). To date, over, 2,075 students have been trained in shipboard medical emergencies and mass casualty exercises utilizing this realistic operational training environment.

In addition, our nationally recognized graduate medical and health education programs are critical to Navy Medicine. I refer to this robust training as Navy Medicine’s “industrial base” since they are foundational to sustaining our pipelines to generate a proficient and combat credible medical force.

Our partnerships with leading trauma and academic medical centers are essential in helping our providers get the trauma volume, complexity and experience to maintain competencies to save lives at sea and on the battlefield. We continue to leverage our existing collaborative agreements with the James H. Stroger Jr. Hospital in Chicago, Illinois; the University of Florida Health Shands Hospital in Jacksonville, Florida; and the University Hospital Cleveland in Cleveland, Ohio. Earlier this year, we established a new partnership with WakeMed Hospital, a Level I trauma center in Raleigh, North Carolina, and continued to support a relationship with the Cleveland Clinic to provide skills sustainment specifically for Independent Duty Corpsmen. Pre-deployment training for our teams continues at the Navy Trauma Training Center at Los Angeles County + University of Southern California. In addition, we are working closely with the University of Pennsylvania Health System in establishing a military-civilian partnership for trauma skills sustainment.

Inclusion and diversity are important components to a mission-ready Navy. Diverse, high performing teams provide us power, advantage and unity. We are a stronger Navy because of our differences as we draw on the diverse culture, skills and perspectives of our shipmates. All of us recognize that we have more to do. These efforts must be consistently demonstrated through our behaviors and a commitment to achieving a Culture of Excellence grounded in our Navy Core Values of Honor, Courage and Commitment.

Platforms: Navy Medical personnel remain forward deployed with the Fleet and Fleet Marine Force. They are engaged in all warfare domains with the focus of keeping our Sailors and Marines ready and healthy to perform their demanding missions. To be effective, they must have optimized platforms and capabilities to deliver the full range of medical support, including combat casualty care at sea, rapid public health response, humanitarian assistance/disaster response, as well as Defense Support of Civilian Authorities missions.

To meet the demands of sustained operations at sea, Navy continues to develop new medical capabilities as well as to re-shape current capabilities to operate throughout the range of military operations. We recognize that Naval Expeditionary Health Service Support in the DMO environment requires modular and scalable capabilities able to provide theater hospitalization and forward resuscitative care, ashore and afloat. Additionally, we are focused on improved patient movement and enroute care capabilities, along with more dispersed holding capabilities to maximize survivability. An important priority currently in development is fielding a Role 2 Enhanced medical payload for the Expeditionary Fast Transport (T-EPF) Flight II, hull I4 currently under construction. Progress continues in support of our overarching deployable medical systems strategy with the direction and resource sponsorship of the Navy's Medical

Systems Integration and Combat Survivability Office and in close collaboration with the United States Marine Corps.

It is also important to note that MTFs serve as important readiness training platforms. Within the MTFs, as well as through other partnerships, our providers get needed readiness-centric medical cases to keep their skills sharp and stay ready to deploy. Accordingly, our Navy Medicine Readiness and Training Commands (NMRTCs) provide the critical command and control for Navy Medicine personnel and ensure, through the Readiness Performance Plans, that our men and women have the clinical and operational currency and competency to support operational platforms such as hospital ships and expeditionary medical facilities. We work to ensure that we man, train and equip our personnel for current and future operations. These efforts continue to be impactful during the deployments of personnel from the MTFs in support of the COVID-19 medical and vaccine response. Furthermore, our overseas facilities function not only as vehicles for health care delivery, but more importantly as in-theatre pre-positioned medical capabilities that are critical components of Combatant Commanders' operational plans.

Performance: Navy Medicine's success is measured by those we serve, our Sailors and Marines. All of us recognize that it is necessary to ensure we provide well-trained personnel serving on agile platforms with the proper equipment sets; however, we also recognize that it is not sufficient. We must complement these efforts with relentless pursuit of applying the principles of a high reliability organization in all our actions, particularly in the operational forces. High velocity learning, rapid cycle feedback, and applying lessons learned are the underpinnings of our collaborative work to improve clinical outcomes and patient safety. Drawing on our high reliability successes in MTFs, we are rapidly moving to fully operationalize these tenets to improve warfighter readiness and increase survivability including the

establishment of six operationally-focused clinical communities: female force readiness; psychological health; neuromusculoskeletal; operational medicine; trauma; and, dental services. This priority is also clearly evident in the whole of Navy Medicine response to the pandemic as led by our network of chief medical officers and others to rapidly assimilate and disseminate relevant clinical and scientific information and best practices throughout the enterprise.

It is critically important that our Sailors and Marines have access to mental health services, where and when they need them. Navy Medicine maintains a “no wrong door” approach to deliver prevention, early identification and evidence-based mental health treatment. Services are available world-wide in mental health specialty clinics, within primary care, at Navy and Marine Corps installation counseling centers, on the waterfront, and embedded within the Fleet and Fleet Marine Force to decrease stigma and ensure access to care for our Sailors, Marines, and their families. In 2020, embedded mental health (EMH) continued to expand with 35 percent active component mental health providers and 30 percent of behavioral health technicians assigned to EMH billets. MH providers are permanently assigned to support aircraft carriers, submarine forces, amphibious assault and surface combatant ships, Naval Expeditionary Combat Command units, Marine Corps Ground Combat and Logistics Element units, and Navy and Marine Corps Special Operations.

Navy Medicine supports operations and readiness, collaborating with stakeholders on enterprise-wide strategies to address EMH manning, laydown, and practices, Disaster Mental Health, resiliency, suicide prevention efforts, and expansion of Operational Virtual Mental Health. Navy Medicine adeptly responded to new challenges presented by the pandemic through proactive mental health guidance, surveillance, and outreach, as well as rapid transition to virtual mental health modalities in MTFs and EMH. Mental health assets deployed across the Fleet to

support COVID-19 related missions and increased operational tempo. This support included deploying a Special Psychiatric Response Intervention Team (SPRINT) to THEODORE ROOSEVELT during the COVID-19 outbreak. Navy Medicine continues to execute and expand the Caregiver Occupational Stress Control program to support psychological health and prevent burnout in Navy Medicine personnel, which may be particularly relevant during COVID-19.

We remain acutely aware of the impact of traumatic brain injury (TBI) on our Sailors and Marines. Services are provided through a network of TBI clinics with a range of care levels, including Intrepid Spirit Centers at both Camp Lejeune and Camp Pendleton, and larger programs at Naval Medical Centers Portsmouth and San Diego providing scalable, multidisciplinary, evidenced-based TBI care with a high return to duty rate. Programs at Camp Lejeune and Naval Medical Center Portsmouth offer TBI evaluation and treatment tracks specifically targeted at tip-of-the-spear warfighters who are at greater risk for sustaining TBI.

Supporting a medical ready force requires that we work diligently to improve the deployability of Sailors and Marines each and every day. Navy Medicine emphasizes the importance of completing a deployability assessment at every provider-based encounter. We also have made significant improvements to the management of our personnel on limited duty to include changing the assignment of limited duty from a fixed, prescriptive duration (180 days) to one that allows for the recommended recovery period to be determined by the specific medical condition for the service member. Navy Medicine is also refining algorithms within our information systems to better identify potential deployment limiting and temporary non-deployable conditions. All of us know that warfighting is inherently demanding and we need to do everything we can to support full recovery when a Sailor or Marine is injured or ill.

Recognizing the unique health care needs of our female Sailors and Marines, we developed our comprehensive Navy Medicine Female Force Readiness Strategy. The focus is to organize and coordinate efforts to increase medical readiness, resiliency, and retention in the female force and to improve comprehensive care delivery. We are prioritizing efforts to increase patient education, improve access to care and striving to ensure front-line provider proficiencies specific to women's health. To this end, we launched a pilot program to embed a women's health provider within care settings closer to operational units to increase service women's ability to resolve health concerns and minimize time away from duty. The pilot is in place at two Fleet sites, Naval Station Norfolk and Naval Station Mayport, and both are yielding promising results. We also published the Deployment Readiness Education for Service Women Handbook, a digital women's health education resource for active duty Marines and Sailors.

DON does not tolerate sexual assault. As part of Navy's Culture of Excellence, we continue to focus on developing and implementing prevention efforts while maintaining victim support and resiliency. Navy Medicine remains ready to respond to sexual assault by ensuring the availability of sexual assault medical forensic exams, ashore and afloat. We continue to provide responsive medical forensic care during the pandemic. Collaboratively, the Services sustained ongoing training by creating a virtual training platform for Sexual Assault Medical Forensic Examiner students to meet the requirements of the 80 hour multi-disciplinary course. These efforts helped ensure that we had the personnel trained to provide sexual assault care in both MTFs and operational settings. Despite COVID-19 restrictions, we trained 83 new medical forensic providers for total inventory of 167 serving across Navy Medicine platforms.

Navy Medicine continues to support the fielding of MHS GENESIS, DoD's modernized electronic health record. This effort is essential to our work to drive standardization, improve

patient safety and foster high reliability within the MHS. From 2017 through March 2021, MHS GENESIS has been deployed to nine Naval facilities in Washington and California. Lessons learned from the earlier MHS GENESIS deployments have been applied to current sites and we are seeing substantive improvements in both training and implementation. We are fully engaged in joint implementation and optimization efforts in the fielding of MHS GENESIS and will continue to work collaboratively with DHA and the other Services. Despite challenges due to the COVID-19 pandemic, significant progress has been made with implementation and the MHS remains on track to complete MHS GENESIS deployment by 2024.

Power: Navy Medicine's capability to project medical power is critical to increasing the survivability of Naval Forces, at sea and on the battlefield. Our contributions include providing the best combat casualty care along with rapidly addressing the threats that contribute to disease non-battle injuries. The global pandemic has demonstrated that we must be prepared to employ the full strength of our One Navy Medicine capabilities to protect the health of Sailors and Marines.

Our Navy Medicine Research and Development enterprise continues to demonstrate that it is responsive to operational requirements and is capable of providing rapid solutions for the warfighter. Collectively, their expertise in unique Naval environments provide high-value, high-impact knowledge and materiel products as evidenced by the significant contributions in battling the SARS-CoV-2 virus, including diagnostic testing, genome sequencing of potential viral variants and countermeasures development.

In addition, we conduct a range of research from basic research, applied research, advanced development, to testing and evaluation. Navy Medicine is engaged in work that directly supports Sailors and Marines, including advancing treatments of decompression sickness among diving

and submarine personnel, providing research response to unexplained physiological events in tactical aircraft, and studying the impact of blast exposures on personnel. Due to the strategic location of labs, many projects involve infectious disease surveillance and international outbreak response enabling better understanding of global emerging health threats to military readiness. Our partnerships with nations on six continents, U.S. academia, non-profit organizations and the private sector, along with access to a global network of scientists, allow for research focused on keeping service members healthy and ready.

Similarly, the Navy Marine Corps Public Health Center (NMCPHC) and its field activities continue to be on the vanguard of Navy's public health efforts in response to the COVID-19 pandemic. Their impactful contributions are reflected in all aspects of our strategy of prevention, mitigation, and recovery. Contributions include deploying public health and preventive medicine expertise on COVID-19-related missions to developing science-driven and evidence-based publications such as the "Playbook for Managing Coronavirus Disease 2019 in a Shipboard Operational Setting" which details management of SARS-CoV-2 outbreak with platform specific recommendations for sanitation, prevention and treatment. Their portfolio is broad and includes laboratory operations, environmental health, population health as well as preventive medicine. NMCPHC brings the unique and vast expertise that is sought after, and, more importantly, is valued by Navy and Marine Corps operational leaders.

Global Health Engagement (GHE) remains a critical element of global stability and national security, particularly in support of security cooperation by strengthening strategic partnership and alliances. Given its importance, GHE represents another important line of effort in support of projecting medical power. Our health security cooperation officers and global health specialists are working in support of Combatant Commanders, Navy Component Commanders as

well as interagency and international partners. In addition, Navy GHE improves readiness, builds resiliency and provides competencies of our Navy Medicine personnel and prepares them to address an increasingly complex and interconnected world where health threats do not respect borders.

Given that our Naval Forces are operating forward around the world, we must continue to leverage the inherent power of Naval Virtual Health, applying technology to provide care and clinical consultations, without the constraints of time and distance. Our response to the COVID-19 pandemic served to accelerate our efforts as Navy Medicine used virtual health services, both operationally and in-garrison, to continue to support the operational readiness of Sailors and Marines during a time when access to face-to-face care diminished, and movement limitations impacted our personnel. We saw significant increases in virtual health visits in many areas, but most notably in mental health. This trend is very encouraging and signals that we are able to maintain important access to care for our patients, particularly given the stressors brought about by the pandemic. We are also working to expand virtual health reach in important readiness areas including periodic health assessments, deployment-related assessments, suitability screening and others. A key complement to our virtual health priorities is Navy Medicine's enterprise-level efforts to advance and integrate data and data analytics throughout our decision making processes through capabilities such as machine learning, robotic process automation and metrics dashboards.

Moving Forward

We continue the important work of MHS transformation. While the COVID-19 response necessitated an extended pause for many of these efforts, we have returned to planning and implementing the Congressionally-directed reforms. Military Medicine's response to the

pandemic provides us a meaningful organizational stress test to assess our capabilities and progress, essentially identifying what's working well, along with highlighting areas that need attention. Critical self-assessment and applying lessons learned derived from rapid cycle feedback are important as we build a high reliability organization.

Within the DON, our leadership recognizes the tremendous opportunity we have to refocus our efforts on medical readiness while transitioning health care benefit administration and management to the DHA, including direction and control of the MTFs. Properly executed, this construct will provide important opportunities to increase standardization, eliminate redundancies and favorably impact safety, quality and access within the MHS. In addition, it affords the DON capacity to focus exclusively on medical readiness and its unique responsibilities to provide a trained and ready medical force capable of operating in the maritime domain to meet their missions of Naval and Joint Forces.

To this end, our work continues to address the smooth transition of MTFs to the DHA as well as the key mission and functions of our NMRTCs in providing critical command and control structures for Navy Medicine personnel to meet Navy and Marine Corps missions. NMRTCs, at the local MTF level, will facilitate and reinforce the mutually supportive relationship between Navy Medicine and the DHA. Our goal remains to build an integrated system of readiness and health. While there is much work ahead, I see tremendous potential for military medicine to be a national model for health care high reliability and integration.

All of us in Navy Medicine understand the important responsibilities placed on us by the Nation to care for our Sailors and Marines who go in harm's way. Again, thank you for your support.



Rear Admiral Bruce Gillingham

Surgeon General of the Navy, N093/Chief, Bureau of Medicine and Surgery



Rear Adm. Bruce L. Gillingham is a native of San Diego. He holds a Bachelor of Arts in Cultural Anthropology (with high honors) from the University of California, San Diego and a Doctor of Medicine from the Uniformed Services University of the Health Sciences. He is an inductee in the medical honor society of Alpha Omega Alpha.

Gillingham completed a surgical internship and an orthopedic residency at Naval Medical Center San Diego. He also completed subspecialty training as a pediatric orthopedic surgeon at the Hospital for Sick Children in Toronto, Canada in 1995. He qualified as an undersea and diving medical officer.

He has served in various positions throughout Navy Medicine to include director of Pediatric Orthopedic and Scoliosis Surgery; Associate Orthopedic Residency

Program director; and director of Surgical Services. While assigned to Naval Medical Center San Diego, he was instrumental in establishing the Comprehensive Combat and Complex Casualty Care Center (C5). Operationally, he served aboard the hospital ship USNS Mercy (T-AH-19) as staff orthopedic surgeon and as director of surgical services. He deployed in support of Operation Iraqi Freedom II as battalion chief of Professional Services (Forward) for the 1st Force Service Support Group and officer in charge of the Surgical Shock Trauma Platoon, achieving a 98 percent combat casualty survival rate while providing echelon II surgical care during Operation Phantom Fury.

Gillingham also served as deputy chief, Bureau of Medicine and Surgery, Readiness & Health; commander, Navy Medicine West; commander, Naval Medical Center San Diego; deputy commander, Naval Medical Center Portsmouth; commanding officer, Naval Hospital Jacksonville, Florida; Pacific Fleet surgeon, and Fleet surgeon and director, Health Services, U.S. Fleet Forces. While in the Pacific, he led efforts to assist

the Vietnam People's Navy in creating an Undersea and Hyperbaric Medical program, and in the re-location of Navy Medical Research Unit-2 to Singapore. In 2011, he served as the Joint Support Force-Japan Surgeon in the aftermath of the Fukushima Nuclear Disaster, ensuring the safety of over 200,000 U.S. citizens, service members and families.

He is a diplomat of the American Board of Orthopedic Surgery, a fellow of the American Academy of Orthopedic Surgeons, and the American Orthopedic Association and a member of the Pediatric Orthopedic Society of North America, American College of Physician Executives, Society of Military Orthopedic Surgeons and Association of Military Surgeons of the United States. He has published over 30 scientific articles and book chapters. In his previous assignment, he served as the director, Medical Resources, Plans and Policy (N0931), Office of the Chief of Naval Operations.

He currently serves as surgeon general of the Navy, N093/chief, Bureau of Medicine and Surgery. Gillingham's personal awards include the Legion of Merit (seven awards), Meritorious Service Medal, Navy and Marine Corps Commendation Medal (two awards), Navy and Marine Corps Achievement Medal, Iraq Campaign Medal with the Eagle Globe, and Anchor device with bronze star and the Fleet Marine Force ribbon.

Ms. MCCOLLUM. Thank you so much.
Lieutenant General Dingle, please.

SUMMARY STATEMENT OF GENERAL DINGLE

General DINGLE. Chair McCollum, Ranking Member Calvert, and distinguished members of the subcommittee, thank you for your support and for the honor to speak to you on behalf of over 83,000 Active Duty Guard and Reserve Army soldier medics.

COVID-19, an unexpected challenge, has attempted to attack the foundation of our Nation, but it did not disrupt the fabric of our Constitution and its Army's response to its call. I honor the soldiers that I am privileged to lead.

As our 40th chief of staff of the Army states, people first, winning matters. I am proud to say that our Army is ready to win. Within days of our Nation's COVID call, we collaborated with Health and Human Services, the Department of Homeland Security, the Defense Health Agency, and our State governments, as we expanded critical testing capacity, inculcated 200 retiree recalls, deployed vaccine and medical teams in support of civilian entities, and partnered with medical research and development in support of the whole-of-government approach.

Soldiers deployed to three countries, 19 States, and three territories to include Arizona, California, Florida, Illinois, Ohio, Texas, and Washington State, to support and to save American lives. You called, we were ready, we responded.

As the 30th of September approaches and authority, direction, and control of our MTFs transitions to the Defense Health Agency mandated by law, my vision for the Army Medicine is clear as ever: We will be ready, reformed in accordance with the law, reorganized, responsive, and relevant in this era of unprecedented global complexity, with the support of our National Defense Strategy and whenever our government calls.

When the Army deploys today and fights tonight, Army Medicine will be right there to return them to duty tomorrow. From the fox-hole to the fixed facility, we will conserve the health and fitness of the fighting force, and reinforce our readiness requirements through healthcare for our beneficiaries.

I will ensure that integrated medical efforts occur with strong fiscal stewardship and partnership between Army Medicine, the Joint Force, and the Defense Health Agency, ensuring the readiness of our soldiers.

The vision and operational focus for Army Medicine remains at building readiness and properly man and proficiently train units and modernizing to remain ready and relevant for future conflicts and challenges. Medical reform directors will be implemented to maximize readiness in support of the Army mission.

Finally, we are committed to sustaining and improving our partnerships, foreign and domestic, to elevate battlefield interoperability and to support our National Defense Strategy.

In closing, I thank the committee for your long-standing support to the Army and military medicine. I look forward to answering your questions.

[The information follows:]

RECORD VERSION

STATEMENT BY

LIEUTENANT GENERAL R. SCOTT DINGLE
THE SURGEON GENERAL, UNITED STATES ARMY

BEFORE THE

HOUSE COMMITTEE ON APPROPRIATIONS
SUBCOMMITTEE ON DEFENSE

FIRST SESSION, 117TH CONGRESS

ON DEFENSE HEALTH PROGRAM

MAY 25, 2021

NOT FOR PUBLICATION UNTIL RELEASED BY THE
HOUSE APPROPRIATIONS COMMITTEE

Chairwoman McCollum, Ranking Member Calvert, and distinguished members of the subcommittee thank you for the opportunity to speak to you on behalf of our Army's health professionals - Soldiers, Civilians, and their Families, about the state of Army Medicine. As the 45th Army Surgeon General, I want to express my gratitude for your unwavering support.

Today, in the 20th year since 9/11, over 190,000 Soldiers are engaged worldwide to support contingency operations, multiple exercises, and theater security cooperation activities. Before this novel coronavirus pandemic, Army Soldiers and Civilians had served throughout the world as part of the Joint Force. This last year, however, has made our work like no other in our Nation's history.

Before I begin my comments, I would like to acknowledge those tragically taken by the virus and other violent acts. They were mothers, fathers, first responders, healthcare providers, the elder, and the young, too many lives sacrificed. May they rest in peace.

I would also like to honor the Soldiers, civilians, contractors, and volunteers I am privileged to lead. As our 40th Chief of Staff of the Army states, "People First, Winning Matters!" I am proud to say that our People are ready to win. Within days of the Nation's call, Soldiers began building hospitals and testing centers where the Nation needed them most. Soldiers and the Federal Emergency Management Agency, state, and local partners converted the Javits Convention Center in New York City into an alternate care facility to meet the potential demand for hospital beds created by COVID-19. Our researchers, project managers, logisticians, public health officials, health facility and operational planners, and scientists were embedded with the interagency for the whole-of-government effort against COVID-19. Over 1,850 service members augmented civilian hospitals or community vaccination programs. You called. We were ready. We responded.

We marshaled our best and very talented professionals from across the Army. Our scientists and public health officials developed therapeutics, pandemic surveillance modeling, and testing strategies that produced the relevant outcomes we see today.

Medical research and public health, the Army's vital asset in fighting diseases, contributed to the national effort under the Military Infectious Diseases Research Program and partnered with civilian, academic, and federal agency counterparts at all echelons in the whole of government response. Army Medicine did this while sustaining the health of our Soldiers, family members, retirees, and civilians both at home and abroad.

Since 2019, the Army and Army Medicine have been diligent in separating the resource requirements for the Services' readiness needs from benefit delivery. This deliberate effort has enabled the Army to expeditiously provide the foregoing actions to support operational and readiness requirements.

As The Army Surgeon General, my top priority is the health, welfare, and readiness of our Soldiers, their Families, our Civilians, and our Soldiers-for-Life, especially after two decades of persistent conflict across the globe. The Army and Army Medicine must consider the policy and funding needs to keep us ready and relevant for future challenges. This is what we must discuss today.

ARMY MEDICINE 2028

The Army Medicine 2028 vision operationalizes my plan to meet Army Medicine's strategic readiness priorities along with five key objectives – Ready, Reformed, Reorganized, Responsive, and Relevant.

- **Ready** – Taking care of people, our Soldiers, and our Families, is paramount to readiness. Their physical, cognitive, and emotional health are the cornerstones to personal readiness. We will build and sustain strategic readiness to ensure the operational force can win across all domains—land, air, sea, space, and cyber, by embracing modernization efforts through emerging technologies, synthetic training, and partnerships.
- **Reformed And Reorganized** – Our Army remains committed to medical reform initiatives. Similarly, Army Medicine must effectively reorganize in accordance with

reform requirements and Army Senior Leader directives to remain nested with the Army Campaign Plan and the Army Modernization Strategy.

- **Responsive** – Army Medicine will tailor our expeditionary force to support the new paradigm of multi-domain operations, synchronized as part of the Joint Health Service Enterprise.
- **Relevant** – Army Medicine must change at the speed of relevance. This includes the modernization of critical capabilities, technical innovations, and expanded alliances and partnerships to meet the shared challenges of our time.

Army Medicine Strategy

The strategic vision positions Army Medicine to achieve the objectives and priorities set forth by the Army. The vision of Army Medicine 2028 is clear: we are responsive and relevant with expeditionary, tailored, medically ready, and ready medical forces to support the Army mission to deploy, fight, and win in a joint, multi-domain, high-intensity conflict. Nested with Army vision and priorities, I lay the foundation for evolving concepts, tactics, and requirements in five specific ways to achieve this vision. We must synchronize and integrate the medical effort. We must continue to build Army Medicine readiness through proper manning, organizing, training, equipping, and leadership. We do this while continuing our modernization and medical reform efforts. We must do this while cultivating our international alliances and partnerships, force multipliers, and strategic assets to our national defense.

Synchronize and Integrate the Medical Effort.

In line with the Secretary of Defense's and Army senior leaders' guidance, Army Medicine will remain responsible and reliable for our teammates and stakeholders. We do this through our teamwork as the Army's medical voice regarding COVID-19 response, conserving the force's health and fitness, and caring for our beneficiaries, active and retired, at our treatment facilities. Our integrated efforts occur within and across the Army, between the Army and Defense Health Agency, and through the Joint Staff and Combatant Commands.

COVID-19 Response: The Nation called; the Army was there with the relevant expertise, equipment, and technology to respond to this unprecedented public health crisis. We will not rest until the virus no longer threatens our Nation. The greatest proximate challenge to our Nation's security is the threat of COVID-19. Army Medicine is decisively engaged in fighting COVID-19 at all levels, supporting the Department of Defense and interagency partners to eradicate COVID-19. I will participate in the statutorily mandated COVID-19 medical health system review panel in the coming months. Per fiscal year (FY) 2021 National Defense Authorization Act (NDAA) Section 732, my team will contribute and support the Secretary of Defense's strategy for pandemic preparedness and response plan. They are studying our response to COVID-19 and modifications to a pilot program on civilian and military partnerships to enhance medical interoperability and surge capability and capacity of the National Disaster Medical System. I finally want to express my gratitude to our Soldiers-for-Life. Last year, the Army asked our retirees to assist the historic effort to defeat COVID-19, and they responded. All of these men and women volunteers are true patriots and exemplars of the unwavering dedication of the Army Medicine team.

Research, Development, and Acquisition: Army Medicine is the Army's medical shield defending the force against COVID-19 in this whole-of-government approach. We responded to the Severe Acute Respiratory Syndrome, Ebola, and Zika outbreaks in the recent past. The Army Medical research enterprise delivered therapeutics, including antibodies in convalescent plasma, collaborated on the study of 40 million compounds, and managed approximately 80% of the Defense Department's investments dedicated to medical research and product development. To date in FY21, the Medical Research and Development Command dispersed \$363 million for research, development, test, and evaluation; \$280 million for operation and maintenance; and \$59 million for procurement across myriad programs supporting the health of the Department and our Nation. In the year since COVID-19 became a household word, our research and development team used these needed funds to protect the Nation from deadly viruses.

Health and Holistic Fitness (H2F): Holistic Health and Fitness, or H2F, is now part of our doctrine per Army Field Manual 7-22. As the Army Chief of Staff states, "People are

my #1 priority: Our Army's people are our greatest strength and our most important weapon system." To maintain our military strength, we will invest in understanding, assessing, and improving the American Soldier's holistic health. That means we have a comprehensive schema to enhance and maintain the Soldier's performance by making Army medical and health professionals part of building cohesive combat teams. In April 2020, 3.75% of the Army is currently medically non-deployable, equating to 38,400 Soldiers. Musculoskeletal injury contributed significantly to the Army's healthcare burden, negatively impacting Soldier health and Army readiness. To conserve the force, Army has 536 military authorizations in the future years' defense program (FYDP) between 2022 and 2026 for physical therapists, occupational therapists, registered dietitians, and enlisted specialists to be forward arrayed within our combat formations to prevent or mitigate injuries and ensure faster recovery to maintain combat power.

Army Recovery Care Program (ARCP): The Army maintains a robust Warrior Care program for managing recovery and complex care for wounded, ill, and injured Soldiers across all Army components. Our program, formerly the Warrior Care and Transition Program, is a critical enabler of Army readiness. Through the use of 14 Soldier Recovery Units, ARCP manages the recovery of wounded, ill, and injured Soldiers requiring complex care at Division/Corps installations and specialty medical centers. The program also provides resources and advocacy for Families and caregivers of Soldiers recovering in the program. Since the program's inception in 2007, more than 84,000 Soldiers have entered the program. As of October 1, 2020, the program completed a two-year Army-directed restructure. Its current population of 1,752 reflects the single entry criteria for all three components and is in line with original restructure estimates of 1600-1800 as of December 31, 2020. The latest restructure has reduced 501 authorizations and \$35 million for Program Objective Memorandum (POM) 2021, but will not decrement operations and support to the wounded warrior.

Medical Military Construction: The construction of medical healthcare and research facilities supporting Army and Department of Defense personnel and missions continues. Army Medicine, the United States Army Corps of Engineers, and the Defense

Health Agency provide collaborative leadership and management to multiple projects. I thank you for your enduring support of the medical military construction program. The Army will recapitalize over 78% (15 of 19) of inpatient facilities between 2005 and 2026. The military health system continues to require future investments in military construction to support safe, quality care for our Soldiers, Family Members, and Soldiers for Life, as well as capital investments for medical research and public health activities. As of this submission, there are currently 14 active hospital, medical research, clinic, lab, and blood program projects supporting Army equities.

Departments of Defense (DOD) and Veterans' Affair (VA) Partnership: Caring for our Soldiers-for-Life reflects our commitment to People and synchronizing the medical effort. In collaboration with the VA, the Army has an integrated joint effort for providing care to our retired population through robust healthcare resource sharing programs. Between 2018 and 2019, Army Medicine provided \$138.2 million in reimbursable care to veteran beneficiaries in our Army treatment facilities. All Army facilities with excess capacity to provide care to the veteran population under the healthcare resource sharing program. Our Soldiers-for-Life are America's strategic reserve. We are obligated to care for them.

Build Readiness.

Building and maintaining readiness is critical to my strategic goal. Army Medicine is pivoting to proficiently trained and manned units led by competent leaders, equipped with modern capabilities to provide expeditionary life/limb-saving to a multi-domain operations capable force by 2028. I acknowledge legislation regarding our force mix options and service models, as well as legislation regarding the military medical manning end strength. Readiness and deployability must remain a top priority of Commanders and Soldiers.

Medical Readiness: To build combat readiness, we affirm the need to reduce the Army's non-deployable rate to 5%, even during the pandemic. This means that despite COVID-19, Soldiers continued to complete their annual health assessments and dental exams. Initially, COVID-19 impacted our ability to conduct the screenings. To clear the backlog of Soldiers who fell out of compliance during the early phase of the pandemic, we

began to use video or telephonic health assessments. At the end of calendar year 2020, only 3.75% of Soldiers were medically non-deployable.

Individual and Collective Training: The Army is committed to the readiness for large-scale combat operations. I will provide the combat force high-quality medical care across the full continuum of combat casualty operations by reforming our medical training processes and seeking innovative partnerships and solutions to providing a ready medical force. Army Medicine is using various initiatives to build deployment readiness:

- **Army Graduate Medical Education.** Five to seven years of training after medical school is required to produce a board-eligible surgeon. The graduate program generates 96% of critical wartime specialty surgeons.
- **Military-Civilian Partnerships.** Army Medicine has entered into medical training agreements with civilian trauma centers and medical centers around the country. Pursuant to recent legislation, Army Medicine has placed doctors, nurses, and medics into facilities across the Nation, where, for example, members from forward surgical teams maximize their exposure to a high volume of patients with critical injuries. This cost-efficient initiative provides skills sustainment opportunities alongside our civilian counterparts in premier trauma centers and hospitals.

Support Modernization of the Medical Force.

Army Medicine's modernization efforts include developing medical concepts parallel with Army efforts. These expeditionary medical capabilities leverage emerging technologies, design the future medical force, ensure interoperability, and invest in synthetic training environments to provide the "sets and reps" required to be battlefield-ready. We must consider leveraging technology and updating our strategies to meet the realities of the landscape.

Recruiting and Retention of Health Professional Officers (HPOs) (Talent Management): Our Army's philosophy is People First, and our attitude is Winning Matters. The Army is about People. I want to thank our legislators for acknowledging the need to

increase special pay incentive programs and rate caps. The increase in health professional compensation assisted with medical accession bonuses, health professional scholarships, Financial Assistance Program, loan repayment, professional training and education programs and incentives, allows us to recruit and retain health professional officers as they make the tough decision to serve the Nation or answer the lucrative opportunities in the private sector. Per section 757 of the Fiscal Year 2021 NDAA, at the direction of the Department of Defense, we will participate in the congressionally-mandated review of our force mix options and the service models to enhance our medical force's readiness.

Virtual Health: As we sustain and modernize Army Medicine's talent management systems and organization, our hardware and software must match the dynamic threat landscape of the 21st century. In this regard, the legislation directs a review of our use of virtual health services across the Army. Leveraging this capability during the pandemic was critical in delivering medical treatment and timely access to care. During the year of COVID-19, when many dreaded entering medical treatment facilities, telehealth provided direct care to our patients. In FY15, there were over 40,000 virtual health encounters in Army Medicine. About 80% of these encounters were related to behavioral health. From March 2020 to January 2021, we had an extraordinary 4.2 million virtual health encounters. Virtual health improves patient satisfaction, continuity of care, readiness, and access—all components for efficient and effective medical care.

Medical Simulation/Synthetic Training: The Department of Simulation at the Medical Center of Excellence is the lead agency for Army medical modeling and simulation policy and strategy. Working with the Army's Program Executive Office Simulation, Training and Instrumentation, and in collaboration with Army Futures Command, our simulation efforts will improve medical skill training through synthetic cross-functional training. The artificial environment will provide the realistic repetitions necessary to train and sustain combat lifesavers and medical personnel for Multi-Domain Operations. Other examples of our technological needs include:

- **Integrated Visual Augmentation System (IVAS).** This system enhanced casualty care through a combination of technologies and augmented reality delivered in the form of a Head-Up Display device. The system will include a casualty response function enabling the Close Combat Force to exercise squad-level response to taking casualties in tactical training scenarios.
- **Tactical Combat Casualty Care (TC3) Simulation.** A first-person game that allows a Soldier to play a combat medic's role during an infantry squad mission in an urban environment.
- **Vertical Lift.** The next-generation medical vertical lift, such as the medical variant of the Future Long-Range Assault Aircraft, will give Army Medicine an aircraft with increased speed, range, survivability, and maneuverability to allow the Army to evacuate the injured from the battlefield to the point of care.

We must make investments to develop further and purchase the required hardware and software to create the Synthetic Training Environment Medical training platforms and next generation of vertical lift.

Medical Reform.

The Medical Reform initiative aims to ensure the highest Soldier and provider medical readiness while reducing administrative requirements associated with military treatment facilities (MTFs) health and business processes, procedures, and practices to deliver more effective and efficient beneficiary care at less cost. The Department of the Army and Army Medicine are committed to this initiative as we diligently evaluate the Medical Department's structure, ensuring its coherence to the needs of Title 10 and our operational demands.

Medical and Dental Treatment Facility Transition: Due to the novel coronavirus response, the military health systems reform efforts were paused in the last year. The Defense Health Agency will assume authority, direction, and control for all United States-based MTFs by September 30, 2021. The Army will transfer 126 Medical and 60 Dental Treatment Facilities to the Defense Health Agency. The Army retained statutory Title 10 responsibility for training, readiness, and oversight of Soldiers at the Medical Treatment

Facilities, Dental Treatment Facilities, Public Health establishments, and Veterinary Treatment Facilities.

Defense Health Program Funds Transfer: The FY21 appropriations drafted by this committee provided more than \$1.1 billion from the Defense Health Program to the Army Operation and Maintenance account consisting of over 15 service-centric medical readiness programs—over \$655 million within Army Medicine and over \$445 million across Army Major Commands. We understand that we need to further evaluate our readiness requirements in subsequent years as the medical health systems reform and transition progress. We acknowledge this committee's recommendations on the need for precise details and justification for Army's Medical readiness programs. Finally, we are also working with the Defense Health Agency to ensure that those medical readiness services within the Defense Health Agency purview (about \$895 million) are meeting the Army's requirement for comprehensive readiness for our Soldiers and their family members.

Strengthen Alliances and Partnerships.

Finally, our allies and partners are collaborators and force multipliers with whom we engage through various multilateral and bilateral affiliations, security cooperation programs, and global health engagement opportunities. From the early 1800s, to today, and into the future, the Army has a long-standing history responding to international public global health issues as a result of our responsibility to protect the health of our forces and to ensure that they are ready to deploy for missions anywhere in the world at a moment's notice. One component of global health engagements involves building, sustaining, and improving partner capacity so that nations can mature into competent combat health service support providers for their forces and coalitions in which they will operate. Among other capabilities, my goal in the Army Medicine strategy is to create a global network of military medical capabilities that will provide niche and system medical services to ensure ready, relevant, responsive, and excellent health service support both in the field and in the institutional setting.

Funding for global health activities, partnership activities, and global health engagements has always been a challenge. As we have seen in the last year, our scientists' international work is a crucial funding concern. Allocated appropriations from Defense Health Program funds provided by our partner nations do not yield impactful results. Partner nation, Combatant Command, and Army Service Component Command prioritization toward combat and combat support capabilities are frequently below the cut line, underfunding global health engagements and medical security cooperation.

To achieve global health objectives, medical forces would benefit from funding investment to continue and capitalize on our critical relationships with international ministries of defense, health, interior, academia, non-governmental, and private sector organizations. As required by statute, we will work with the Department to assess the feasibility of establishing medical security partnership with Taiwan (FY21 NDAA, Section 1260B) and the grant program to collaborate with Israel on post-traumatic stress disorder research.

Medical Research and Development Command laboratories in Thailand, Philippines, Nepal, Cambodia, Kenya, Nigeria, Tanzania, Uganda, and the Republic of Georgia conduct essential surveillance of biological threats and groundbreaking research on infectious diseases and diseases of military and public health significance. Through regional and functional health commands, the Army's global presence also serves as a force for good, offering humanitarian assistance and disaster relief when requested.

The Army Medical Center of Excellence provides officer and enlisted medical leadership training to approximately 200 soldiers from partner nations. Of these, our relationship with the Israel Defense Force medical services, based on the 1978 United States-Israel Data Exchange Agreement on Military Medicine, or "Shores," sustained our relationship through their International Medical Programs office and the Army's Medical Strategic Leadership Program. Similarly, our relationship with Taiwan (one which Army Medicine looks forward to expanding) was sustained through our educational programs, which had 25 participants in recent years.

Army Medicine will build on our experience from multinational staff hospitals in Iraq and Afghanistan as the opportunity affords. We do this while leveraging current experiences in Europe with our allies and partner nations to strengthen our many long-lasting international relationships with the North Atlantic Treaty Organization and the American-British-Canadian-Australian-and New Zealand alliances. When matured, these relationships will enhance the readiness of future US military operations in that region. The corporate and national response to the global pandemic, ongoing research and development of freeze-dried plasma, advancements in prosthetics and rehabilitation, and more effective treatments for post-traumatic stress disorder and other combat stress-related injuries have made Army Medicine a proven and formidable partner in global health and military medicine.

CONCLUSION

In closing, I want to thank the committee for your long-standing support to the Army and Military Medicine. I remain committed to working with our defense, interagency, intergovernmental, multinational, and civilian partners to improve Army readiness. At the same time, our healthcare professionals continue to care for our Soldiers, Civilians, and their Families.

From the foxhole to the fixed facility—Army Medicine will be ready, reformed, reorganized, responsive, and relevant. My vision will ensure that we sustain mutual trusted relationships within the Army, the Joint Force, and the Nation. When a Soldier calls for a medic, Army Medicine will be ready and responsive with expertly trained Soldiers capable of healing injuries to the body. Medical units should be adequately manned and equipped with the best equipment and technology. It is not about fighting the last war. We must have the People, cutting-edge tools, medical concepts, doctrine, capabilities, and the training for the next conflict. I appreciate the subcommittee's work and your continued support to our Soldiers, Army Medicine, and our Army.

Lieutenant General R. Scott Dingle

The 45th U.S. Army Surgeon General and Commanding General, U.S. Army Medical Command



Lieutenant General R. Scott Dingle is The 45th Surgeon General of the United States Army and Commanding General, United States Army Medical Command. Prior to his appointment as The Surgeon General and Commanding General, he served as the Deputy Surgeon General and Deputy Commanding General (Support), U.S. Army Medical Command.

His previous military assignments include: Commanding General, Regional Health Command – Atlantic; Deputy Chief of Staff, G-3/5/7, Office of The Surgeon General (OTSG), Falls Church, VA; Commander, 30th Medical Brigade, Germany; Director, Health Care Operations/G-3, OTSG, Falls Church, VA; Commander, U.S. Army Medical Recruiting Brigade, Fort Knox, KY; Commander, 261st Multifunctional Medical Battalion, Fort Bragg, NC; Chief, Current Operations, Special Plans Officer, Healthcare Operations Executive Officer, OTSG, Falls Church, VA; Chief, Medical Plans and Operations Multinational Corps-Iraq Surgeon's Office, OPERATION IRAQI FREEDOM, Baghdad, Iraq; Chief, Medical Plans and Operations, 18th Airborne Corps Surgeon's Office, Fort Bragg, NC; Executive Officer, 261st Area Support Medical Battalion (44th MEDCOM), Fort Bragg, NC; Ground Combat Planner for CJTF -180, OPERATION IRAQI FREEDOM, Baghdad, Iraq; Assistant Chief of Staff, Plans and Exercises, 44th Medical Command and 18th Airborne Corps Plans Officer, Fort Bragg, NC; Chief, Division Medical Operations Center, 1st Armored Division, Germany; Instructor, Officer Basic and Advanced Courses, Army Medical Department Center and School, Fort Sam Houston, TX; Plans Officer, 3rd Infantry Division Medical Operations Center, Germany; Commander, Charlie Company, 3rd Forward Support Battalion, Germany; Commander, Medical Company and Medical Hold Detachment, Fort Eustis, VA; Chief of Plans, Operations, Training, and Security, Fort Eustis, VA; Adjutant, Fort Eustis, VA; Ambulance Platoon leader and Motor Officer, 75th Forward Support Battalion, 194th Separate Armored Brigade; Fort Knox, KY.

LTG Dingle is a Distinguished Military Graduate of Morgan State University. His degrees include Master of Science in Administration from Central Michigan University, Master of Military Arts and Science from the School of Advanced Military Studies and a Master of Science in National Security Strategy from the National War College.

Awards and decorations include the Distinguished Service Medal (Oak Leaf Cluster), Legion of Merit (two Oak Leaf Clusters), Bronze Star Medal, Meritorious Service Medal (seven Oak Leaf Clusters), Joint Service Commendation Medal, Joint Meritorious Unit Award, Army Commendation Medal (two Bronze Oak Leaf Clusters), Army Achievement Medal (one Bronze Oak Leaf Cluster), Humanitarian Service Medal, the Order of Military Medical Merit, Recruiters Medallion, the Order of Kentucky Colonels, the Army Surgeon General's prestigious 9A Proficiency Designator, Expert Field Medical Badge, Parachutist Badge, and the Air Assault Badge.

Ms. MCCOLLUM. Lieutenant General Hogg, please give us your statement, and then we will continue to questions.

SUMMARY STATEMENT OF GENERAL HOGG

General HOGG. Thank you, ma'am. Chairwoman McCollum, Ranking Member Calvert, and distinguished members of the subcommittee, thank you for the opportunity to testify on behalf of the more than 55,900 Active Duty, Guard, Reserve, and civilian airmen who comprise the Air Force medical service.

Your sustained confidence and support enables us to remain mission-focused, excellence-driven, and ready to fight tonight.

Over the past year, our airmen have been involved in every aspect of the COVID-19 response. From the early days of official public health emergency response, to supporting the whole-of-government vaccination efforts, Air Force medics showed their ability to innovate.

When COVID-19 epicenters in New York, California, Texas, and North Dakota were facing critical staffing shortages, we acted quickly, enabled critical care strike teams directly into civilian facilities.

Today we have deployed over 1,000 Air Force medics to FEMA vaccination sites in 13 States to administer COVID-19 vaccinations; and as of yesterday, we have given over 1.3 million vaccines.

A year before the first COVID-19 case hit the U.S., we established our newest critical sustainment C-STARS training program at the University of Nebraska Omaha. This center for the sustainment of trauma and readiness skills focused on disease containment.

Our infectious disease specialists worked alongside civilian counterparts to treat some of the very first COVID-19 patients, using the university's biocontainment unit.

We took our air medical evacuation capabilities into new territory when we were tasked to transport COVID-19 patients. Early in the pandemic, the rapid rise of cases drove the need to move more patients at once while mitigating the spread of COVID-19 to aircrew members.

We partnered with teams across the Department of Defense and the civilian industry to develop a new infectious disease transport system called the Negatively Pressurized Conex. This Conex can safely transport up to three times as many patients as the previous isolation system. And as of the 24th of May, we have completed 101 missions, and moved 372 COVID-positive patients.

While battling the pandemic, we also remain dedicated to the Military Health System transformation efforts. We have worked side by side with the Defense Health Agency to identify all necessary processes needed to mature the Defense Health Agency's functional capabilities.

We also implemented a new reform model to improve our airmen's and Guardians' readiness and deployability. We reorganized our military treatment facilities into two squadrons. The first squadron focuses on the health of airmen and Guardians, and the second squadron focuses on the care of all our other beneficiaries.

This new model has been implemented at 66 bases, and early analysis has already shown the model enhances force readiness and lethality.

This pandemic brought unprecedented challenges, but it also provided opportunities to accelerate, change, or lose, to become more agile, resilient, and capable to face the unknown. This is what we train for. We remain ready for the fight, as we evolve to face the next major threat.

It has been an honor to serve as the Air and Space Force Surgeon General, alongside extraordinary medical professionals on the joint team. This is my final time to appear before this subcommittee as I will be retiring next week. Thank you for your continued support and for the opportunity to address you today. I look forward to answering your questions.

[The information follows:]

Department of the Air Force



Presentation

Before the House Appropriations
Committee, Subcommittee on Defense

Defense Health Program

Witness Statement of

Lieutenant General Dorothy Hogg
Surgeon General of the Air Force

May 25, 2021





BIOGRAPHY



UNITED STATES AIR FORCE

LIEUTENANT GENERAL DOROTHY A. HOGG

Lt. Gen. Dorothy A. Hogg is the Surgeon General, Headquarters U.S. Air Force, Pentagon and also serves as the first Surgeon General of the United States Space Force. In this role, she advises the Secretary of the Air Force, the Air Force Chief of Staff, the Space Force Chief of Space Operations, and the Assistant Secretary of Defense for Health Affairs on matters pertaining to the medical aspects of the air expeditionary force and the health of Airmen and Guardians. Lt. Gen. Hogg has authority to commit resources worldwide for the Air Force Medical Service, to make decisions affecting the delivery of medical services, and to develop plans, programs and procedures to support worldwide medical service missions. She exercises direction, guidance and technical management of a \$6.1 billion, 55,945-person integrated healthcare delivery and readiness system, serving 2.6 million beneficiaries at 76 military treatment facilities worldwide. Prior to her current assignment, General Hogg served as Deputy Surgeon General and Chief, Air Force Nurse Corps, Office of the Surgeon General, Falls Church, Virginia. Lt. Gen. Hogg entered the Air Force in 1984 and has commanded at the squadron and group level, and served as the Deputy Command Surgeon for two major commands. She has deployed in support of operations Enduring Freedom and Iraqi Freedom.



EDUCATION

- 1981 Bachelor of Science degree in Nursing, University of Southern Maine, Portland
- 1986 Squadron Officer School, by correspondence
- 1987 Women's Health Nurse Practitioner, School of Healthcare Sciences, Sheppard Air Force Base, TX
- 1992 Master of Public Administration, Troy State University, Troy, AL
- 1996 Air Command and Staff College, by seminar
- 1997 Master of Science in Nursing, Sigma Theta Tau, Medical University of South Carolina
- 2002 Air War College, by seminar
- 2007 Executive Development Intern, SDE in-residence equivalent
- 2010 Interagency Institute for Federal Healthcare Executives
- 2012 Joint Medical Executive Skills Medical Executive Skills Capstone Course
- 2014 Capstone, Fort Lesley J. McNair, Washington, D.C.

ASSIGNMENTS

1984 – 1986, Staff Nurse, OB/GYN Nursing Unit, U.S. Air Force Regional Hospital, Eglin AFB, FL
 1986 – 1987, Nurse Practitioner Student, School of Healthcare Sciences, Sheppard AFB, TX
 1987 – 1989, Women's Health Nurse Practitioner, 410th Medical Group, K.I. Sawyer AFB, MI
 1989 – 1992, Women's Health Nurse Practitioner, 52nd Medical Group, Spangdahlem Air Base, Germany
 1992 – 1996, Women's Health Nurse Practitioner, 18th Medical Group, Kadena AB, Japan
 1996 – 1997, AFIT Master's Student, Medical University of South Carolina, Charleston, SC
 1997 – 2001, Maternal-Infant Flight Commander, 366th Medical Group, Mountain Home AFB, ID
 2001 – 2002, Family Practice Flight Commander, 314th Medical Group, Little Rock AFB, AR
 2002 – 2004, Clinical Medicine Flight Commander, 314th Medical Group, Little Rock AFB, AR
 2004 – 2006, 22nd Medical Operations Squadron Commander/Chief Nurse Executive, McConnell AFB, KS
 2006 – 2007, Executive Development Intern, Manpower and Organization/SDE equivalent, Headquarters U.S. Air Force/SG, Bolling AFB, Washington, D.C.
 2007 – 2008, 79th Medical Operations Squadron Commander, 79th Medical Group, Andrews AFB, MD
 2008 – 2010, 9th Medical Group Commander, Beale AFB, CA
 2010 – 2012, Deputy Command Surgeon, Air Force Central Command, Shaw AFB, SC
 2012 – 2013, Deputy Command Surgeon, Air Force Materiel Command, Wright Patterson AFB, OH
 2013 – 2014, Chief, Air Force Nurse Corps/Assistant Surgeon General, Medical Force Development, Office of the Surgeon General, Falls Church, VA
 2014 – 2015, Chief, Air Force Nurse Corps/Director, Medical Operations and Research Office of the Surgeon General, Headquarters U.S. Air Force, Falls Church, VA
 2015 – 2018, Deputy Surgeon General/Chief, Air Force Nurse Corps, Office of the Surgeon General, Falls Church, VA
 2018 – Present, Surgeon General, Headquarters U.S. Air Force, the Pentagon, Arlington, VA
 2019 – Present, Surgeon General, U.S. Space Force, the Pentagon, Arlington, VA

MAJOR AWARDS AND DECORATIONS

Legion of Merit
 Bronze Star Medal
 Meritorious Service Medal with silver and two oak leaf clusters
 Air Force Commendation Medal with two oak leaf clusters

CURRENT NATIONAL CERTIFICATIONS

Women's Health Nurse Practitioner National Certification Corporation

EFFECTIVE DATES OF PROMOTION

Second Lieutenant Dec. 29, 1983
 First Lieutenant Jan. 14, 1986
 Captain Jan. 14, 1988
 Major Aug. 1, 1995
 Lieutenant Colonel June 1, 2001
 Colonel Nov. 1, 2006
 Major General Aug. 9, 2013
 Lieutenant General June 4, 2018

Chairwoman McCollum, Ranking Member Calvert, Chairwoman DeLauro and distinguished members of the Subcommittee, thank you for the opportunity to testify on behalf of the 55,945 active duty, reserve, guard, and civilian Airmen who comprise the Air Force Medical Service. It is an honor to serve with these Airmen who demonstrate their ongoing dedication to the mission resulting in the success of the Department of the Air Force. Your sustained confidence and support in our efforts enables us to remain mission-focused, excellence-driven and ready to fight tonight.

The Air Force Medical Service supports the Department of the Air Force's mission to fly, fight and win, and defend American interests in air, space, and cyberspace. Our strength resides in our resilience and on our willingness to succeed in austere, dynamic, and challenging environments. Our readiness focuses on delivering lifesaving care, whether on the battlefield or within our own communities. We train to successfully operate in field hospitals with limited supplies, pushing the limits of our capabilities to stretch our problem solving abilities. The Air Force Medical Service can successfully function, in fact, excel, on cargo and tanker aircraft to move our service members to higher levels of care. Air Force medics ensure combatant commanders have a medically ready and fit force. With the launch of our newest military branch, the U.S. Space Force, Air Force medics are also responsible for maintaining the readiness for Guardians operating the nation's space capabilities. We embrace these unique physical and psychological demands of space mission sets and are planning for the future demands of space medicine requirements.

My responsibility to provide the best prepared medical force has not been dampened

by the challenges of the ongoing pandemic, in fact, it has proved the resilience and flexibility of our Airmen. This pandemic tested our capabilities; we faced many challenges, but at the core of our success was our medics. Their training, commitment, and dedication to service provided a resource our nation depends upon.

AIR FORCE MEDICAL SERVICE COVID-19 RESPONSE

Over this past year, our medics have been put on the front lines like never before, to combat a new enemy, one that struck in our own backyards and bases around the globe. The pandemic brought military medical capacity and capability to the tip of the spear in our nation's response in combating COVID. Our medical Airmen from nearly every specialty and position have been working tirelessly alongside our sister services and civilian partners to conquer this disease. We have deployed to the hardest hit areas of our country to support overrun civilian hospitals. In the midst of these challenges, our Airmen have continued to innovate and respond to my call for disruptive innovation. One example is the Negatively Pressurized Conex. During the 2014 Ebola epidemic, it became clear the Department of Defense needed a way to safely transport multiple patients within the same airframe who were suffering from a highly infectious disease. Four months from when the need was identified, the transport isolation system was introduced and ready for patient movement. It is easily transported on existing cargo aircraft, including the C-130 and the C-17, and provides a contained area for medics to care for these patients. While we trained to execute this system, it never saw an operational mission until the COVID-19 pandemic. The first operational mission for this isolation system took place on April 10, 2020, when three COVID-19 positive patients were transported from Afghanistan to Ramstein Air Base, Germany.

While the mission was a success, the rapid rise of COVID-19 case numbers required us to move larger numbers of patients at one time. This was a challenge, but our Airmen partnered with teams across the Air Force, Department of Defense, and civilian industry, under the direction of the Program Executive Office for Agile Combat Support, to develop and procure an innovative solution. In less than 100 days, a new isolation system, the Negatively Pressurized Conex, was launched. This innovation rapidly went from an idea to a solution, and on July 1, 2020, Airmen successfully transported 12 COVID-19 patients on a C-17. As of April 21, 2021, we have completed 96 missions and moved 336 COVID-19 patients in this capability.

Our Air Force medics also provided the nation with innovative solutions to solve bed space and personnel shortages. When COVID-19 epicenters in New York, California, North Dakota, and Texas were experiencing bed space shortages, our team went to work developing solutions and designed four COVID Theater Hospitals, consisting of more than 200 beds, to provide the support the communities were desperately seeking. As cases surged, it soon became apparent that these solutions would not accomplish the immediate needs of our civilian partners, so we quickly tailored a better solution. We broke our theater hospitals into smaller critical care strike teams and embedded them directly into civilian facilities to augment their capabilities. Nearly 800 Air Force medics were deployed into civilian facilities to work alongside their civilian counterparts. Most recently, we deployed an additional 1,000 Air Force medics to 11 vaccination sites in 10 states to administer COVID-19 vaccines. As of April 24, 2021, we have successfully administered approximately one million vaccines.

DELIVERING CARE TO OUR WARFIGHTERS

While the nation's attention shifted to combating COVID-19, the Air Force Medical

Service never took the eye off of the ball in supporting the operational demands of the Air and Space Force missions. Our medics hold the sacred responsibility for treating service members so they can complete the mission and return home safely. We have continued to bolster our existing capabilities.

Currently, we are halfway through a five-year rollout of a new initiative to embed base Operational Support Teams at all Department of the Air Force installations. The Operational Support Teams consist of a clinical psychologist, social worker, physical therapist, exercise physiologist, and a team leader who are all focused on improving operational performance of our Airmen. The team will provide direct unit-level medical engagement outside of Air Force military treatment facilities. This is accomplished by enhancing both physical and psychological resiliency, as well as employing military occupational injury prevention techniques. These teams will temporarily embed into high-risk squadrons and begin to build and foster trusting relationships, conduct unit-focused needs assessments, provide interventions, and conduct consultations. The overall goal of this initiative is to address unit-specific health concerns before they have a chance to negatively impact Airmen, Guardians, or the mission.

KEEPING MEDICAL AIRMEN READY TO DELIVER CARE

The readiness of my medics is my number one priority. The primary readiness platform for medical skills are our military treatment facilities. However, some of our treatment facilities do not have the patient volume, diversity, and acuity Air Force medics require to have a current skill set. To address this gap, I have developed several partnerships and training agreements with civilian organizations. In the past year, we continued to grow these opportunities with our most recent partnership—the University of Nebraska Medical Center.

In 2019, we started our newest C-STARS-Omaha program with a primary focus on disease containment. This site focuses on the care of highly infectious disease patients. Our Air Force medics, working alongside their civilian counterparts, were able to treat some of the first COVID-19 patients utilizing the university's biocontainment unit. On March 1st of this year, we launched the inaugural course on principles of biocontainment care, covering topics on recognition, diagnosis and management of highly- infectious disease, infection prevention and control principles, and safe donning and doffing personal protective equipment. This course will pay huge dividends for future pandemic events.

In addition to establishing civilian partnerships to maintain currency, we are also developing an internal training program called Medic-X. This program is designed to expand medical support skills in mass casualty scenarios where patient load overwhelms medical capabilities. This approach fundamentally changes what defines an "Air Force Medic," extending response capabilities to all Air Force Medical Service skillsets and ranks, including non-clinical careers such as, pharmacists, lab officers, medical administrators, and medical logisticians. We have identified 58 specific skills aimed at equipping non-clinical Airmen with the ability to respond in the event of a mass-casualty event. A beta test of non-clinical personnel was conducted in May 2020 at 10 different locations with a 96.5% success rate of comprehension, retention and execution of these skills. We plan on rolling out the Medic-X program in phases with the goal of full integration into all of our bases by 2025.

COMMITMENT TO MILITARY HEALTH SYSTEM TRANSITION AND TRANSFORMATION

Despite challenges posed by implementing the changes outlined in section 702 of the 2017 National Defense Authorization Act and COVID-19, we remain dedicated to the smooth

transition of the delivery of the health benefit, and associated functions and personnel to the Defense Health Agency, so I can focus on my responsibility of delivering medically-ready Airmen and Guardians and ready medical Airmen. The Air Force Medical Service has been engaged with the Defense Health Agency to help them formalize processes, mitigate risks, and address challenges. We have provided a detailed framework that identified all functions and personnel required to stand up DHA's functional capabilities. We also worked with DHA to identify ways to standardize these services across all military treatment facilities. Despite a temporary pause in transition activities due to COVID-19, the Air Force Medical Service continues to provide the necessary transition support, providing requested resources and manpower needed to maintain specific functional capabilities at military treatment facilities. This direct support is expected to end on October 1, 2021.

As our Air Force Military Treatment Facilities continue to transition to the authority, direction, and control of the Defense Health Agency, we also implemented an Air Force Medical Reform Model to align with the Air Force's Strategic Plan to enhance readiness, increase lethality, and utilize cost-effective modernization. Resource-neutral changes in structure were applied to focus and improve the deployability of the forces. Under this new model, we reconfigured and launched two new squadrons with distinct missions. The first squadron, the Operational Medical Readiness Squadron, focuses on the health of Airmen and Guardians, and the second squadron, the Healthcare Operations Squadron, focuses on delivering care to all other beneficiaries. Analysis to date, has shown a decrease in the duration of Mobility Restriction by 6.6 days, an increase in Individual Medical Readiness by 1.1% and a decrease in Non-Deployable, All Reasons status by 2.3%.

NEW FRONTIERS AND NEW DOMAINS

Our readiness posture has equipped us to swiftly and effectively respond to COVID-19 while maintaining the demands of our mission. We now need to be ready for a more dynamic and demanding battlefield, forcing us to push the boundaries of our capabilities even further. Our future ground medical forces and equipment must be more agile, lighter, leaner, and more autonomous when considering logistical support may be limited. Wherever our Airmen and Guardians go, Air Force medics must follow.

As mentioned earlier, the U.S. Space Force is now a year old. Space Force medical support focuses on addressing the occupational challenges that emerge while operating unmanned satellites. As the demands of the Space Force increase, so will the necessary medical support to keep those members fit for duty.

The Arctic region's increasingly strategic importance, along with the Department of Defense's significant regional investment, requires a deliberate and forward-thinking approach to ensuring the U.S. can compete and protect the nation's interests in the region. This means leading the development and establishment of the Air Force Medical Service's capability to provide medical care in this environment. In support of the Department of the Air Force Strategy, on my direction, the Air Combat Command Surgeon, in collaboration with the Air Force Medical Readiness Agency, conducted a Capabilities-Based Assessment focused on identifying capability gaps and requirements necessary to operate and sustain medical operations in extreme cold environments, called Below Zero Medicine. We convened two Below Zero Medicine Summits, made up of diverse groups of subject matter experts, to support the establishment of a Medical Pilot Unit and a Cold Weather Region Center of

Excellence (Medical) at Joint Base Elmendorf-Richardson. This initiative is focused on identifying and implementing innovative ways to bring the hospital to the patient in any environment.

The ongoing COVID-19 pandemic has consumed much of the nation's attention, bringing with it unprecedented and unpredictable challenges. It forced our medics to adapt at breakneck speeds and face an unknown enemy, and they did just that. They worked to keep themselves safe, to protect the mission and continue to save lives. While many may see a group of military medics working against insurmountable odds, I see military medics putting their training into action. I see the deployment of agile, resilient and capable medics equipped with what they need to face the unknown. This is what we train for—we remain ready so we can fight tonight. This mentality must remain in focus as we evolve to face the next major threat.

I am honored to serve as the Surgeon General for both the Air Force and Space Force and to work alongside the talented leadership in both Services, our Army and Navy partners, and the DHA as we continue to battle COVID -19 and transform the Military Health System. Most importantly, I am honored to work for our medics who are at the frontlines whenever and wherever they are needed. Thank you to the Subcommittee for your continued support of our remarkable Air Force medics and the health of our Airmen, Guardians, Soldiers, Sailors and Marines.

COVID-19 AND LESSONS LEARNED

Ms. McCOLLUM. Well, thank you. I thank you all for your testimony, and we wish you the best in your retirement, but we are going to take advantage of your expertise for as long as we have you, especially today.

I am going to recognize myself for a few minutes here, but I am going to try to set an example of directing questions to specific witnesses, and maybe not hear from every witness on everything. Sometimes we will need to.

And on the Webex chat, you are going to find members, so you know your place in line.

Let's start with the first question that I have here, and I want to go to COVID-19, because in all your testimony, there was discussion about lessons learned. I am going to set the scene here for a few minutes.

As of May 19th, there have been 193,736 accumulative, across-the-military, cases of COVID, 28 deaths, and right now, we have active cases of 5,271. So, more than 1 million military members have either been fully or partially vaccinated—congratulations on that—and forces deployed in support of community vaccination centers was 4,749.

And then, we all know that Congress has provided, you know, a lot of dollars to the Defense Health Program.

So, I am going to ask a question for each one of you, and I want you to be very brief in it. And I am going to use the example of measures being taken to reduce the risk of COVID.

Admiral Gillingham, you talked about how you worked on confined face spaces, ships, and submarines, and worked to reduce the spread of COVID. Could each of you briefly tell me your one big takeaway lesson learned on COVID—and if you could just do that in, like, 30 seconds—your big takeaway. I know you have a lot, but just your big takeaway. And we will start with the Admiral, and each of you please then just follow in order.

Admiral GILLINGHAM. Thank you, Chairwoman McCollum. I think the biggest takeaway for me is the value of our public health, infectious disease, and preventive medicine experts. They labor often in the shadows while we think about and focus on trauma and casualty care. But they have been the heroes, and so they, along with our researchers and our public health experts, you know, maintaining them, maintaining a strong research program, I think, is going to be critical going forward, as well as maintaining our network of overseas laboratories and environmental preventive medicine units that are out there on the forefront on the vanguard of detecting emerging disease. Thank you.

Ms. McCOLLUM. Thank you. Somebody else? If you share the same thing, give us your next lesson learned. Maybe we will start with Mr. Place. Excuse me.

General PLACE. Yes, ma'am. For me, it is leveraging telehealth. We have used it some before the pandemic, but at peak, spring/summer, almost 50 percent of our primary care appointments were utilizing telehealth. So enabling to continue the conversations with our patients to maintain, or even new challenges or new disease processes, but to be able to work with them using technology. Over.

Ms. MCCOLLUM. Dr. Adirim.

Dr. ADIRIM. Thanks. I wasn't here during most of the pandemic, so looking back historically, I think one of the things that impressed me was how quickly the Department pivoted to a force health protection posture. There were evidence-based policies and procedures that were implemented that I think really reduced the number of cases, deaths, and hospitalizations.

The numbers that you cited are for all of DOD, so it is not just for the uniformed force. If you look at just the uniform force, I think we are well below the civilian sector, and I give credit to the force health protection procedures and the execution by the Services, as well as I just have to add in a second one, the pivot to prioritizing testing and really using it in a strategic manner to augment our force health protection.

Ms. MCCOLLUM. Thank you. Thank you.

Lieutenant General Dingle.

General DINGLE. Ma'am, I would say mission command flexibility, and what I mean by that is, it was a tremendous lesson and honor to watch the Services respond to the Nation, the ability to cross-level the uniformed forces when soldiers, sailors, and airmen deployed out of the MTFs and then they had to be back field, the ability to organize forces as an urban augmentation medical task force, whether in New York, Seattle, or across the country, vaccination task force teams deploying, you know, in support of the States.

And then, finally, it would also be the integration of that mission command flexibility by the senior commanders in the field, where now the medical personnel were at the table, commanders were listening, and then they were executing to protect the forces at their post camps and stations.

Ms. MCCOLLUM. Thank you.

Lieutenant General Hogg, quickly please.

General HOGG. Yes, ma'am. Public health, one, and second, innovation to deliver care and to get the mission done. Our medics took it upon themselves to figure out how to deliver care, either face-to-face or virtually, that protected not only the patient but themselves, and also to give guidance to mission commanders in order to keep the mission going.

Ms. MCCOLLUM. Okay, thank you. Then I have two follow-up questions, and I am going to direct them to, first, to Mr. Place, and then Ms. Adirim.

So first, Mr. Place, what have you learned about staffing in military facilities in instances that military healthcare personnel have been called upon by civilian agencies for assistance? In other words, when we drew out to help with testing, when we draw out to help with vaccines and other things like that, or to move forward or move you around, that creates a hole some other place. So lessons learned from that.

And if there is more than you can say in, you know, 60 seconds, you know, we look forward to a fuller explanation provided to the staff, and I will share it with the members.

General PLACE. Yes, ma'am. I think it is what General Dingle said, and that is mission command, prioritizing the work that must be done today with the most urgent requirements for healthcare

delivery. So it is the leadership locally reorganizing the staff that they have.

Sometimes that means taking inpatient—or outpatient staff to an inpatient mission. Sometimes it means taking administrative staff and putting them at vaccination sites. But it is all about knowing who you have, what their capabilities are, and utilizing your talent in the most—or the highest priority areas on the day that you need them. Mission command, ma'am, that is the way—

Ms. MCCOLLUM. Did you feel you had limited risk at the MTFs for the servicemembers and their beneficiaries as you were doing that?

General PLACE. So, with the ability to partner with the network, with the private sector care, I don't recall a single area where we had significant long-term concerns about the ability to provide healthcare based on mission command on the installation and integration with the downtown medical care. Over.

Ms. MCCOLLUM. Okay, thank you.

Dr. Adirim, one thing that I know we continue, as members, to be concerned about, is addressing industrial base issues, especially PPE items that were in short supply because they are manufactured elsewhere. What is the Department proposing to happen for that?

Dr. ADIRIM. Well, I think we were in a very good position. We had a fairly large stockpile which, in fact, we shared with the rest of the Nation. I believe it was 20 million N95 masks that we shared with the United States.

I think it is a matter of strengthening our supply chains, and I know that that is something that our USD for Acquisition and Sustainment is working with across the Federal interagency to do that.

Ms. MCCOLLUM. Thank you. And I thank the members. I went over 5 minutes doing that, but I wanted to make sure we got everything in on COVID, and we all had an opportunity to hear that.

With that, I turn it over to the gentleman from California, Mr. Calvert.

MEDICAL READINESS

Mr. CALVERT. Thank you, Madam Chair. I have a question for all the Surgeons General, and that is related to medical readiness. Obviously, we got significantly diverted because of this pandemic, and rightfully so. We had a logistical issue. We had research issues.

But let's go back to our primary focus, and that is our medical readiness if unfortunate war happens.

I think that the military does a good job of basic healthcare, obviously research. We have talked about your interaction with the private sector. But what I worry about is if we have a significant interaction with a near-peer adversary, how prepared are we to provide immediate medical care for the men and women who may be caught up in that conflict? And that is for all the Surgeons General.

General HOGG. Yes, sir, I will go ahead and start. We are prepared to provide the care anytime, anywhere. We have not skimped on maintaining the readiness of our airmen and medics. We are looking at what the near-peer fight will look like and tailoring our

services to that. So—as a matter of fact, doing mobile ground surgical teams and increasing my critical care air transport teams and the capabilities like that. We definitely are ready for the next fight. Over.

Admiral GILLINGHAM. Sir, I would say, for the Navy, we recognize, and have been doing a tremendous amount of work on being able to operate in a distributed maritime environment, as well as—and to provide medical care in expeditionary advance basing operations to support the Marine Corps.

We have done several exercises, tabletop exercises, and work to identify the capabilities required to do that, and I am excited to say that we are looking forward to the delivery of EPF flight 2, hull number 14, which will allow us to provide ambulance ship-like connectivity close to the weapons engagement zone. So we are definitely moving out in those concepts.

Mr. CALVERT. Admiral, you especially, what kind of equipment do you have? Obviously, the Pacific is a big area to move healthcare rapidly to an area that you may not know where you are going to be sending in the next, say, week, if something happens.

Admiral GILLINGHAM. Yes, sir, and that is the fundamental concept behind distributed maritime operations. Instead of large strike groups, for example, having more surface action groups distributed across that environment, that have small surgical teams that are capable of doing initial damage control surgery, and, as well, that role 2 capability I just described to board the EPF flight 2, will allow us to respond to a ship in distress, for example, be able to do initial damage control surgery aboard, and be able to evacuate those casualties using Osprey aircraft.

Mr. CALVERT. Okay.

General DINGLE. And then, sir, I will close with a comment. General McConville tells us that we cannot telework to combat, and so, we turned on the training machine last summer in the Army in the new COVID environment. So we are executing the emergency deployment readiness exercises.

We have large exercises like Golden Medic, Defender 21, in which medical forces are fully inculcated in there, and then, also, we have the individual exercises that we are leveraging, things like the Expert Field Medical Badge, individual critical task lists, ensuring the readiness of the individual soldier for when they are called upon to deploy, fight, and win, they have the acuity, and they are able to do that.

And then, finally, the partnership with the DHA, leveraging the health readiness platforms, our medical treatment facilities, to get after the acuity that they need to deploy, so when we do deploy them in support of vaccine teams or urban augmentation teams, that we are also capitalizing those individual skills that reinforce those that are required when they are deployed to fight and win.

Mr. CALVERT. Okay. Thank you. Obviously, something none of us want to see happen, but we have to be prepared if something does happen, and I would like to get into that in more depth to make sure sometime, Chair, that we can get into that to make sure that we are prepared, in fact, if conflict does occur. I yield back.

Ms. MCCOLLUM. Thank you. I agree, Mr. Calvert, and you and I asked some really broad questions. So, Members, what is in the chat room is the same order I have on the paper in front of me, so we are in a good spot. Thank you so much for the team for getting that in there. We will have Mr. Ryan, followed by Mr. Rogers. Mr. Ryan.

FOOD DELIVERY SYSTEM

Mr. RYAN. Thank you, Madam Chair, this question I have is for General Dingle and General Hogg. I am sure you will agree that the health and medical readiness of our servicemembers and their families is critical to the optimal performance on the battlefield.

And here in Congress, we hear a lot from the Services about the human performance optimization, and the Services are doing some pretty amazing things when it comes to maximizing our human capability, and I think the medical and the health community is doing a good job in advising the Services on the nutritious ingredients we should be using in food that is prepared and served, or sold on our bases.

And where the Services are falling woefully short is in the area using these standards to make high-quality, nutritious food available to our servicemembers and their families and incentivizing them to actually eat the food that is made available.

And the high cost of tolerating obesity in our servicemembers, their families, and veterans, falls squarely on the backs of the taxpayer. Let me be clear, I don't believe the problem is a lack of understanding of good nutrition.

The problem is an antiquated food delivery system that fails to make nutritious food available in adequate quantities and fails to make the right choice, the easy choice for the customer.

And if you look at a graph of the—you know, the supply chain, of how to get food ordered, it is an incredibly cumbersome, complex series of bureaucracies that you need to learn how to navigate.

And so, this committee and the American taxpayer need your help and support in the transformation of the entire installation food delivery system. While dining facilities generally provide nutritious offerings, many more meals are eaten each day at the myriad of on-base, fast-food joints, snack bars, and base restaurants.

I know that you do not control the system, but you do have influence, and I just would like to know if you will support this initiative, and if so, I would very much like to hear your ideas on how you can help?

General HOGG. Yes, thank you for the question. So we—I definitely do support the initiative, and in the Air Force, we use the DOD tool called MNEAT. It is the Military Nutrition Environmental Assessment Tool.

At each one of our installations, we have either public health or a dietician who goes around the installation and does an evaluation of the nutritional offerings on base, and then gives that report to the installation commander. And then they are part of a committee, who then looks to see how they can improve it.

They identify good food opportunities. We identify where we can do better as far as vending machines and putting healthier options in vending machines, and we talk to all the other installations on

base. I definitely support any initiative that we could do to make that better.

General DINGLE. And, sir, I would add, I absolutely also support 100, you know, and 90 percent. We are nested tidy with our Army Materiel Command and Installation Management Command in getting after programs like the Holistic Health and Fitness, the Performance Triad, our Army Wellness Centers, Go Green Initiative, that are in our dining facilities, our Warrior Restaurants, our individual initial-entry training, soldier-fielding programs, all of which get after what you talk about.

In addition to that, myself and my command sergeant major, we engage every commander on a monthly basis at our pre-commanders course to get it to start at the top, to educate them in conjunction with those things that are going to produce a healthy warrior.

Mr. RYAN. Well, I would really appreciate your help. You know, I know you are retiring, but I, you know, would love to, you know, get your help on this. This has been something we have been working on, and we look at the amount of money we are spending on healthcare, the number of our troops that have diabetes.

And it doesn't just affect the Department of Defense. You know, last Congress, I sat on the Veterans Subcommittee, and when we look at veterans' healthcare, a lot of these habits and problems started when they were Active Duty, but it is still costing the taxpayer money.

I mean, we just got to be smart here in how we are running our operation, because I think we can—you know, obviously we are having very difficult decisions that we have to make across the budget with multiple threats around the country. We shouldn't be blowing money on—you know, because we can't get diabetes under control within our rank and file. So anyway, I appreciate your service. Thank you so much. Yield back.

Ms. MCCOLLUM. Thank you.

Mr. RYAN. I yield back nothing, Chairwoman. I have nothing to yield back. Thank you.

Ms. MCCOLLUM. Well, and I know you would have had an extra second, you would have talked about the statistic that I gave was 26 population of the 17- to 24-year-olds not being in good health to serve in the military due to weight and obesity. So, we need to work on it in the school level as well.

Mr. Rogers, I understand you got a little bit of an extra briefing on medical records. You have been the leader on that, without Mrs. Lowey here. I wanted to make sure you got as much information ahead of time on it, so we look forward to your questions now, sir.

MENTAL HEALTHCARE

Mr. ROGERS. Well, I thank you, Madam Chair. I will defer the electronic records discussion to another time when we can focus on it in its entirety and solely. Today, I would like to ask briefly about mental health care in the Services.

Dr. Adirim, or any of you, go into detail in how you have seen the COVID-19 pandemic affect our servicemembers' mental health. Mental health.

Dr. ADIRIM. Sure. And we really appreciate the question, because this is something that is very important to us, and is critical that we provide as good access to mental health services as we can, not only for our uniformed servicemembers, but also for their families.

And the pandemic, as you are aware, has had an impact on many of us just in general, and, so, likely, it has had an impact on our beneficiaries.

There has been a number of things that we have done in order to ensure access. As General Place mentioned in his opening remarks, we, along with the rest of the country, really opened up virtual health to not only protect people during the pandemic, but also to ensure that they had the services that they need.

And the one area that has been a success and that we are continuing to study and plan to keep is virtual behavioral health. So what we have found is that there is an increasing need, and we are committed to meeting that need, whether it is direct care, purchase care, virtual health, any way that we can.

Mr. ROGERS. You know, we have got an epidemic going on inside the pandemic. The COVID-19 pandemic, of course, has changed a lot of everything, but the epidemic that is going on all the while, and really little noticed, is the overdose deaths from opioid abuse. At least there was a 27 percent jump in opioid overdoses nationwide in 2019, and so what do you think?

Ms. MCCOLLUM. Mr. Rogers is resetting. We will give him an extra—okay. He still has time remaining. If he doesn't come on in the next 10 seconds, we will move to Mr. Cuellar. So, Mr. Rogers' staff is on. Please let him know that we have reserved 2 minutes and 17 seconds for him.

Mr. Cuellar.

HUMAN PERFORMANCE OPTIMIZATION

Mr. CUELLAR. Thank you, Madam Chair, and ranking member, and to all the witnesses. Thank you so much. I want to follow up on where Mr. Ryan was working on, except I want to cover more than just nutrition. You know, one of the things that I think we need to look at, and I am proposing and waiting for the committee to decide on this, but I also want to focus on developing the utilization of human performance optimization across and throughout the military services.

But it is not only the nutrition. I think we need to optimize physical fitness, especially if you look at a recent 2020 study across the military, that lower extremity overuse injuries and musculoskeletal injuries are the leading cause of being medically not ready for duty.

So, it is physical fitness, nutrition, sleep, and psychological wellness which are—those are the elements of the human performance optimization.

One of the things I will be asking, if the committee goes along with my request, is for the Department to employ a comprehensive, evidence-based program to educate servicemembers on all avenues to optimize human performance on, and look at specific measures to sustain the mission's success; and also ask you all to enhance any partnerships with civilian institutes and work with them to enhance this program.

I know, for example, when some of us were at the West Point Academy, they are doing some work there also. And I know—I did some research on my own, and there is really so much literature out there that the military is doing. And so, one of the things that we will ask is that you all do a consolidated inventory of all HPO research efforts within the Department of Defense and any other agency, so we can put it together in a one-stop center.

So, I would like to just get your thoughts on what you all are doing, because the research I have done is, there are so many efforts out there, but I don't know if it is consolidated on the areas of nutrition, physical fitness, sleep, and psychological wellness within the HPOs. I would like to get your thoughts on that.

General HOGG. Yes, sir. General Hogg, I will go first. In the Air Force, we see ourselves as the maintainers of the human weapon system, and, so, human performance is incredibly important. And we need to go where the airmen are at, first and foremost, and that is to their work sites.

We have instituted integrating operational support teams that go out into the units to evaluate what they are doing, how they are executing their mission, and what we can do to prevent injury.

We all know that musculoskeletal injury is the number one cause for servicemembers to not be ready to do the mission. What can we do ahead of time to help them prevent those musculoskeletal injuries.

I also embed medics into units. There are some units that should have embedded medics all the time. Our Special Forces, our very specialized units, they are physically challenged all the time in doing their mission. So, how do I make sure that if they get injured, that they have the care immediately onsite, to prevent any long-term outcomes.

Embedding physical therapists, athletic trainers, mental health folks right into the units so members become comfortable seeing, talking to, and addressing their issues. That is one thing that we are doing in the Air Force to help that.

Mr. CUELLAR. Can I ask you this question—sorry to interrupt. Is there a comprehensive consolidated inventory for what the Air Force and the other Armed Services are doing, number one, and do you all work with civilian—for example, you have got some of the elite athletes out there, for example—well, without going to any particular one, but there are elite athletes, you know, where those organizations do a lot of work.

Is there a consolidated inventory of what work you all do together, or does every branch do it separately? And I am sorry, I got 20 seconds, then my time is up. I apologize for that. Love to follow up with you all on that. If you don't mind, to all three witnesses, if you can follow up with the committee on what each of you all are doing, and if there is any consolidated work on this.

Thank you so much, Madam Chair. My time is up.

Ms. MCCOLLUM. Thank you. We have got a lot of universities working on that.

Mr. Womack, and then Mr. Kilmer. Mr. Womack, please.

COVID'S IMPACT ON OTHER HEALTHCARE

Mr. WOMACK. Thank you, Madam Chair. Hey, by the way, any savings we get out of any cuts that happen, I recommend some of it go to Pulaski County, Kentucky, for some rural broadband, so we can get Hal Rogers back on here. Just a thought. Thanks to—

Ms. MCCOLLUM. It is the infrastructure plan.

Mr. WOMACK. There you go. Hey, thanks to the panel today. Couple of real quick questions, then I have got another more formal question. I know we have talked a lot about COVID, and we have kind of danced around the subject, but one of my concerns about COVID, as it was in the civilian community, in the heat of the moment, we delayed a lot of elective surgery, a lot of non-urgent, care-type surgeries and this sort of thing.

From the military perspective, where are we? And this is specifically more to the—maybe to the Army, I don't know, all the services, probably, can respond to it—but where are we in relation to, from a readiness perspective, anything that happened or was delayed as a result of COVID, the non-urgent sort of things that do go to readiness and medical fitness in the event that we had to fight tonight? So real quickly, if you could cover that particular subject on COVID.

General DINGLE. I will open real quick, briefly, and that is where the synergy of the Services and Defense Health Agency, as we turn the surgeries and all the readiness requirements back on, we are prioritizing getting our soldiers, in my case, the things that they need to be medically ready.

And, so, it has been a tremendous, again, partnership in getting after our pivot to readiness.

Mr. WOMACK. All right.

General HOGG. Same in the Air Force. We prioritized our military members' healthcare in the times when it was limited, and we are in now back, full up round.

Mr. WOMACK. I understand you are prioritizing, but my question is, do we have a backlog? How does it affect readiness?

General HOGG. So, I don't have a backlog, because I took care of the care for our military members when needed.

Mr. WOMACK. Okay. What about Army? General Dingle.

General DINGLE. Absolutely, same thing, sir. They were prioritized, and we were taking care of those issues.

Mr. WOMACK. Okay. So, we don't have a backlog. What about the Navy, are we good there?

Admiral GILLINGHAM. We are on track, sir, yes.

Mr. WOMACK. Real quickly about the Guard and Reserve. They have been a very important partner of ours since 9/11. We have deployed them many, many times. I have always had concerns about their medical fitness and medical readiness under COVID. Has it gotten worse? How do we assess? And this is primarily for the Army, and, perhaps, the Air Force.

General DINGLE. So from the Army perspective, it has not gotten worse. The standards of fitness we have maintained even in a COVID environment. We implemented four self-protection measures for all of us to continue or maintain a level of medical readiness and fitness in itself.

Mr. WOMACK. Air Force?

General HOGG. Same for the Air Force, sir. It has not gotten worse. And when they are on orders and available to provide—to receive care, we provide it for them, whatever is needed.

MEDICAL GRANT RESEARCH PROGRAMS

Mr. WOMACK. Okay. Real quickly, University of Arkansas for Medical Sciences incredible research department has utilized DOD grants to study and advance things like bone regeneration and patients suffering catastrophic injuries. And this important DOD-funded research such as this takes place in universities and facilities all across our country.

So, the question for Dr. Adirim is, or Director Place is, given the potential shortfall of a billion-eight, do you anticipate a reduction in the availability of this important medical research grant—these grant programs?

Dr. ADIRIM. I will start, and then I will have General Place perhaps give a few more specifics, but we don't intend to reduce our research. It is so important to keeping us ready and keeping our forces ready for across the spectrum, whether it is prevention, treatment, and rehabilitation just like the type of research that you mentioned.

I will turn it over to General Place.

General PLACE. Sir, quickly, those funds are fenced, and any time that we would even consider moving those research and development dollars, we would come back to you first. No intention to move them. Over.

Mr. WOMACK. Good. Very good. All right. I have got about a half a minute yet. I am going to yield back my time, and maybe we will have a round two, and if I am still around, we will come back and talk some more. Thank you so much for your testimony.

Ms. MCCOLLUM. I just thought, Mr. Womack, you had a great question at the beginning. So, the question, if you could get back to the committee on, did you keep doing surgeries? The hospitals in most of our States stopped doing elective surgeries. So, is the reason why you don't have a backlog is that you were going ahead with—especially for readiness with servicemen and -women, going ahead and doing anything that you needed to do? If you could get back—I thought Mr. Womack had a great question and I would like to get that as some followup.

Mr. Kilmer, and then Mr. Diaz-Balart, who is joining us by phone, so he is incognito. We will start with Mr. Kilmer.

MILITARY HEALTH SYSTEM REFORM

Mr. KILMER. Thank you, Madam Chair.

Lieutenant General Place, I would like to ask you briefly about concerns I have been hearing from the folks I represent about the military health system reform. As you know, the DOD's been implementing this plan for restructuring and realigning the medical treatment facilities, but, unfortunately, that realignment has already impacted access to care for our servicemembers, including our retirees, who have dedicated their lives to serving our country.

My district is home to Naval Hospital Bremerton, and the realignment has really impacted the hospital, reducing about 100 bil-

lets from their manning document over the past year. So when hospital staff leave either because they retire or move to another installation, their positions are no longer being filled.

I know the realignment is not only affecting the military hospital in my region, but is impacting many other districts across the country as well. I have heard the DOD recommendation is to realign over 18,000 billets, reducing those billets for military treatment facilities and moving them to operational forces. Listen, I am all for readiness, but we can't sacrifice the health of our servicemembers and veterans.

So, unfortunately, we have seen some of these changes come at the expense of improving healthcare outcomes for the folks that I represent, including veterans and Active Duty military and their families, seen them lose access to quality care. I am concerned about the ability of local civilian providers to adequately cover the gaps in care. For example, a veteran living in Kitsap County in my district could be forced at times to drive over 2 hours to receive treatment in Seattle.

If you serve our country, the Federal Government should have your back, and these manning reductions mean we are failing to live up to that promise. Let me start with this question: What is the current status of the MHS reform and what steps do you recommend are taken prior to the realignment's full implementation to ensure that servicemembers and their families have uninterrupted access to quality providers?

General PLACE. Yes, sir. Thank you for the question. So, the way that you have asked the question is exactly consistent with the way that the Defense Health Agency is putting forward our plan. Our plan for that 703 reduction that you referenced that Honorable McCaffrey submitted to the Congress last year about February, pandemic, of course, came in in the meantime. We have paused all transition plans and have been in the process of revalidating every single location. That revalidation has worked, it is now working its way through formal coordination within the Department. My expectation is that report will come back to you some time this summer.

In the meantime, my responsibility, my requirement, is to make sure that care can be delivered, whether that care is on site, on the installation, in our facilities, or in the network. And if we can't manage it in the network, then not reduce it within what is happening on the installation. Now, in order to accomplish that, as the services are moving their uniformed personnel, that is where the dialogue happens between each of the three service surgeons general who are still in the Pentagon and me to make sure that we are synchronized, that we are inseparable on how we are managing the manning document and our ability to provide care locally with either civilians hired in the installation or what we would send out to the network.

So, that is the very intricate dance that we do together. I hope that answered your question. Over.

CUTS TO SERVICES

Mr. KILMER. It does somewhat, but maybe, can you give us some insight into what level of analysis is done when we see the reduction of these billets and the cuts to these services? You know, what

consideration is made to the availability of care and the proximity of care within the community and what consideration is made to the impact that this will have on our servicemembers? Because, frankly, just in all candor, the sense from folks in our area is that there is not adequate sensitivity to those issues.

General PLACE. I am sorry that folks feel that way. Certainly, our intention is for all those considerations to be taken into account. One of the challenges, though, sir, that we have to work through is the super subspecialization of care in America. And in some locations of relatively rural America, as you mentioned, it is—I have been stationed at Fort Lewis in the past. It takes some time to get from Whidbey Island or from Bremerton to Seattle where super specialty care is delivered, but there is not enough requirement for it within the greater Bremerton area or the greater Whidbey Island area. How do we balance the servicemembers and family members who are stationed there using our exceptional family member programs, as well as delivering primary and specialty care in those locations? That is the balance that we have to work through.

And even today, one of the requirements are different than what might be the requirements a year from now or 5 years from now. So, that is how we have to work together. Over.

Mr. KILMER. Thanks, Madam Chair. I am out of time. I yield back.

Ms. MCCOLLUM. Thank you. If you have more questions, please submit them for the record. I would be interested in the followup.

Mr. Diaz-Balart, you are joining us as anonymous from phone. Welcome. And I will let you know when you are at 4 minutes.

Mr. Diaz-Balart, we are going to give you a minute to figure out how to unmute yourself and join us and go to Mr. Aguilar.

Mr. Aguilar.

USS ROOSEVELT COVID OUTBREAK STUDY

Mr. AGUILAR. Thank you, Madam Chair.

Admiral Gillingham, early in the pandemic, COVID-19 infected 1,200 sailors on the USS *Roosevelt*, which had nearly 4,800 personnel. In your written testimony, you note that this outbreak was studied in a final report on the outbreak was published in the New England Journal of Medicine. What was the Navy and the scientific community at large learn about COVID-19 from the initial outbreak?

Admiral GILLINGHAM. Thank you, sir, for that question. I think that one of the primary lessons learned—and it was one of the first works that demonstrated the asymptomatic transmission of the virus. About 50 percent of those that were infected aboard *Roosevelt* became so through asymptomatic transmissions. Other additional findings told us about the latency of the virus. That worked out to be about 10 days. Our scientists did viral cultures and were able to demonstrate that.

And so the key, though, was, is that we were able to take that information in real time and generalize it across the fleet and the Marine Corps to prevent further outbreaks. We did have one additional outbreak aboard USS *Kidd*, one of our destroyers operating in the SOUTHCOM AOR, but because of what we learned there,

the impact was much less and we are able to get *Kidd* back to sea much quicker. And, subsequently, we have had no—none of our ships miss operational commitments as a result.

It really was a tremendous collaboration between our scientists, public health experts, and the CDC to do that initial evaluation and quickly use that information in rapid cycle feedback to change the way we operate.

Mr. AGUILAR. Were there other outcomes in the journal and in the study that led to a change in operations?

Admiral GILLINGHAM. Well, the other—you mentioned the article published in *New England Journal*. A companion piece was also published actually on Veterans Day last year from our study of—a prospective study of marine recruits at Parris Island, and that also testified to or really demonstrated how pernicious the virus is. Even in that tightly controlled environment, there were still six separate sources of virus entering the cohorts there at Parris Island. Also did, though, emphasize the, you know, the relative asymptomatic and less severe nature among that young adult population. And those lessons, I think, were valuable to share to other congregate settings such as universities and schools.

ACCESS TO MENTAL HEALTHCARE DURING COVID

Mr. AGUILAR. I appreciate the answer.

This question is for the surgeons general. The pandemic has placed significant burdens on the stress of servicemembers and their families; however, throughout the pandemic, the conversation around mental health has shifted away from the taboo topic to one that is integrated in our healthcare conversations.

What are you doing within your authorities to ensure ready access to mental health services?

Admiral GILLINGHAM. I will go ahead and start, sir. We have found tremendous value in imbedding mental health personnel with both the fleet and in the field with the Marine Corps. Thirty-five percent of our professional mental health specialists are outside the medical treatment facility. I think it also emphasized that we also know that a big part of mental wellness is resilience, and so we have put a lot of effort on trying to stay to the left of actual specific mental illness by fostering resiliency and life skills.

About 40 percent of our sailors and marines that do come to mental health care do so because of an adjustment disorder. And we have piloted programs at our recruit training command where we now provide stress reduction—lessons in stress reduction such as meditation, and we are extending that to the fleet with our enhanced operational stress control efforts.

General HOGG. Yes. In the Air Force, it is really about focusing in on connecting this, because that is really where it starts, I think, in how do we get the entire community around these individuals to help them work through the issues and the challenges that we are having. Ensuring leadership engagement, equipping and empowering families. You know, oftentimes they are going to be the first ones to notice a change, and so what kind of avenues do they have in order to get help for themselves or their members.

And then also time-based prevention. So, you know, making sure that we are taking away some of those means that somebody would

use to hurt themselves—guns, drugs. Because we all know that, you know, if somebody is going to consider ending their life, they will do it in the first 5 minutes. And so, taking away those means where they don't have that around them might decrease that. And so, it is really about creating a community and a connectedness to the whole system.

Mr. AGUILAR. Thank you so much. I didn't get to all of you, but my time is up.

I yield back, Madam Chair.

Ms. MCCOLLUM. Thank you. We are going to have time for another round of questions, Mr. Aguilar.

Mr. Diaz-Balart, can you join us? I thought that you had worked your magic to be unmuted. You are unmuted, but we are not hearing you. I am disappointed for you.

Ms. KAPTUR.

Ms. KAPTUR. Hello, Madam Chair. Can you hear me?

Ms. MCCOLLUM. Yes, I can.

DIAGNOSING BRAIN AND MENTAL CONDITIONS

Ms. KAPTUR. All right. Thank you very much. Thank you for organizing this hearing. And I want to thank all of our distinguished guests this morning. My interests—I want to thank them for their service to our country during this difficult time. You are distinguishing yourselves. When the 101st Airborne landed in Cleveland and were giving out vaccines, I thought, now I have seen the world change, and they have made such a huge difference.

My interest is in human performance and brain-related conditions, medical conditions, that onset due to stress, to injury, or to preconditions of that individual due to violent incidents prior to enlistment in the armed services. Conditions like biochemical imbalances where serotonin and dopamine aren't be released in the proper way, mood disorders, PTSD, bipolar, schizoaffective disorder, schizophrenia, paranoia, to name a few. Impulsive, I think they call it compulsive disorder.

Anyway, I would like to know from DOD's vast reservoir of knowledge how to gather the experts from your department and perhaps the Department of Energy, where we have our massive research labs with our imaging and super computing capacity, to take a look at a better diagnosis, what do we know about diagnosing these conditions? What are we doing for better pharmacological innovation? And how are we working with the major brain banks in the country, such as exist at The Stanley Foundation and in Boston, to put information up on super computers to look at what is going on in the brain? Who are the people within the Department who are working in this arena?

When the admiral of the 5th fleet took his life in Bahrain, it had a major impact on me because we just met him in Tampa about a year before that. And so this whole diagnostic area, research area is important.

And then secondly, the education role that the DOD can play by helping meet the major shortage we have of doctors that work in this field. It is about 100,000 short in our country right now, along with four times that many advanced practice nurses. What can we do to, and loan forgiveness, to attract individuals to this field after

they have graduated from medical school and can serve in the military, serve our personnel, but maybe even do some work in the civilian sector somehow related to that?

I am very, very interested in who, this is probably not the moment to go into all this, but who at DOD could we gather? I am still looking for thousands of DNA samples that were taken by the Ohio National Guard in relation to these conditions, and I don't know where they have been stored. But part of the study that was done with the Ohio Guard showed that part of the reason for the declining human performance in those voluntarily giving their DNA that had these conditions onset was that their brains had been injured prior to enlistment, where they had been a part of violent incidents before going into the military.

I am interested in the brain, human brain and human performance. I wonder if you could at least comment on that and see if there is a way we could have a roundtable. I am not the only member who is interested in brain condition and human performance, from what I have listened on the panel this morning.

Could anyone comment, please?

Dr. ADIRIM. I think I will start and then have my colleagues jump in. I think you bring up a very large topic, and brain health is a priority for the Department.

You have brought up about research. We do have significant investments in PTSD, mental health disorders, brain injuries, and the like. In fact, we have just started a new—it is not that new, but it has been a few years old, warfighter brain health where, for example, we are proposing to do neuropsychological assessments on all servicemembers that access and then periodically do reassessments.

That is just one example, but we do have significant investments in research. And as you have alluded to, we work with the Department of Veterans Affairs, as well as academia and multiple places. I think some of the ones you mentioned we are working with.

Second of all, with regard to education, we also have big input into educating our servicemembers.

And, lastly, you mentioned recruitment and the tools that we have to recruit those people who are behavioral health specialists. We do have tools that include things like bonuses, accession bonuses, retention bonuses that the military departments can use to attract and retain those specialists that are priorities.

Those are some of the top line answers to what you have asked. And then I will turn it over to anybody else who would like to contribute.

Ms. MCCOLLUM. Ms. Kaptur, you packed a lot into 5 minutes with more followup to come.

Ms. KAPTUR. Madam Chair, thank you for having this hearing. This is great. I congratulate you.

Ms. MCCOLLUM. So, Mr. Calvert, we are going to do a second round. Do you want to go first or you want to go at the end with me? Your choice.

Mr. CALVERT. Hold on. Can you hear me all right?

Ms. MCCOLLUM. I can hear you now.

Mr. CALVERT. Why don't we wait till the end. We will just finish it up.

Ms. McCOLLUM. Okay.
Mr. Ryan.

SPIRITUAL READINESS PROGRAMS

Mr. RYAN. Thank you, Madam Chair.

I just kind of want to follow up a little bit on what Mr. Aguilar was talking about and Henry Cuellar was talking about. If you could share with us—I have got a brief the other day, but I would love for the committee to hear about the spiritual readiness program.

Are any of you familiar with that pilot program that the chaplains are taking on?

General DINGLE. Yes, sir. This is General Dingle. The Chaplain Integration program is a program that the Department of the Army chaplain and myself came together to help synergize our efforts versus having them stovepiped.

In the past, we have never really synchronized the ability and the talent of our chaplains, who play a large role in the prevention of suicides with our medical professionals. We implemented what is called the CHIP, the Chaplain Integration program, in which we are synergizing, emphasizing, educating, and training, not just our providers to leverage each other and share information, but as well as getting that information/education out to the force in addition to our imbedded behavioral health assets.

Mr. RYAN. Okay. Great. I think this is a program, after getting briefed on it, Madam Chair, I would love for the committee to at least get a one pager on it where the chaplains are really integrating some of these practices around mindfulness and other practices really to help connect a lot of the rank-and-file members to each other and do it through the Chaplain Corps. I think it is a great opportunity for us to really play some offense with some of the mental health promotion and really giving the soldiers the tools they need to be able to kind of withstand and build some resiliency given all of the economic and other stressors that they have. I just wanted to make sure we brought that up in this hearing.

Anyway, I will yield back, Madam Chair. Thank you.

Ms. McCOLLUM. Thank you. And the Chaplain Corps is really, really important. I know that from Guard deployments to being with Active Duty in that, the work that they do is really important. They are sometimes the first call for help for resources, so I agree with you, we need to get some more information on that.

Mr. Cuellar and then Mr. Aguilar, then Ms. Kaptur, and then Mr. Calvert and I will close.

CONSOLIDATION OF RESEARCH

Mr. CUELLAR. Thank you, Madam Chair.

I want to follow up on what my colleague, Mr. Ryan, and I have been talking about is, on that HBO, I know you all are going to put that information together, but make sure, as the chairwoman said, that you all tell us what different higher education institutions you are working with, what the different parts of the departments are working on this, what the military academies are working on, so when you put all that together on all the areas that we talked about, that Mr. Ryan and myself had talked about, and

other members, just have something very comprehensive, and make sure we have a consolidated inventory, a one-stop center for all of this. Because it looks like, you know, every agency does—every armed service does something a little different. And I know what the Air Force does. You know, I have an idea what the Army does, but we got to make sure we learn the best practices from each other and start off, especially with our military academies where they start off with.

So, that should be it, just followup on that.

And, Madam Chair, I yield back the balance of my time. Thank you so much.

Ms. MCCOLLUM. Thank you. I think the staff has been taking notes and will figure out how to integrate, not only things in the President's budget as our committee priorities, but also how to follow through with future briefings.

Mr. Aguilar.

ACCESS TO MENTAL HEALTH SERVICES

Mr. AGUILAR. Thanks, Madam Chair.

And I will pick up where I left off, and I don't believe I heard from General Dingle. What are we doing within your authority to ensure ready access to mental health services?

General DINGLE. Yes, sir. And I was going to—yes, sir. I was going to add that, in addition to what was already said, we also just completed a behavioral health assessment deemed comprehensive in the Army, and there were two things that was previously mentioned by my colleagues that they brought up. One was the isolation and another was leadership. Those were two common themes that we found in our assessment as we looked at the impact of COVID on our soldiers around the world.

As we leveraged, again, their access to behavioral health with our imbedded behavioral health is what we call it in the Army, given them greater access. But in the COVID environment, another thing that General Place mentioned earlier that just skyrocket for us was the behavioral virtual health. The soldiers leveraging in an isolated environment, this COVID environment, our behavioral health virtual went up about 120 percent.

And then in addition to that, as I do my battle for circulation, the commanders in the field, you know, they have also been the difference makers. Leadership. So leadership involvement in their ranks and organizations want to help remove the stigma, but also to connect the force, so that when they see their battle, you know—we call it this is my squad, knowing who is next to you, knowing to the left and right so that you can engage and intervene has been tremendous. Over.

PHYSICIAN RECRUITMENT AND RETENTION

Mr. AGUILAR. I appreciate it, General. I will stick with you just for one additional question.

A GAO study found that the DOD had difficulty recruiting and retaining physicians across the specialties. And in your testimony, you stated that Army medicine has been pursuing a couple approaches to support readiness and high-quality medical care, one

being Army graduate medical education and then the other being military civilian partnerships.

Are you concerned about the difficulty that you are having in recruiting and retaining combat casualty care specialists?

General DINGLE. Sir, one thing, it is always my concern when we lose any of our medical professionals, especially our surgeons and providers. However, as we have been losing our surgeons who will get out after their first term, especially those who enter service from the Health Professional Scholarship Program, we have an entire cohort that we graduate through USUHS, as well as others who continue and who want to serve their country.

One of the things that has just been a huge for us, in addition to the incentives and bonus pay that you all have given us, is our Civ-to-Mil partnerships. One of the big things that our surgeons, our providers want to do is they want to do surgeries. And us being able to leverage, again, the DHA and our health readiness platforms, but the Civ-Mil partnerships have been a home run for the Army in the recruitment and the raising of that morale.

And so, it is my intent to expand those in conjunction with the DHA providing the touches that we need and reps to maintain their acuity.

Mr. AGUILAR. Thank you, General. Appreciate the answers.

Thanks, Madam Chair, for the second round.

Ms. MCCOLLUM. Thank you.

Ms. Kaptur.

RESEARCH FUNDING

Ms. KAPTUR. Thank you, Madam Chair, very much. I will make it quick.

What is the total amount of money that the DOD spends on mental health research, the behavioral research that I have been talking about that is brain related, in a year? We know that the overall budget of the VA for research is about \$800 million, and I am trying to get them to break it down for me. I don't know if you have those figures at the tip of your fingers or not.

LOAN FORGIVENESS

But, then secondly, in terms of loan forgiveness as an attraction for people post-medical school to be attracted into DOD as a physician. You mentioned some of the programs that you have, but do you have a loan forgiveness program where, let's say, a medical student has a \$400,000 debt, you just relieve the debt to attract them into service, or do you need authority to do that because, frankly, I want to help you out?

And then in terms of education, how do you use your uniform services to help in this specific area working with the Intrepid Center?

RESEARCH FUNDING

Dr. ADIRIM. So we have to break this down for each one. So the first one, with regard to the actual dollars that we spend for mental health, I can tell you, just like the VA, how much overall we

spend in research. But for that, I will need to take that away unless General Place happens to know that.

General PLACE. I don't, ma'am. Sorry.

Dr. ADIRIM. Yeah. No. We are happy to get you the dollar amount that we invest in mental health, but we do spend just under a billion dollars in research overall.

Ms. KAPTUR. Ma'am, could I just interrupt you a second? When these folks come home and they come down to National Guard and Reserve units in districts like mine, what happens is the care just like it drivels away. And so the guard and the reserve, we have people who get sick and it is very hard to get care to them.

So I am trying to figure out, in all these different pockets in the government, you know, how much money we actually spend in the brain-related areas for research and treatment and how we attract medical personnel into this field. Okay. I am trying to help you out, but I got to get the big picture.

Dr. ADIRIM. Very happy to provide that dollar amount that we invest in mental health, brain health to you. We will take that back.

The other question—

AUTHORITY FOR EDUCATION

Ms. KAPTUR. What about authority for education? Do you need more authority to pay the debt of someone who has graduated from medical school and could be attracted into the neuropsychiatric field, but it doesn't pay that much in the civilian sector compared to being an orthopedic doctor, right?

We understand the foot; we don't understand the brain completely yet. These docs go out there, and we got shortages. The jails that I represent, 40 percent of the inmates have mental illness of one form or another, and about 10 percent of them are vets.

What we have to do is figure this out as a country. You know, you really have enormous power to attract, to inspire. And so, I am interested in your current authorities to educate, like through the Uniform Military Service, medical service, can we do more there? Can we forgive loans? Can we create a new program? Are there authorities that have been given to you that aren't being fully exercised for education in this field?

Dr. ADIRIM. We do have authorities. Whether or not they are adequate, we can have that discussion. The authorities that we have are with regard to, you know, bringing on students into the Uniformed Services University. We have training programs. And then we also have bonuses that we pay for a session and for retention that the military departments can use to keep those specialties, like the ones that you have said, the ones around mental health, in order to compete or better compete with the civilian sector.

We do have some of those authorities. You know, each department uses them based on their priorities so—

Ms. KAPTUR. Great. We have a national crisis in this area.

Madam Chair, my time is up, but I think a discussion with Chairman Takano at the VA, with Debbie Wasserman Schultz, with Rosa, with NIMH, the chair of the full committee, I think that would benefit us in this arena of health.

Thank you.

Ms. MCCOLLUM. So we are going to have a question on workforce, and so the committee will be getting back to the panel so that we understand what you are doing with workforce on this issue when we have our committee on workforce, and we should have that captured by then.

To the ranking member, Mr. Calvert.

MEDICAL RESEARCH INITIATIVES

Mr. CALVERT. Thank you, Madam Chair.

I have a question on medical research. General Dingle, since the medical research currently falls under the Army and has for some time, I want to begin by asking you how we can best support our warfighters in this area. Congress routinely adds over a billion dollars to the Defense budget to fund specific areas of medical research. Last year, we added \$1.8 billion, and the year before that it was \$1.6 billion. Even by Defense standards, that is a lot of money.

Can you please provide for us some examples of research initiatives that provide the greatest benefit for the health and readiness of our troops? And also, do you support the proposed transfer of medical research to Defense Health Agency? Why or why not?

General DINGLE. Yes, sir, Representative Calvert. As you know, we execute 35 research programs and we manage about 4,500 or so research awards, to include 500 clinical trials. All of those go toward the operational readiness of our soldiers, as well as treatment, you know, within our beneficiary population.

The moneys that you are providing us, you know, are—you know, again, we take great pride in being the stewards of that; however, we also acknowledge that, you know, in the law you have written for us to transition that research, we are working with the Defense Health Agency and Health Affairs on the way ahead, you know, in how to meet the intent of the law. At the same time, again, we understand that, you know, we are proud and we love what we do in managing and being great stewards of those moneys. Over.

DEFENSE HEALTH AGENCY

Mr. CALVERT. Yeah. How about the Defense Health Agency issue?

General PLACE. Sir, if you are asking me, Ron Place from Defense Health Agency, I think that the history and capabilities that the Army has done with medical research and development has been exceptional. I do think, though, that there are some benefits for standardizing within a Joint Force organization so they can support all requirements across the Department in a prioritized fashion.

I am in favor of what the Congress has done in the past to synchronize it within the Defense Health Agency. Over.

Mr. CALVERT. You don't think that is just going to create another bureaucracy that is going to be cumbersome?

General PLACE. No, sir. Our goal is to utilize the best practices that the Army has already demonstrated in MRDC. Over.

Mr. CALVERT. Okay. Thank you, Madam Chair. I yield back.

CHAIR MCCOLLUM CLOSING REMARKS

Ms. MCCOLLUM. Thank you. I have got a couple of questions, and I think this one will go for the record, and it goes to workforce, and it is a followup from Mr. Kilmer. So, Doctor and General Place, \$334.6 million was requested in the fiscal year 2021 budget for buying back some of the capability loss with reductions of the military providers. Little information has been provided to justify the executability of the request and the funding that was not appropriated.

Without asking about the fiscal year 2022 request, what factors would give confidence to DOD that you would be able to obligate the hundreds of millions of dollars in one fiscal year? We will take that for the record. And what is the average amount of time, going to workforce, it takes to get a civilian medical professional hired, and are you expecting to have problems recruiting experienced civilian doctors?

And I think that came out loud and clear, but not just doctors, nurse practitioners, you know, the extended medical family that you need to do that.

A followup from Mr. Womack, who asked a really great question. Once again, Dr. Adirim and General Place, looking forward to fiscal year 2022 budget, what impact do you think deferred care will have on healthcare utilization over the year?

Now, you kind of left me with the impression that for servicemembers there probably isn't much deferred care, but there might be deferred care for family members and retirees who are using our facilities. So what impact do you think that deferred care will have on long-term costs and possible conditions detected during routine checkups or testing because procedures were postponed?

And I will use the example, because I am a great proponent of people keeping up on colonoscopies and testing so that we can reduce the amount of unnecessary deaths, quite often, from colon cancer if detected early enough. So, if you could break those apart. You know, maybe the servicemembers were good on deferred, nothing was deferred on families there were and what potential costs you could see coming out of that.

I also want to follow up on kind of where we are on the transition that appears to possibly be moving forward from removing civilian personnel families in that from receiving healthcare at some of the clinics. Where are you on that? That was a pause on COVID. Has COVID taught you anything more that we can learn from that? And I will put that in a more formalized question.

Additionally, I am going to do a followup on COVID. We know that we learned a lot and you learned a lot over the last year and a half that life-saving PPE, it is masks, it is gloves, it is syringes, a lot of this is made overseas. Right now, you appear, from the testimony that you gave, you were confident that the supply chain was not too vulnerable, but that doesn't mean that that couldn't happen next time if there was another pandemic because we have a stress on the system currently.

Hopefully, the vaccines, enough people get vaccinated, we don't have reinfections with new strains and everything like that, but

there has been a strain on our system. I would like to know what discussions are taking place with DOD about working to onshore more of these basic necessities, not only for military readiness, but for the national security of the entire population as well.

And last but not least, it would not be a hearing if I did not talk about the Arctic. I would like to know what is going on, an update on the Cold Weather Region Center of Excellence that we are working on establishing where we are on the pilots, how long the pilot is going to go on? I would like to look at your benchmarks or milestones.

And as Mr. Rogers said, I will join him with the informal briefing more on medical records. If any other members would like to join us, I know Mr. Calvert is always welcome and we do things together as a team. If there is other members interested in that, please let us know. If staff—I know that you are listening on another channel, let us know if your member is interested in that. A little extra homework.

I would like to thank all the people who testified. And I am going to paraphrase what the Army started out with, thank you for your work in a foxhole, the cockpit, and the helm, all the way down to the facility for the golden hour and for those of you who are able to do the wonderful deliveries of our new Americans for the first hour of life.

Please thank everybody who works under your command. Every job is important from the nutritionist to the person who makes sure that that room is clean and healthy with what we are dealing with bacteria resistance entities that are out there. Just thank you for all that you do.

And to General Hogg, we just wish you the best in your retirement. We thank you for your service. Your expertise will be missed. We hope that you stay in touch and find another way to put all your expertise to work for all of us here in the United States.

As we close this hearing off, with Memorial Day especially coming up this weekend, we know how important your work is in making sure that we get the best medical attention to our servicemen and -women when they need it, especially when they are in the battlefield putting their lives on the line.

With that, this meeting is adjourned. And I thank all of you and all the members today for joining us.

The Honorable Tim Ryan
Appropriations Committee, Subcommittee for Defense
Questions for the Record

Witnesses: All

Question One: The Chief of the National Guard Bureau recently testified before this committee as to the importance of no-cost health care for members of the Guard and Reserve. Although this benefit would increase spending, I firmly believe that we would ultimately save money by offering preventative care to our citizen Soldiers, Sailors, Airmen and Marines.

More importantly, we would be taking care of our service members and their families in a year when the Guard and Reserve have been called upon more than at any other time during World War II.

Do you agree with my sentiments? If not, why not?

Defense Health Agency Answer: DoD recognizes the contributions of RC members as valued partners in DOD's Total Force concept and the opportunities to offer better health insurance coverage will go a long way to ensure these service members are more fully medically ready should the Nation call upon them. Should Congress wish to extend the benefit further, up to or including Active Duty Service member (ADSM) benefits under 10 USC Chapter 55 Section 1074, assuming full funding is provided, the Department does not object to the proposal. We agree that many Selected Reserve are paying relatively high costs for their health insurance coverage. That is why the Department supports removal of the FEHB exclusion. Currently, Selected Reserve and National Guard Service members who are eligible through their employment as a dual-technician or Federal civilian employee for the Federal Employees Health Benefits Program (FEHBP) are ineligible for TRICARE Reserve Select (TRS). All other Selected Reserve and National Guard Service members are already eligible to purchase TRS. The Department strongly supports removal of the FEHB exclusion from purchasing TRS, which would allow all eligible members to purchase comprehensive TRICARE coverage at a low cost compared with civilian healthcare plans (\$47.20 per month for an individual, \$238.99 for an individual and family). The Department also notes that there is already substantial coverage for activating Service members on qualifying orders who can receive up to six months of benefits prior to their period of Active Duty, coverage while activated on qualifying orders, and 180 days of coverage after deactivation from periods of qualifying Active Duty through the Transitional Assistance Management Program (TAMP).

Navy Answer: Congressman Ryan, I concur with your comments about the outstanding contributions made by the Guard and Reserve Component personnel in response to the COVID-19 pandemic. I also agree that all our personnel must be medically ready to deploy and execute their demanding responsibility. Regarding any specific proposals impacting the administration of the current health plan affecting the National Guard Bureau, I would defer to the Department of Defense.

Question Two: Surgeon General's, are you satisfied that the food available across the installation best supports Human Performance Optimization?

Air Force Answer. We are satisfied with our progress to date but recognize there is still more room for improvement. In recent years the Department of the Air Force has engaged in efforts and initiatives to improve "on-base" accessibility through partnerships with industry and testing of various models to increase the availability, affordability and acceptability of health performance foods. Our latest food model ("Air Force Food 2.0") focuses the Air Force Services Center Food and Beverage Division to actively increase the number of healthy "Green Coded" recipes for our Airmen and Guardians. Examples of recipe changes include the addition of more fruits, vegetables, grains and plant-based ingredients.

Navy Answer: Congressman Ryan, I concur with your comments regarding the importance of diet and nutrition. We are making good progress but understand there is more work ahead. Nutrition is critical to "fueling" our Sailors and Marines and helping optimize their performance as they execute their demanding operational responsibilities. Proper nutrition is also critical to promoting health and well-being of our service members, now and in the future.

The Navy continues to emphasize the importance of diet both ashore and afloat. Our galleys are required to follow the Department of Defense food service standards outlined in DoD Instruction 1338.10 (DoD Food Service Program) and OPNAV Instruction 10110.1 (Nutrition and Menu Standards for Human Performance Optimization). In addition, galleys are required to follow the Go for Green and Fuel Fight standards and prominently display stoplight signage, highlighting healthy food options.

Within Navy Medicine, our Navy dietitians serve and actively participate on the DoD Food and Nutrition Committee to improve the military nutrition environment, food service operations, delivery of medical nutrition therapy, and nutrition literacy. When Navy dietitians are available, they support our commands and Sailors by assisting them to plan and make healthy food choices in the galleys while providing education on optimal fueling choices. The Naval Supply Systems Command has authority over shipboard food services, while the Commander, Naval Installations Command is responsible for oversight of meal service and menus for shore/base galleys.

All of us recognize that human performance and nutrition require the coupling of availability of healthy foods and Sailor education. Our Navy Dietitian Support to the Operational Forces program provides performance nutrition education to Sailors assigned to operational commands. Since 2018, over 12,000 Sailors have participated in this program.

The Honorable Congressman Henry Cuellar
Appropriations Committee, Subcommittee for Defense
Questions for the Record

Witnesses: All

Question One: Please provide an update on what each service and DHA are doing to optimize Human Performance Optimization? Is there a comprehensive consolidated inventory of Human Performance Optimization activities for what the Armed Services are doing? And do you all work with civilians?

Defense Health Agency Answer:

CHAMP'S MISSION

Optimize Warfighter mission and family readiness through leadership, community engagement, education, and conducting and translating human performance research

WHAT CHAMP IS

- A DoD Military Health System Center of Excellence for Human Performance Translation residing within the Uniformed Services University of the Health Sciences (USU)
- A team of highly motivated and multidisciplinary staff, including educators, researchers, clinicians, and scientists with a wide subject-matter expert (SME) network throughout military health and performance domains. Staff includes active-duty and retired Military Service Members.

WHAT CHAMP DOES

- Translate human performance research for the military community, including active-duty Military Service Members, military families, and military healthcare providers.
- Create evidence-based educational products for Warfighters, leaders, and their families.
- Conduct research across military medicine, and translate it into effective policy changes.
- Collaborate with a broad spectrum of agencies and programs across academic, clinical, and research realms, bringing the community together.
- Deliver evidence-based answers to common questions regarding holistic health and fitness related to military duty.
- Provide military leadership with best practices, research, support, and training on Total Force Fitness (TFF) and Human Performance Optimization (HPO).

EDUCATION & TRAINING

- CHAMP is DoD's leading proactive resource in training and educating the Uniformed Services on HPO and TFF.
- CHAMP translates evidence-based research on HPO into practical educational resources to optimize Warfighter performance for line leadership, healthcare providers, students, researchers, Warfighters, and their families.

- CHAMP’s educational resources are Human Performance Resources by CHAMP (hprc-online.org) and Operation Supplement Safety (opss.org). These joint-service (or “all service”) public-facing websites showcase evidence-based information on performance optimization across the domains of TFF.
 - The Human Performance Resources by CHAMP (HPRC) team produces comprehensive evidence-based resources to educate Military Service Members on optimizing human performance across all domains of Total Force Fitness. Through developing and disseminating content, delivering presentations, and creating and delivering programs and curricula, HPRC fills gaps and responds to demand signals to optimize Military Service Member performance. HPRC’s research-based, military-specific resources span topics such as performance nutrition, injury prevention, training for Service physical fitness tests, sleep strategies, mental fitness, and relationship, team, and leadership information. For example, two specific recent successes include creating a pre-workout poster to be hung in Army MWR garrisons and HPRC’s Personal Protective Nutrition and Personal Protective Lifestyle handout, which was included as a resource in the MHS COVID-19 Practice Management Guide (v7). CHAMP teamed up with the Center for Neuroscience and Regenerative Medicine (CNRM) at USU to deliver nine live events on social media about brain health topics. The events discussed the interaction of brain health and elements of Total Force Fitness domains: exercise, nutrition, mood, sleep, relationships, and dietary supplements. The CHAMP brain health series is continuing in June 2021 with once-a-month sessions on topics like what happens in the brain when you’re stressed, sex differences and the brain, and circadian rhythms, the brain, and performance. Additionally, new article and graphic content is planned for HPRC-online.org to help Military Service Members understand the basics about the brain and brain health, and how performance activities impact and are impacted by brain health.
 - Operation Supplement Safety (OPSS), is the military’s “go to” key source of dietary supplement guidance and evidence-based information for all Military Service Members and healthcare providers. OPSS engages its federal partners—including FDA, DEA, NIH/ODS, FTC, and DoJ—on pertinent topics related to dietary supplements, as well as the U.S. Anti-Doping Agency (USADA). Over the past year, OPSS developed a “Brain Health Guide” outlining evidence-based information about dietary supplement ingredients touted for brain health. Important efforts for completion in Fall 2021 include a health professional module, an updated list of DoD-prohibited ingredients, and a mobile app (OPSSup). The OPSSup app will incorporate an extensive dietary supplement ingredient database that will help Military Service Members make informed decisions about dietary supplement products and potential problematic ingredients.

RESEARCH & SCHOLARSHIP

- CHAMP is DoD’s primary asset in translational research through collaborative relationships with USU, other DoD agencies, academia, and industry that share common goals of addressing optimal human performance.

- CHAMP's efforts include basic, clinical, translational, and community-based participatory research to support specific human performance interest areas.
 - Community-Based Engagement
 - Performance Psychology
 - Social Fitness
 - Spiritual Fitness
 - Dietary Supplements
 - Performance Nutrition
 - Nutrition Environment
 - Brain Health
 - Exertion-Related Events
 - Musculoskeletal Injury Prevention
 - Integrative Health Technologies

LEADERSHIP & SERVICE

- CHAMP's SMEs and staff serve the global community by supporting the health and performance of uniformed Service Members and their families and by deploying teams of experts in response to HPO/TFF-related requests from other DoD and U.S. agencies and organizations.
- CHAMP develops future leaders in military HPO by providing hands-on experience, mentorship, and consultation in HPO/TFF to field commanders, clinicians, educators, researchers, and students from all disciplines.
- CHAMP contributes to mission readiness by directly assisting diverse units, developing return-to-duty protocols, and facilitating Warfighter clinical consultations through the Warrior Heat- and Exertion-Related Events Collaborative.
- CHAMP helps individual military communities create mission-relevant HPO and TFF blueprints with line-valued metrics.

COLLABORATION

- Working directly with the Office of the Army Surgeon General, CHAMP established the Warrior Heat- and Exertion-Related Events Collaborative (WHEC), in conjunction with a forward field operating agency, Heat Center of Excellence at Fort Benning, Georgia. HPRC supports the WHEC website, which includes clinical care and provider resources, educational tools, videos, and articles related to exertional heat illness. A portal on the website enables healthcare providers to ask questions of a Multidisciplinary Case Review Committee run in conjunction with clinicians and researchers from Walter Reed National Military Medical Center and the Uniformed Services University. WHEC works directly with DHA's Military Specific Clinical Care Community and has developed practice parameters on exertional rhabdomyolysis, exercise-associated hyponatremia, exercise collapse associated with sickle cell trait and exertional heat stroke.
- CHAMP and the Walter Reed Army Institute of Research hosted a virtual Performance Psychology Summit in November 2020 to advocate for a performance-oriented focus combined with more traditional clinical approaches to support Force psychological health and readiness. CHAMP is poised to provide leadership and advocacy to advance the science and practice of performance psychology across the DoD.

- The CHAMP Spirituality and Performance Team (SPRT) provides direct quantitative and qualitative research support and consultation to operational (embedded) chaplains serving with the Army, Air Force, Navy, and Marine Corps, especially aiding operational chaplains in the work of (a) identifying and understanding evidence-based “core attributes” of spiritual readiness in the military performance domain; (b) reliably and quantifiably measuring growth in these core attributes; (c) demonstrating the impact of spiritual growth on progress in total readiness; and (d) building locally tailored Spiritual Fitness programs and services that rely on the evidence and can be continuously assessed in terms of impact on the total readiness of the Warfighter.
- CHAMP’s multidisciplinary mobile training team conducted HPO and TFF Capability-Based Blueprint (CBB) and Targeting Systems in collaboration with members of the USAF 1U Sensor Operators, the 1N3 Cryptologic Language Analysts, and the 2W1X1C Aircraft Armament Systems “Bomb loader” communities. The resulting CBB reports highlight the health and performance priorities and line-valued metrics that directly support career-field, mission-essential tasks identified as critical to their mission sets. The resulting blueprints and targeting systems report will serve as the first steps for improving the precision of embedded team’s health-and-performance service delivery, resource acquisition, upstream services, and professional competencies.
- CHAMP, in collaboration with others, conducted a pilot study—Evaluating Training to Enhance Cognitive Agility (ETECA)—designed to see whether cognitive agility training, as trained through improvisational actors, would change decision-making under stressful, live-fire, military-derived scenarios. Multiple biometrics were collected—including EEG, heart rate, facial expressions, pupil dilation respiration, and skin conductance—and will be analyzed by hybrid machine learning. Blood transcriptome profiling is also in process.
- The new Military Nutrition Environment Assessment Tool (mNEAT) web-based application developed by CHAMP will enable the Services to assess their food environments (policy support, food availability, choice architecture, food labeling, health messaging, and economics) and then develop action plans to improve the nutrition environment. It will be deployed for pilot testing.
- Go for Green®, a joint-service nutrition program that helps military dining facilities provide and promote meals to improve the performance for Military Service Members, continues to grow. The program is being actively assessed at two pilot sites, with the intention that it become DoD-wide.
- Musculoskeletal injury (MSK-I) and MSK-I prevention is a key area. CHAMP has focused on biopsychosocial and organizational culture factors affecting MSK-I during training. Additionally, CHAMP is identifying perceived and real barriers to prompt MSK-I reporting in military trainees and their instructors, with the goal of developing education to improve reporting and reduce the MSK-I burden in training Military Service Members. Finally, CHAMP has a comprehensive longitudinal all-Service database to identify promising approaches to mitigating and treating MSK-I.

Army Answer: The Holistic Health and Fitness (H2F) System is the Army’s primary investment in Soldier personal readiness, optimal physical and non-physical performance, reduced injury rates, improved rehabilitation after injury, and increased overall effectiveness of the Total Army. The system leverages evidence-based information and best practices to

empower and equip Soldiers to take charge of their health, fitness, and well-being to optimize performance, while preventing injury and disease.

Nested within the Department of Defense Total Force Fitness program and the *Army Campaign Plan*, Holistic Health and Fitness (H2F) is an enterprise-wide readiness “system” that combines all aspects of physical and non-physical human performance optimization under a single governance structure. The H2F System encompasses both the physical and non-physical domains (mental readiness, sleep readiness, nutritional readiness, and spiritual readiness) required for optimal performance and improved readiness. The H2F System focuses on improving health- and fitness-related knowledge, attitudes, and behaviors to increase deployable rates currently degraded by obesity, injury, and poor lifestyle choices. By addressing and optimizing mental wellness and acuity, this system builds agile, adaptable, and fit Soldiers. The priority investment for H2F is the fielding of in-person or virtual H2F Performance Teams with subject matter expertise to improve physical and non-physical readiness. H2F Performance Teams consist of physical therapists, occupational therapists, registered dietitians, cognitive performance specialists, strength and conditioning coaches, and athletic trainers. They will advise commanders on performance readiness issues and integrate H2F into mission planning and personnel decisions. Team members employ appropriate injury mitigation countermeasures through Soldier training and education in coordination with unit leadership. 28 Brigade Combat teams will be fielded with H2F Performance Teams in FY21, with incremental fielding for follow on brigades each year as funding is available. The Army National Guard and Army Reserve are conducting pilots and analysis for their individual components based on dispersion, maximizing both in person and virtual access where appropriate.

The H2F System represents the Army’s investment in the health and fitness of our most critical weapon system: the Soldier. The H2F program has partnered with several civilian institutions to understand predictive injury modeling, to study the correlation between high physical demand Soldier tasks and the associated fitness events, and to learn from institutions that have recognized Tactical Strength and Conditioning Programs. The ARNG is also expanding partnerships and opportunities with civilian academic institutions as well as Professional Athletic Organizations.

Air Force Answer: We have a number of programs that address performance optimization. One primary initiative has been the expansion of Operational Support Teams (OSTs) led by the 711th Human Performance Wing. There are also a large number of occupational and mission specific programs that have been developed to address the unique requirements of special populations such as Special Operation Forces, pilots, and Intelligence, Surveillance and Reconnaissance (ISR). Overall, our combined efforts aim to improve the physical and mental wellbeing of both Airmen and Guardians.

Further embedded initiatives continue to be rolled out across the Air and Space Force based on risk and identified need at the unit level. Supporting these initiatives requires balancing the operational and healthcare demands placed on our military treatment facilities.

Question Two: Is there a comprehensive consolidated inventory of Human Performance Optimization activities for what the Armed Services are doing?

Air Force Answer: The Air Force Medical Readiness Agency recently established an office of Integrated Operational Support that provides broad oversight and support for multiple Human Performance Optimization initiatives in coordination with the Department of the Air Force Manpower, Personnel and Services and the sponsoring organization. As one of their initial tasks, they developed a consolidated list of programs with a brief description for each, which are listed below.

Consolidated Listing of Air Force Medical Service
Human Performance Optimization Activities

Program	Description
Guardian Angel Human Performance Optimization (GA HPO)	This program augments the Preservation of The Force & Family (POTFF) located at Air Combat Command Special Tactics Squadrons.
Optimizing the Human Weapon System (OHWS)	This is a CSAF Program specific to the fighter pilot community to address back and neck pain or injuries sustained during flight operations.
Flight Doctor Squadron Medical Element Program	This program imbeds flight doctors into operational units
Flight Physical Therapy Squadron Medical Element Program	This program imbeds physical therapists into operational units
Human Performance Optimization Davis-Monthan AFB	Installation specific human performance initiative to better integrate the Guardian Angel Human Performance Optimization and operational support teams.
Warrior Athlete Center of Excellence (WACoE)	Supports Moody AFB 93rd Base Defense Group and Explosive Ordnance Disposal Squadron with human performance assets (i.e., physiologist, psychologist, sport med physician)
Moody AFB Rescue Squadron Local Human Performance Contracts	Athletic training program and contract support for Moody AFB's 71st Rescue Squadron
Comprehensive Readiness for Aircrew Flying Training (CRAFT)	Pilot training initiative introducing human performance in the beginning of an aviator's career. Topics areas: physical, cognitive and resilience.
Versatile Injury Prevention and Embedded Reconditioning (VIPER)	Performance initiative and injury mitigation for Basic Military Trainees.
Luke AFB Human Performance Initiative ("TITAN")	Luke AFB Human Performance initiative for improving the performance of fighter pilots.

Air Education Training Command (AETC) Special Warfare Wing	AETC's human performance program supporting Special Warfare Trainees.
58 Special Operations Wing Kirkland AFB	Human performance initiative embedding medical personnel in the 336th Survival, Evasion, Resistance and Escape school.
United States Air Force Academy (USAFA) Sports Medicine	USAFA's multidisciplinary sports medicine team providing sports medicine care and physiological testing and training to approximately 1,200 Division 1 NCAA athletes.
USAFA Prep School	Athletic and dietary sports medicine support to 100 cadet-candidates.
Comprehensive Operational Medicine for Battle-Ready Airmen (COBRA)	Hub and Spoke model of Sports Medicine Care at Aviano AB, Italy. Provides rapid and evidence-based treatment and recovery tools for common musculoskeletal and health conditions within squadrons while causing minimal disruption to the mission.
Elite Performance Initiative Center (EPIC)	This is a broad research initiative on Human Performance at the 711th Human Performance Wing.
True Compass	This is a Wright Patterson AFB initiative for civilian personnel providing mental health support.
Preservation of the Force & Family (POTFF)	Congressionally defined and funded program for Special Operations Command which includes AFSOC.
Air Ground Ops Wing (AGOW)	Performance optimization and direct care support for Special Tactics personnel. This is not base specific.
Airmen Resilience Teams (ART)	This program embeds mental health and religious support teams in intelligence, surveillance and reconnaissance squadrons.
Operational Support Team (OST)	A program which temporarily embeds mental and physical health experts in high risk squadrons to provide interventions to increase resilience and performance.
Religious Support Teams (RST)	A program composed of chaplains and religious non-commissioned officers (NCOs) working in an operational unit.
True North (TN)	Department of Air Force drive resilience program embedding mental health professionals and religious support teams within high-risk groups.
USAFA Peak Performance Center	Counseling services for USAFA cadets.
Space Team for Airmen Resilience (STAR)	Mental Health & Physician Assistants direct support to Guardians.

Navy Answer: The Chief of Naval Operations (CNO) establishes the Navy's policy for health promotion and wellness (HPW). The Chief, Bureau of Medicine and Surgery (BUMED / Navy Surgeon General serves as the principal advisor to the CNO for health service programs within the Navy, and as the subject matter expert on the Navy's HPW Program. The Navy and Marine Corps Public Health Center (NMCPHC) is BUMED's program manager for HPW. NMCPHC Warfighter Wellness and Health Promotion (W2/HP) Department is instrumental in human performance optimization across the Navy and Marine Corps. W2/HP human performance updates include:

- The CNO's policy (OPNAVINST 6100.2 – Health and Wellness Promotion Program) requires every Navy command to establish a multidisciplinary Command HPW Committee with an appointed HPW Coordinator that plan, implement and evaluate programs that focus on the health, fitness and quality of life of their Warfighters. W2/HP supports this requirement through the development and delivery of high quality, evidence-based programs, products and training for Command HPW Coordinator/Committee use.
- W2/HP develops and distributes evidence-based tools to promote individual and command health and readiness; including: Command Annual HPW Planning Tool, Annual Health Risk Assessment (HRA), Monthly HPW Toolkit and the Blue-H Navy Surgeon General's HPW Award, which guides, encourages and rewards health promotion in Navy and Marine Corps organizations.
- W2/HP delivers programs focused on improved readiness, fewer deployment limiting conditions and a fitter fighting force, such as the Wellness and Readiness (WaR) and Pregnancy and Postpartum Physical Training (P3T) programs.

Though BUMED does not currently have a comprehensive consolidated inventory of Human Performance activities throughout the Navy, efforts are underway to address this with the newly established Navy Fitness Advisory Committee (NFAC), led by the Chief of Naval Personnel's (CNP) Physical Readiness Program Office (OPNAV N17).

- The NFAC established a collaborative platform for Navy fitness stakeholders to evaluate current and proposed Navy Human Performance efforts and show a comprehensive inventory of initiatives. The NFAC supports the CNO's "Culture of Excellence" efforts through increased physical readiness, improved long-term health and wellness, and reduced unplanned losses.
- NMCPHC's W2/HP Department is a collaborative member of the NFAC and supports the Holistic Health and Wellness, Nutrition, and Human Performance sub-committees, which takes a broad collaborative approach to identify and review evidence-based best practices and lessons learned from fitness, human performance and physical readiness policies, programs and initiatives across all agencies and Services.

In addition to NFAC participation, W2/HP also collaborates directly with other agencies in the pursuit of improving Human Performance throughout the Department of the Navy.

- W2/HP collaborates with OPNAV N17 Physical Readiness Program Office and Commander, Navy Installations Command (CNIC) Fitness, Sports and Deployed Forces Support Branch to deliver awareness, education and intervention guidance regarding nutrition, physical activity, sleep and stress management for Sailors via educational products, communications and the Navy Operational Fitness and Fueling System (NOFFS).

- W2/HP participates in collaborative review and implementation recommendation of evidence-based best practice programs. One example is Functional Movement Screening (FMS) standardization and analysis of individual functional movements by CNIC.
- W2/HP partners with the USMC Human Performance Branch (Training & Education Command) and Marine Corps Semper Fit Branch (Marine & Family Programs Division) to coordinate USMC Human Performance and Injury Prevention efforts to ensure efficiency and avoid redundancy with BUMED efforts.
- W2/HP partners with the Army Public Health Center (APHC) for adaptation of the proven Army Wellness Center and Pregnancy & Postpartum Physical Fitness programs to address these unique Human Performance needs by all Services.

BUMED's participation in collaborative Human Performance efforts across agencies, the Services and institutes of higher learning are demonstrated.

- W2/HP SMEs participate in DoD, Defense Health Agency, Veterans Health Administration and shared service efforts related to healthy eating, supplement safety, physical fitness, neuro-musculoskeletal injury prevention, rehabilitation research, psychological health, addictive behaviors and sleep.
- NMCPHC is a collaborative partner with the Uniformed Services University of the Health Sciences (USU), actively participating in the Consortium of Health and Military Performance (CHAMP), Total Force Fitness (TFF) and Human Performance Resources by CHAMP (HPRC). W2/HP coordinates availability of these multi-service Human Performance resources to Navy Warfighters through W2/HP products, programs, public website/social media content, and W2/HP stakeholder training.

Finally, BUMED's Naval Medical Research & Development (NMR&D) laboratories are focused on high performance and timely response to the needs of the Warfighter and national security. The NMR&D enterprise develops solutions to both traditional battlefield medical problems, such as bleeding, traumatic brain injury, combat stress, Warfighter performance, and countermeasures and to biological threats, both naturally occurring infectious diseases and man-made, that affect the Warfighter ensuring U.S. forces can perform anytime, anywhere.

- Human Performance Optimization is an important focus within our R&D enterprise with efforts studying how to optimize an individual's performance to successfully accomplish his/her mission. Specific examples of this include, but are not limited to, optimized watchbill and logistic scheduling and fatigue meter software to enhance watch scheduling, and crew endurance training program for applying circadian-based watchbills for enhanced personnel readiness and less fatigue. With any of our efforts, NMR&D is always seeking to work on the cutting edge of R&D with other government partners and civilian institutions (e.g. academia or industry) while maintaining focus on mitigating threats and enhancing the performance of the Warfighter.

Air Force Answer: We have a number of programs that address performance optimization. One primary initiative has been the expansion of Operational Support Teams (OSTs) led by the 711th Human Performance Wing. There are also a large number of occupational and mission specific programs that have been developed to address the unique requirements of special populations such as Special Operation Forces, pilots, and Intelligence,

Surveillance and Reconnaissance (ISR). Overall, our combined efforts aim to improve the physical and mental wellbeing of both Airmen and Guardians.

Further embedded initiatives continue to be rolled out across the Air and Space Force based on risk and identified need at the unit level. Supporting these initiatives requires balancing the operational and healthcare demands placed on our military treatment facilities.

Question Three: And do you all work with civilians?

Answer: Yes, we have multiple partnerships with civilian organizations for many focus areas. Our primary civilian partnership, specifically for Human Performance Optimization, is with the University of Texas San Antonio Human Performance Optimization Center.

The Honorable Robert B. Aderholt
Appropriations Committee, Subcommittee for Defense
Questions for the Record

Witnesses: All

Question One: In March, the Navy awarded a contract to build the second ambulance variant of the multi-purpose Expeditionary Fast Transport ship. EPF ships 14 and 15 now include a combined forward resuscitative capability with a limited Intensive Care Unit and medical ward, while maintaining most of the original non-medical mission requirements of the ships as well. An important new capability is the ability for patients to recover onboard ships after surgery, for both Naval and humanitarian missions. The Navy's Surgeon General recently testified before the Senate Appropriations Committee that these ships fill a critical gap in Naval operations and are a high priority for Naval medicine. How large is the gap, and what are the Navy's plans to address it?

Answer: Naval Expeditionary Health Services Support (NEHSS) for Distributed Maritime Operations (DMO) Initial Capabilities Document (ICD), validated by the Joint Staff in September 2020, identified gaps and capabilities required to optimize medical support to enable naval forces to effectively deploy, survive, operate, maneuver, and regenerate while under attack in a contested maritime environment. Key capabilities requirements for Afloat Medical include:

- Provide Forward Resuscitative Care (Role 2 Capability)
- Provide Theater Hospitalization (Role 3 Capability)
- Provide Blood and Blood Products
- Provide Medical Care for Mass Casualty Operations

Navy is expanding Afloat Medical capability through construction of T-EPF with embarkable Role 2 Enhanced (R2E) medical capability (referred to as 'EPF Flight II'). Flight II incorporates fact-of-life and operational improvements that will provide Combatant Commanders (CCDRs) a more flexible and capable platform and enable an embarkable R2E medical capability. Currently, two new construction EPF Flight IIs (EPF 14 and EPF 15) are planned and funded. Chief of Naval Operations (N81) Flight II total quantity assessment analysis, which incorporates requirements for DMO, is ongoing. Additionally, Navy is committed to sustaining the USNS MERCY and USNS COMFORT as the only existing Afloat Theater Hospitalization (Role 3) capability in Department of Defense (DoD)

Question Two: Has the Navy established a formal acquisition requirements document for EPF ambulance variant ships? If yes, please provide it for the record. If not, why not?

Answer: Yes. The Naval Expeditionary Health Services Support (NEHSS) for Distributed Maritime Operations (DMO) Initial Capabilities Document (ICD) was validated by the Joint Staff in September 2020.

Question Three: How do EPF ambulance ships differ from the dedicated Navy hospital ships, *U.S.S. Comfort* and *U.S.S. Mercy*? How are they complementary?

Answer: EPF Flight II and hospital ships provide different levels of medical care and capacity. EPF Flight II will enable an embarkable Role 2 Enhanced (R2E) capability, providing Forward Resuscitative Care but is not an “ambulance ship”. Role 2 medical treatment facilities (MTF) provide advanced trauma management and emergency medical treatment, including continuation of resuscitation started in Role 1 and basic secondary health care built around primary surgery; intensive care unit (ICU); ward beds; limited x-ray, and laboratory.

USNS MERCY (T-AH 19) and USNS COMFORT (T-AH 20) provide the only Afloat Theater Hospitalization (Role 3) capability in DoD. In Role 3, the patient is treated in a MTF that is staffed and equipped to provide care to all categories of patients, to include resuscitation, initial wound surgery, and postoperative treatment with significant breadth of specialty medicine and surgery as well as diagnostics not present in the EPF Flight II embarked R2E capability.

T-AH MTFs are outfitted with 12 fully equipped operating rooms and a 1,000-bed hospital facility; provides Role 3 medical care to include emergency and specialty surgery, intensive care, medical specialty care, and extended holding capacity and capability augmented by robust ancillary support. The combination of T-AH (Role 3) and T-EPF platforms with embarkable medical capability (R2E) are critical enablers for the National Defense Strategy, Tri-Service Maritime Strategy, and CNO’s Navigation Plan 2021 with their capability to provide operationally-relevant and resilient logistics with a distributed continuum of care.

Question Four: How close are the Navy’s current hospital ships near to the end of their planned service lives, and what are Navy’s plans to replace them, and when?

Answer: USNS MERCY service life extension efforts began in 2017 to support planned retirement in 2036. USNS COMFORT service life extension efforts are programmed to begin in FY21 to support planned retirement in 2037. Their mission is to provide afloat, mobile, acute surgical medical facilities when called upon to the U.S. military and, secondarily, hospital services to support U.S. disaster relief and humanitarian operations worldwide. Navy is committed to sustaining the USNS MERCY and USNS COMFORT until a suitable capability is in place.

Question Five: What are the advantages in terms using EPF ambulance variant ships to further augment or replace the Navy’s current dedicated hospital ships? Please address the ability to rapidly reconfigure them to meet specific medical emergencies, as well as the potential for significantly reduced manning and annual operating costs from employing new design ships.

Answer: EPF is a shallow draft, commercial-based, catamaran designed for rapid, intra-theater transport of personnel and equipment. The EPF’s high speed, shallow draft, and ability to load/unload in austere ports enables maneuver force agility in achieving positional advantage over intermediate distances without reliance on shore-based infrastructure. EPF Flight II enhancements include: a strengthened bow, flight deck modifications to allow CMV/MV-22 launch and recovery; installation of an 11M Rigid Hull Inflatable Boat (RHIB); the addition of

an elevator to move personnel and equipment from the flight deck to medical treatment areas; increases in berthing for embarked personnel, potable water, and sewage capacity; and the ability to embark a R2E medical capability, while maintaining a high-speed intra-theater surface lift capability. EPF Flight IIs are not a replacement for Navy's hospital ships. As a complement to the Role 3 capability provided by T-AH, EPF Flight II could serve as a high-speed intra-theater 'connector' providing needed R2E care closer to Point of Injury. EPF Flight II will be able to conduct patient recovery and medical operations independently or in concert with other Flight IIs or hospital ships. EPF Flight II will receive patients either via inorganic helicopter or organic RHIB. Upon receipt, patients will be routed to a triage area where they will be evaluated and given initial care. Patients will then be brought to the operating rooms for surgery, or directly to the Intensive Care Unit (ICU) or acute care wards, as clinically indicated. Patients will remain onboard while the ship maneuvers away from the contested area and transports them to the next appropriate medical care facility for advance trauma management. EPF Flight II can be reconfigured to support the R2E mission within 72 hours after the medical personnel and associated medical equipment arrive to the ship.

Question Six: During the pandemic, the Navy hospital ships were deployed to New York and Los Angeles to assist those cities but ended up not having a major role in administering to patients. In retrospect, had the Navy had EPF ambulance variant ships in service at that time, would it have deployed them rather than the hospital ships?

Answer: Secretary of Defense (SECDEF) ordered the deployment of both hospital ships in order to alleviate possible stress on civilian hospitals' capacity for resuscitation and intensive respiratory care. The hospital ships, each with 100 intensive care beds, provide the capability and capacity to meet the projected demand to support overwhelmed civilian hospitals. The planned capability and capacity envisioned on EPF Flight II would not have met the projected demand.

Question Seven: In June 2020, the U.S. Army Medical Research and Development Command's (MRDC) Telemedicine and Advanced Technology Research Center (TATRC) stood up the National Emergency Telecritical Care Network (NETCCN) project. The NETCCN project provides for the rapid development, deployment, and testing of a mobile solutions for telecritical care services to respond to disaster surges such as medical trauma, natural disasters and/or public health emergencies (i.e. COVID-19). As of October 22nd, HHS' Office of the Assistant Secretary for Preparedness and Response (ASPR) and TATRC have established a 4-year memorandum of understanding to provide \$45 million for the acceleration and scale-up of NETCCN, and immediately deploy the telehealth platform as part of COVID-19 operational support in U.S. hotspots. In light of the successful DoD and HHS response to improving telecritical care as a result of the COVID-19 pandemic (i.e. the National Emergency Telecritical Care Network (NETCCN) project), does DHA anticipate using NETCCN, or similar projects, as a model for future clinically guided telemedicine technology procurements? If not, what steps will DHA and the Department take to reap the benefits of the groundwork laid by the Telemedicine and Advanced Technology Research Center (TATRC) to rapidly accelerate current and future digital health and telehealth applications throughout the Department and ensure our servicemen and women have the best telehealth capabilities available to them?

Answer: DHA plans to expand the Joint Tele-Critical Care Network (JTCCN) across the direct care system in support of readiness and great clinical outcomes as part of our direct care optimization efforts. We developed standard Tele-Critical Care (TCC) technical requirements and currently are integrating the robust TCC technical platform into MHS GENESIS. The new enterprise TCC capability will be implemented during the BAMC/Lackland “Go Live” in January 2022. In support of TCC expansion, DHA’s \$8M Joint Incentive Fund TCC proposal was approved, which will allow us to combine our new platform with the Veteran’s Administration, linking our facilities and capabilities together. Finally, DHA is reaping the benefits of TATRC’s groundwork by using the NETCC project lessons learned to build a JOMIS TCC capability, allowing us to deploy critical support anywhere.

Question Eight: The Edward Via College of Osteopathic Medicine (VCOM) at Auburn University has developed an infectious disease surveillance web-based application, known as the Clinical Rotation Evaluation and Documentation Organizer (CREDO), to track clinical patient encounters for the purpose of properly monitoring and assessing novel and emerging biothreats. The platform acts as a real-time, whole-world syndromic surveillance and actionable intelligence tool, which can collect data over a vast number of distributed rural and urban sites, thus surveilling a large region of the United States/ world without the need to extract and merge data from disparate electronic health record systems. The platform is robust and scalable, as well as deployable in any environment running intelligently on any smart device with a web browser. In November/ December of 2019, CREDO was able to analyze previous entries to identify what would turn out to be COVID-19. Ultimately, CREDO has the ability to detect and identify any potential biothreat or pathogen early before it becomes an outbreak or global health crisis. What steps are being undertaken to ensure that the Defense Health Agency (DHA) has capabilities like syndromic surveillance platforms to detect and identify emerging biothreats or “hot spots” and act as an early warning system for potential future pandemics?

Answer: DHA operates an early syndromic surveillance detection system originally developed in 2001 for the detection of emerging biothreats called ESSENCE (Electronic Surveillance System for the Early Notification of Community-based Epidemics). The ESSENCE system is a global monitoring capability operated in the Military Health System (MHS) for early detection of imminent health threats that could impact readiness for active duty service members. It monitors and assesses the MHS population for ongoing physical health status; occurrence of illness, injury, disease; potential hazards and actual exposures to contaminants. It is also capable of facilitating prompt recognition and investigation of clusters or outbreaks of illness at military installations within 24-48 hours of their occurrence. ESSENCE is the only global capability for detecting threats to force health protection available in the MHS. The Public Health Directorate’s Armed Forces Health Surveillance Division (AFHSD) has partnered with the US Centers for Disease Control and Prevention (CDC) to release the latest version that enables DoD and the CDC to use the same software for sharing data & communication between military medical treatment facilities (MTFs) and over 43 state/civilian public health authorities. Thus, ESSENCE supports the 2018 National Biosurveillance Strategy and the MHS Force Health Protection mission to maintain readiness by providing information to facilitate informed decision-making and timely response to biothreats or “hot spots” as well as act as an early warning system for potential future pandemics.

Question Nine: While on the battlefield, American warfighters are at great risk of life-altering severe burns. Five to twenty percent of all combat-related injuries are burns resulting in long-term complications and significant morbidity and mortality. The inadequate treatment of such burns can result in ongoing pain, permanent scarring and disfigurement, depression, post-traumatic stress disorder and other physical and psychological symptoms. Current treatments available for burn recovery include lengthy timelines, taking valuable warfighters off the battlefield for critical periods of time impeding the achievement of force objectives. Research into burn treatments is reaching a key turning point, which will not only reduce ongoing pain and scarring in burn victims but will also greatly speed up recovery times. Currently, doctors debride burns with a scalpel and when doing so remove both dead tissue and live tissue. However, new research aims to optimize the ArF Excimer Laser to debride burns quickly and efficiently without debriding live tissue. The Army's Institute of Surgical Research (ISR) in San Antonio, Texas has already been supportive of this effort through their project "Promote Faster and Scarless Healing of Burn Wounds by ArF Excimer Laser Debriding Burn Eschar, Not Viable Skin." What is the office of the Assistant Secretary of Defense (Health Affairs), the Surgeon General of the U.S. Army and the Defense Health Agency pursuing to take advantage of ISR's advancements in burn recovery treatments to minimize costs associated with battlefield wound care? Specifically, what is being done to create a "Program of Record" for this wound care breakthrough so that all Services can benefit from the cost savings to the taxpayer and better medical outcomes for our wounded warriors?

Answer: DHA Component Acquisition Executive's Program Management Office for Pharmaceuticals, Devices, and Medical Support Systems has a program planned for initiation in FY22 for Combat Wound Treatment and Management, which includes the burn treatment and recovery technical areas.

Question Ten: Defender Pharmaceuticals, Inc. ("Defender"), headquartered in Florida, is researching and developing Scopolamine Nasal Gel (also known as intranasal Scopolamine or INSCOP) to address urgent medical needs of our active-duty military and veterans. One application of INSCOP is for the rapid reversal of depression and suicide ideation in our military personnel and veterans. Scopolamine is already established as a safe medication with a variety of uses (e.g. the prevention of nausea and vomiting caused by motion sickness and post-surgical, drying secretions, etc.). Dr. Maura Furey from the National Institute of Mental Health (NIMH) studied the effectiveness of intravenous (IV) scopolamine in depressed patients from May 2004 through February 2010 in rigorous placebo-controlled studies. All of the patients rapidly showed a clinically and statistically significant improvement in depressive symptoms and approximately 50% of patients achieved a rapid total reversal of their depressive symptoms after 1 to 2 treatments over a three-day period, which was sustained throughout the duration of the study. INSCOP has the potential to achieve the same results as the IV formulation. Unlike the IV formulation, INSCOP is a self-administered intranasal formulation offering unique benefits of rapid onset (≤ 15 minutes) and direct access to the central nervous system. No other formulation of self-administered INSCOP promises to be as highly effective an option for our military personnel and veterans who are burdened with depressive symptoms and suicidal ideation.

Even more worrisome is fact that COVID-19 has exacerbated the issue. The number of suicides increased by an alarming 25% in the fourth quarter of 2020 compared to 2019, and military suicides have risen approximately 13.5% over the past year. Given that the number of active-duty military experiencing depression, post-traumatic stress disorder (PTSD) and suicidal tendencies is at a critical level, it is imperative DoD leverage investments already made by the NIH to treat depression and prevent suicide in our military populations. It has been brought to my attention that there is a safe and effective treatment for depression and suicidal ideation using a new version of an already FDA-approved drug (since 1947) known as Scopolamine, which was originally studied by the NIMH. The NIMH studies have shown that Scopolamine is three times more effective than the current standard practice of prescribing Ketamine, a known “date rape” drug, without the detrimental side effects. Scopolamine can quickly and dramatically lessen depressive symptoms, and potentially even achieve reversal of those symptoms and likely be a tool to prevent suicide in our service members. Given the issue of rising military suicide rates, is the Office of the Assistant Secretary of Defense (Health Affairs) and Defense Health Agency leadership aware of the NIMH trial involving Scopolamine and the promising results it has shown for treating major depressive disorder and suicidal ideation? Additionally, what steps will be taken to ensure an aggressive response to the suicide crisis and how will this response support the clinical development of depression reduction and suicide prevention treatments, such as Scopolamine Nasal Gel?

Answer: One of the Defense Health Agency priorities is to provide great outcomes, especially for our beneficiaries suffering from major depression and suicidal ideation. This is accomplished by using current clinical information to guide treatment plans, including medication therapy. Current and up-to-date evidence-based information is found in national guidelines and peer-reviewed medical literature. In 2016, the DoD, jointly with the VA, published clinical practice guidelines for managing major depressive disorder to assist MHS providers by recommending evidence-based pharmacotherapy. Medications that have been approved by the FDA are available for MHS providers to prescribe and administer. DHA currently covers all pharmacy-dispensed medications that have received FDA approval for treating depression. Newly FDA approved drugs are reviewed by the DoD Pharmacy & Therapeutics (P&T) Committee for placement on the TRICARE formulary. The robust review process includes evaluating clinical efficacy, pharmacoeconomic analyses, determining impact on readiness, and humanistic outcomes. The DoD P&T committee uses the information gained during this process to determine formulary placement. Medications like intranasal scopolamine, when approved by the FDA for the treatment of depression and suicidality, will be reviewed by the DoD P&T Committee following this robust process.

Question Eleven: The Congressionally Directed Medical Research Programs’ (CDMRP) unique approach to funding high impact projects has advanced research leading to cures and improvements in patient care, in addition to breakthrough technologies, across a range of areas. The CDMRP’s coordinated and intentional approach has produced results in many diseases that have not otherwise received significant attention. What are the specific advancements, including therapeutics, that funding from the Duchenne Muscular Dystrophy Research Program (DMDRP) has helped produce? When does the CDMRP plan to update the DMDRP Strategic Plan to ensure this record of success continues?

Answer: The Duchenne Muscular Dystrophy Research Program (DMDRP) focuses its funding on developing or improving treatments and clinical trial readiness. The following is a list of scientific advances funding from DMDRP has helped produce:

Two FDA-approved therapeutics (Exondys 51 and Viletpso®) Efforts supported preclinical work that led to FDA approval of two therapeutics, Exondys 51 and Viletpso®. These therapeutics are currently available as potential treatments for over 20% of DMD patients who have mutations in exon 51 or exon 53.

New potential treatment (Vamorlone). Funded preclinical studies evaluating a non-hormonal steroid drug Vamorlone as a potential alternative to the current standard of care treatment with corticosteroids to prolong muscle function but without the significant adverse side effects caused by corticosteroid treatment. Vamorlone is now in clinical testing in an FDA/European Medicines Agency registration study that has shown positive and statistically significant results and a New Drug Application with the FDA is anticipated in early 2022.

New prognostic test to measure patient responses to dystrophin replacement therapies The dystrophin protein, which is needed for muscles to function properly, is missing or deficient in people with DMD. The DMDRP funded research established a mass spectrometry method to accurately quantify levels of dystrophin in muscle biopsies with improved precision and specificity over current methods. This assay is currently being tested by biopharma companies to measure levels of dystrophin in muscle biopsies collected from pre- and post-treated DMD patients enrolled in clinical trials using dystrophin replacement therapies (clinicaltrials.gov identifier number NCT03167255).

New potential treatment for DMD-associated cardiomyopathy. DMD causes progressive cardiomyopathy that lowers quality of life and leads to death. The DMDRP funded preclinical research on a CRISPR-based gene therapy approach to treat DMD-associated cardiomyopathy. Promising results showed the gene therapy provides long-term rescue of both skeletal and heart muscle function. In addition, dystrophic muscle stem cells can be edited to correct the dystrophin gene mutation and regenerate new muscle with the dystrophin protein. Next steps in the development path for this potential treatment are to evaluate its efficiency, possible immune responses, and potential toxicity in larger DMD animal models prior to translating it to patients with DMD.

Gene therapy as a promising long-term treatment for DMD. The DMDRP supported two preclinical studies on an adenoviral-based gene therapy that demonstrated improved cardiorespiratory function and persistent micro-dystrophin protein expression for at least 2 years using animal models. The combined results from these two projects led to a collaboration with a biotech company (Solid Biosciences) for a clinical trial evaluating micro-dystrophin gene transfer (SGT-001) in adolescents and children with DMD (clinicaltrials.gov identifier number NCT03368742).

The DMDRP strategic plan will be updated in fiscal year 2022.

The Honorable Mario Diaz-Balart
Appropriations Committee, Subcommittee for Defense
Questions for the Record

Witnesses: All

Question One: Over the past several years, this committee has discussed the implementation and standardization of Tactical Combat Casualty Care (TCCC) across the force. The importance of this program cannot be understated – it's estimated that almost 90% of American servicemembers who die from combat wounds die before arriving at medical treatment facilities. And because military medics are in high demand and limited supply, the TCCC program undoubtedly saves lives in the 'Golden Hour' prior to arriving at a higher echelon of care. Can you provide an update on this program and its implementation across the force? What are your projected budget requirements to continue to train servicemembers and how might that training be impacted if you do not receive the proper funding?

Air Force Answer. The Department has moved forward on several fronts to implement the four tiers of TCCC training. For example, TCCC All Service Member training for new accessions has been implemented at Basic Military Training and at the Air Force Academy. Installations across the Department also are establishing their All Service Member training programs to meet the Secretary of the Air Force's April 2023 deadline to have everyone trained.

The Defense Health Agency is still finalizing the curriculum for the remaining three tiers of TCCC which focus on advanced clinical skills for medical personnel. In the interim, we have directed and funded our primary first responders, the Aerospace Medical Technician career field, to complete the National Association of Emergency Medical Technician (NAEMT) Association TCCC course by January 2022. We have also encouraged other clinical staff to complete the existing NAEMT TCCC training until the curricula is released by the Defense Health Agency.

The initial assessment of the existing Department funding appears adequate at this time to support full TCCC implementation. Further programming assessment upon full implementation in 2023 will better allow us to assess the impact of this program on the Department's budget.

Navy Answer: Navy is actively implementing the Tactical Combat Casualty Care (TCCC) Tier 1 and Tier 2 curriculum, which either replaces or supplements existing medical response training given to all Sailors. Navy's TCCC training during pre-deployment certifications is consistent with the Navy's Ready Relevant Learning (RRL) model, which delivers training at the most appropriate time and closest to the actual point of need while following Department of Defense Common Military Training requirements. Navy Medicine supports Fleet TCCC training via cognizant Navy Medicine Readiness and Training Commands or Units, and maintains primary responsibility for implementation and sustainment of Tier 3 and Tier 4 TCCC training. Upon Tier 3 and Tier 4 curricula approval and release, the Navy Hospital Corpsmen (HM) "A" School TCCC training and certification requirement will be updated to the Tier 3 curriculum. Tier 4 TCCC training and certification will be incorporated into the Reconnaissance, Surface, Submarine and Dive Independent Duty Corpsman (IDC) courses of instruction.

TCCC Tier 1 and Tier 2 training are being implemented within the Navy's existing budget, as they replace existing first aid and trauma care curriculum. Funding requirements for TCCC Tier 3 and Tier 4 implementation will not be known until the curriculum is fully developed and released by the Defense Health Agency.

Defense Health Agency Answer: The curricula and training materials for the TCCC Tier 1, "All Service Member," and Tier 2, "Combat Lifesaver," courses were delivered to the Military Departments for implementation on September 17, 2019 and July 29, 2020, respectively. Completion of the TCCC Tiers 3 and 4 curricula is intended for Service members whose specific wartime duties involve providing trauma care. The latter tiers have unfortunately experienced delays due to limitations imposed by COVID-19 force health protection requirements. TCCC Tiers 3 and 4 are now projected for completion not later than December 1, 2021, and July 1, 2022, respectively. Despite the delay in completing the last two TCCC tiers, the Military Departments have been empowered to execute a phased approach to implementing TCCC training, transitioning to the role-appropriate standardized TCCC skill level content as it is progressively released by the DHA. This includes the content previously delivered for TCCC Tiers 1 and 2.

The Military Departments have developed plans for implementing the four-tiered TCCC standardized curricula released by the JTS. These plans take into account policy outlined in DoDI 1322.31, "Common Military Training (CMT)," which authorizes the Military Departments to determine training frequency for Service members completing the TCCC Tier 1, "All Service Members," course. The Military Departments detailed plans for transitioning to standardized TCCC instruction for their Service members are outlined in the Department's final response to House Report 116-120, page 164, accompanying H.R. 2500, the National Defense Authorization Action Act for FY 2020, "Report on Pre-Hospital Tactical Combat Trauma Training," September 2020.

As a support agency, DHA is well-positioned to continue to support the Services through the provision of standardized combat casualty care curricula and supporting technology. To sustain and update the current standardized TCCC curricula products, the anticipated budget is less than \$250K per annum. In order to deliver these curricula to the Services, the DHA utilizes the Deployed Medicine technology platform, a mobile device and computer based application that hosts all TCCC materials and provides support capabilities to all TCCC students, trainers, and instructors. The anticipated yearly budget for Deployed Medicine is \$1.25M per annum. Medical readiness training and preparedness would be adversely impacted if proper funding is not received, the Services will continue to deliver non-standardized versions of the training contributing to a lack of interoperability on the battlefield, potential for confusion, failure to uniformly incorporate the latest advances in combat casualty care, and increase in mortality from injury. Sustainment of the aforementioned combat casualty care knowledge products must be funded to ensure that evidence-driven learning products are properly incorporated into curricula products and is disseminated to the Services.

Transitioning to the more in-depth, hands-on standardized curriculum will result in some level of incremental cost above what the MILDEPs currently spend on their respective first aid and self-aid/buddy care courses. Since the DHA cost is for curriculum development, the

MILDEPs will be able to provide a more thorough, accurate cost estimate for fully transitioning to the standardized, four-tiered TCCC curricula once TCCC tiers 3 and 4 are released.

Army Answer: The Army implemented the most fundamental TCCC skillsets into the common-core individual tactical skills training program, The Army Warrior Tasks and Battle Drills (AWTBs). Next level of TCCC skillsets are incorporated into the Army Combat Lifesaver (CLS) Program at the Unit level. By incorporating critical TCCC tasks into ATWBs and CLS, which include evaluating a casualty, performing a first aid on open (chest, abdominal and head) wounds and call for Medical Evacuation, it requires commanders at the lowest levels to plan, train and sustain individual Soldier training tasks in accordance with AR 350-1 (Army Training and Leader development). This methodology delivers the widest dissemination of most fundamental TCCC tasks to the Army.

Resourcing is driven by mission and readiness requirements, and fundamental TCCC task requirements are incorporated into Army Warrior Tasks and Battle Drills and the Combat Lifesaver Program. The Army resources commands to execute ATWB and CLS training.

Question Two: The 2017 NDAA mandated the expansion of civilian/military partnerships designed for trauma training, sustainment, and readiness for military trauma providers by establishing the Joint Trauma Education and Training Directorate. It also allows the Secretary of Defense to enter partnerships with civilian medical centers in order to provide integrated combat casualty care teams, including forward surgical teams, with maximum exposure to a high volume of patients with critical injuries. One of these Military-Civilian Partnerships exists at US Army Trauma Training Center at Miami Dade Ryder Trauma Center. Lieutenant General Dingle, can you talk about what a partnership like this does for the Army? Are there any limitations of this partnership that could be addressed by this committee?

Answer: The military-civilian partnership between the Army and Public Health Trust/Jackson Memorial Hospital/University of Miami signed on 10 September 2001 provides a strategic capability for training the Army's Forward Surgical Teams (FSTs). FSTs attend a 2 week collective training event at the U.S. Army Trauma Training Center (ATTC) just prior to deployment. The ATTC platform provides FST personnel exposure to high volume and high acuity trauma and surgical critical care working alongside nationally recognized experts caring for civilian trauma patients. Access to severely injured and critically ill patients enables Soldiers to achieve the necessary clinical proficiencies. Soldiers are updated on the latest Joint Trauma System Clinical Practice Guidelines to ensure they are fully prepared to manage trauma in the deployed environment. In addition, Soldiers attending ATTC participate in advanced trauma care simulation training to further refine their critical wartime knowledge, skills, and abilities. A Mass Casualty Training exercise held at the end of the rotation allows Commanders to assess team and individual strengths and weaknesses and address any gaps identified.

Current limitations remain at throughput and increasing partnership with civilian Level 1 trauma centers, where ATTC model could be replicated across the US to ensure pre-deployment training availability and scalability. In FY21, the Chief of Staff of the Army increased the number of trauma teams from 40 to 49 across the Active Duty and Reserve Components. In terms of throughput, the ATTC currently trains eleven trauma teams annually.

To ensure that the current experience and quality of training is not diluted or compromise, the platform should be optimized and scaled to maximize throughput within the constraints of the institution and clinical volume. We also recognize that Army trauma teams need to “train as they fight” - austere environment training with exposure to deployable medical equipment and simulated battlefield conditions/scenarios should be added to the ATTC model.

To meet the Army’s need to deliver a trained and ready medical capability in support of large scale combat operations or other contingencies, the ATTC model should be replicated at Level 1 Trauma Centers across the US to ensure pre-deployment training availability and scalability. This was proven effective at Brooke Army Medical Center, the DoD’s only Level 1 Trauma Center, and the pilot site for STARC, a program that led to informed decisions about the ATTC model. Redundancy is also crucial to ensure uninterrupted access to pre-deployment training platforms which could be compromised in the event of a natural disaster (hurricane, etc.) or other local or national emergency such as was experienced during the COVID-19 pandemic.

Pre-deployment collective training like ATTC is only one aspect of the overall training continuum for an Army trauma team. Individual skills sustainment for FST team members to ensure each are ready to perform in their roles is a critical prerequisite for effective collective training. Programs like the AMEDD Military Civilian Trauma Team Training (AMCT3) and the Strategic Medical Asset Readiness Training (SMART) initiatives forge partnerships with civilian trauma centers and hospitals to address individual skills proficiency. Military-Civilian partnerships for both individual and trauma team training will continue to be strengthened and expanded to achieve a Ready Medical Force.

Question Three: Admiral Gillingham, one of military medicine’s primary missions is protecting the force. Regarding COVID, the Navy was “first to fight”, with the USS THEODORE ROOSEVELT being hit early in the pandemic. I’d like to hear about how Navy Medicine responded, what we learned, and how we applied that knowledge to keep our Navy on mission. Were we successful in mitigating the impact to the Navy?

Answer: Congressman Diaz-Balart, I appreciate your question. With the earliest identification of the SARS-CoV-2 virus, it was evident that we were battling an adversary whose behavior was highly unpredictable. While all of us in military medicine are trained to respond to medical emergencies and crises, we quickly recognized that protecting our personnel in this public health emergency, along with maintaining operational effectiveness, would be our primary mission. Actions and interventions by experts from the Navy Medicine Public Health and Research and Development enterprises during the early stages, directly impacted Navy Medicine’s ability to better understand the virus’s behavior, mitigate/contain the virus spread, effectively support ongoing Fleet operations, and preserve Navy and Marine Corps readiness.

To illustrate, using state-of-the-art technologies and research-use only assays for COVID-19, personnel from the Navy Medical Research Center deployed to USS THEODORE ROOSEVELT (CVN-71) providing the first COVID-19 detection onboard a Navy ship, and filling a critical gap in COVID-19 in the Fleet prior to the Food and Drug Administration issuing Emergency Use Authorization (EUA) for COVID-19 diagnostic devices available onboard ships.

This work continued as we learned how to deal with the virus from the early outbreaks on THEODORE ROOSEVELT and USS KIDD (DD-661), particularly regarding its asymptomatic transmission. Rapidly applying lessons learned from these ships and continually incorporating the latest critical information from the Centers for Disease Control and Prevention and Navy Medicine experts, Navy leadership quickly operationalized this guidance for the Fleet in the Standardized Operational Guidance. This guidance incorporated the most current scientific and public health information to include testing, restriction of movement, isolation/quarantine, physical distancing, face coverings, contact tracing, and vaccinations. This direction is critical for both individual and unit health protection and is impactful in preserving operational readiness while protecting shipmates, installation and communities from COVID-19 transmission. Our Sailors have demonstrated tremendous personal responsibility, resilience and adaptability in responding to the pandemic. More than a year from the onset of the initial outbreak, key lines of efforts throughout the Navy have been instrumental in allowing our ships and personnel to stay mission capable despite the pandemic.

In an effort to gain more insight into SARS-CoV-2 virus, Navy Medicine conducted two important studies, both of which were published in the New England Journal of Medicine on November 11, 2020: (1) An Outbreak of COVID-19 on an Aircraft Carrier analyzed epidemiological data from the outbreak of SARS-Cov-2 onboard THEODORE ROOSEVELT in order to understand the transmission and impact of SARS-CoV-2 on the crew. This work provides a better understanding of the behavior of the virus shipboard and supports the development of updated guidance for the Fleet to mitigate future outbreaks. (2) SARS-CoV-2 Transmission among Marine Recruits during Quarantine reports on the COVID-19 Health Action Response for Marines (CHARM) which took place at Marine Corps Recruit Depot Parris Island and examined asymptomatic and symptomatic transmission in a young adult population. A follow-on study with the initial Marine volunteers, CHARM 2.0, is currently underway. This research is important for Naval Forces but also reaffirms our commitment to widely contribute to further the understanding of the SARS-CoV-2 virus both nationally and internationally.

Question Four: The Defense Health Agency has successfully delivered the MHS GENESIS electronic health record to 17 states, across more than 600 military treatment facilities, to more than 41,000 total active users. In fact, DHA deployed MHS Genesis in 13 states in a single weekend. The Department of Veterans Affairs was unsuccessful in deploying the same electronic record to a single facility and has decided to pause their deployment of Cerner Millennium. Will VA's pause effect the Defense Health Agency's deployment of MHS Genesis in any way? What is the difference between what DOD and VA did in their last deployment of the electronic health record? What is the key to the Defense Health Agency's success?

Answer: No, the VA's pause will not have any impact on DoD's deployment of MHS GENESIS. DoD is still on track with their schedule to have MHS GENESIS deployment completed by end of calendar year 2023.

During DoD's most recent deployment of MHS GENESIS at our Wave CARSON+ military medical treatment facilities (MTFs), we leaned highly on past experiences from each of our deployments since the Initial Operational Capability launch in 2017.

DoD's updated deployment strategy has a large focus on change management, and our recent success can largely be attributed to both our Peer Expert Training program and our Pay-it-Forward program.

Our Peer Expert Training program is designed to provide a high-level understanding of the change in behavior required by system users to adopt MHS GENESIS, as well as in-depth training on the functional capabilities of the new electronic health record. This training is provided to hand selected staff at MTFs preparing to transition to MHS GENESIS. The staff that are selected to become Peer Experts are chosen by the Commander of their respective MTF based upon their leadership skills, and ability to teach their peers in a working environment. DoD provides 18 months of training to those who are selected as Peer Experts leading up to the time their MTF is scheduled to make its official transition to MHS GENESIS, commonly known as "Go-Live".

Peer Experts are deployed in most, if not all, clinical areas of practice as well as administrative areas at a ratio between 10:1 and 20:1. This helps ensure new users of MHS GENESIS have access to a peer who has the necessary knowledge, skills, and abilities to properly and safely operate MHS GENESIS once an MTF begins using the system.

DoD's Pay-it-Forward (PIF) program is designed to leverage staff volunteers, and peer experts, from MTFs that have already transitioned to MHS GENESIS to provide over the shoulder support to staff at MTFs who are in the midst of Go-Live activities. Similar to our Peer Expert program, PIF leverages staff in most clinical and administrative areas. Our PIF volunteers are scheduled to provide on-site support for the first week of an MTF's transition to MHS GENESIS.

These two programs were designed following DoD's IOC deployment of MHS GENESIS, and subsequent pause in deployment activities where we conducted a strategic review of our own deployment strategy and training programs.

To date, the Department of Veterans Affairs (VA) has achieved a significant milestone in its initial deployment of the federal EHR to Mann-Grandstaff VA Medical Center in 2020. However, the VA is experiencing some of the challenges DoD experienced in the beginning of its own EHR modernization journey. As a result, VA is now conducting a strategic review of its EHR modernization program implementation. Like DoD, VA is confident that they have taken this opportunity to evaluate their own unique challenges, and will apply lessons learned to their future deployments of the joint EHR.

DHA works closely with key stakeholders including: the MHS GENESIS acquisition team at the Program Executive Office, Defense Healthcare Management Systems (PEO DHMS), who oversees the overall deployment of MHS GENESIS through their contract with the Leidos Partnership for Defense Health, as well as DHA's Information Operations Directorate, who is

responsible for ensuring each MTF's digital infrastructure has been optimized to support MHS GENESIS system requirements. Coordination between these three entities has been a key to addressing challenges as they arise whether from a clinical, acquisition, or digital infrastructure perspective.

The mission of the Program Executive Office, Defense Healthcare Management Systems (PEO DHMS) is to transform the delivery of healthcare and advance data sharing through a modernized electronic health record for service members, veterans, and their families. PEO DHMS is an acquisition organization with a direct reporting relationship to the Office of the Under Secretary of Defense for Acquisition and Sustainment (OUSD(A&S)), and administratively attached to the Defense Health Agency. The purpose of the organization is to drive patient-centered healthcare through modern solutions. Through innovation, superior execution, responsiveness and fiscal accountability, the entire PEO DHMS team transforms the delivery of healthcare by focusing on the whole health IT portfolio. In addition to the electronic health record, which is foundational, the PEO DHMS is bringing improved data access to the table through the MHS Information Portal (MIP) and advancing capabilities for the operational medicine community.

DHA established a senior level "Functional Champion" to serve as the "single voice" for healthcare community, leveraging the chief health informatics officer to translate requirements and collaborate on enterprise solutions to the program office. This functional role is outside the program office chain but works hand in hand to deliver the solution.

The power of enterprise solutions became more apparent as more sites came on line—shifting paradigm from a site specific perspective to an enterprise health system perspective. As more sites come on board the influence and advice of peers currently using the system are critical to driving adoption, improvement and confidence in the system. Adoption improves when the enterprise value proposition is realized.

Lessons learned are captured and incorporated through each phase of process focused on infrastructure, management structures, user readiness, and system usability.

Following the IOC deployment of MHS GENESIS, DHA created a new Health Informatics structure at its headquarters and subsequently at each MTF preparing to transition to MHS GENESIS. Our Health Informatics team at the headquarters level, DHA Health Informatics (DHA-HI), is charged with ensuring MHS GENESIS is properly configured for all users of the system, as well as identifying training gaps that have resulted in challenges with user adoption. Our Health Informatics structure at the MTF level is known as an Informatics Steering Committee, which is comprised of key leaders at each MTF who are able to capture user feedback, and clearly communicate user challenges from the site level to the headquarters level and vice versa.

WEDNESDAY, MAY 26, 2021.

DEFENSE ENVIRONMENTAL RESTORATION

WITNESSES

AMY BORMAN, DEPUTY ASSISTANT SECRETARY OF THE ARMY FOR ENVIRONMENT, SAFETY AND OCCUPATIONAL HEALTH

MARK CORRELL, DEPUTY ASSISTANT SECRETARY OF THE AIR FORCE FOR ENVIRONMENT, SAFETY AND INFRASTRUCTURE

RICHARD KIDD, DEPUTY ASSISTANT SECRETARY OF DEFENSE FOR ENVIRONMENT AND ENERGY RESILIENCE

KARNIG OHANNESSIAN, DEPUTY ASSISTANT SECRETARY OF THE NAVY FOR ENVIRONMENT

OPENING STATEMENT OF CHAIR MCCOLLUM

Ms. MCCOLLUM. This hearing will come to order.

This hearing is fully virtual, and I am going to address some housekeeping matters.

For today's meeting, the chair or staff designated by the chair may mute participants' microphones when they are not under recognition for the purpose of eliminating background noise.

Members are responsible for muting and unmuting themselves. If I notice you have not unmuted yourself, I will ask you to do so. And if you still have problems, I will ask the staff to unmute you. So just indicate by nodding your head if you need to be unmuted.

I remind all witnesses and the members that the 5-minute rule still applies. And if you can't see the timer, please email staff and we will make sure you can know how to get it up on your screen.

If there is a technology issue, we will move to the next member until that issue is resolved and you will retain the balance of your time.

You will notice, as I said, a clock on your screen, and it shows you how much time is remaining. At 1 minute, the clock will turn yellow. At 30 seconds remaining, I will gently tap the gavel to remind members that their time is almost expired. When your time has expired and the clock has turned red, I will begin to recognize the next member.

In terms of speaking order, we are going to follow the order set forward by House rules, beginning with the chair and the ranking member. Members present at the time the hearing is called to order will be recognized in order of seniority, and finally, members not present at the time the hearing is called to order.

And finally, House rules require me to remind you that we have set up an email address to which members can send anything they wish to submit in writing at any of our hearings or markups, and that email has been provided in advance to your staff.

So with that, I will bring forward my opening statement.

This afternoon the committee will receive testimony on the Defense Environmental Restoration Programs and Accounts. Our four witnesses are Mr. Richard Kidd, Deputy Assistant Secretary of Defense for Environmental and Energy Resilience; Ms. Amy Borman, Deputy Assistant Secretary for the Army for Environment; Mr. Ohannessian—and I tried to practice that with you yesterday, sir, I hope I got it close, please correct us when you are testifying—the Deputy Secretary for the Navy and Environment; and Mr. Mark Correll, Deputy Assistant Secretary of the Air Force for Environment, Safety, and Infrastructure.

We welcome you and we thank you for your service.

This is the very first time that the Defense Appropriations Subcommittee has ever held a hearing specifically on environmental restoration or remediation issues within the Department of Defense. I believe it is critically important that this subcommittee be engaged here because environmental cleanup is directly relevant to every single State in our Nation and many of our congressional districts that we represent.

The impacts of environmental contamination in our communities, whether it be from hazardous chemicals or military munitions, are not partisan issues. This is about the lives, the health, and safety of our servicemembers, their families, and our constituents who live in and around military installations.

It is the duty of the Department of Defense and the services to ensure that they are responsible stewards of the land on which they operate. Where contamination has occurred, the Department and the services must ensure that those sites are cleaned up in a timely fashion to standards that meet the needs of the local communities.

It is our job in Congress to be a partner with DOD by ensuring adequate funding and conducting proper oversight of these cleanup projects.

One of my hopes for this hearing is for us to learn how we can better work together, in fact, work smarter, in funding remediation projects so we can get these sites cleaned up as swiftly as possible.

For some of the topics for today's hearing, I hope we can hear more about how funding is prioritized in the Environmental Restoration Account and how the Department and the services are using risk-based analysis to respond to contamination in our communities caused by DOD actions.

In places where the Department is the known source of contamination, how the Department is communicating the risks to servicemembers, their families, and the neighboring communities and ensuring that those who are affected are well aware and consulted.

The cost to complete cleanup of DOD-caused contamination and military munitions at current and former military facilities and what constraints exist to speed along the cleanups.

The scope of the DOD's PFOS cleanup, where the Department is in identifying these possible contaminations of DOD installations, these toxic chlorinated forever chemicals, and how far along in the CERCLA process are the services in remediating the PFOS contamination.

The discussion of research and development, the work the Department is exploring to do its PFOS remediation, and what promising technologies exist to develop PFOS-free firefighting foam.

Now, I acknowledge and we all know that we are holding this hearing just before the release of the full budget request, and we understand, to our testifiers, that this may limit your ability to answer certain questions.

However, given the tight timeframe we have to write this bill, I ask that you be prepared to respond to members and committee staff on any specific budget questions that are asked today immediately after the full budget request has been submitted.

With that, I thank you again for appearing before the committee today to discuss these important issues. I will ask you to present your summarized statements in a moment. But first I would like to recognize our ranking member, Mr. Calvert, for his opening statement.

OPENING STATEMENT OF MR. CALVERT

Mr. CALVERT. Thank you, Chair McCollum. I appreciate you calling this hearing today.

There are few issues more consequential to the quality of life for our soldiers, sailors, airmen, marines, and guardians than worry-free access to safe and clean drinking water.

The Defense Environmental Restoration Program is a critical element in providing both short and long-term remediation on military installations or in the surrounding communities, especially, as the chairman mentioned, where PFOS levels were detected in excess of current clean water standards.

Given the complexities of this national challenge and the importance of close interagency collaboration with EPA, I look forward to discussion on the details of your approach to identify, investigate, and respond to this presence of PFOS. And I mention PFOS especially because it seems to be the overwhelming problem throughout the Nation.

I would also appreciate an update on the Department's efforts to find a replacement for PFOS, as the chairman mentioned. This long-used firefighting foam, I know it is very effective in putting out fires, but, obviously, it has other problems.

My understanding is that the fiscal year 2020 NDAA requires the Department to phase it out in all military installations by October 2024, but perhaps you can tell us whether this timetable can be accelerated if we have hopefully a suitable alternative.

I know there is a high level of interest in Congress in the Department's efforts to address contamination from other hazardous substances, including unexploded ordnance, discarded military munitions at formerly used defense properties and BRAC locations throughout the United States. I hope you can similarly update us on these important efforts.

Again, I thank the chair, and I thank all of you for your appearance today, and I look forward to your testimony.

With that, Madam Chair, I yield back.

Ms. MCCOLLUM. Thank you. You and I have worked on environmental issues for many, many years. Look forward to working with you on this.

Mr. Kidd, we would like to ask you for your statement, please.

SUMMARY STATEMENT OF MR. KIDD

Mr. KIDD. Chair McCollum, Ranking Member Calvert, other members of the committee, I appreciate the opportunity to be here today and provide a summary of the Department of Defense's Environmental Restoration Program.

Thanks to strong and consistent support from Congress, totaling over \$45 billion since the inception of this effort, the Department has been able to establish and maintain a mature, effective cleanup program. We have made consistent progress across both Installation Restoration Program sites to address cleanup and Military Munitions Response Program sites to address unexploded ordnance.

Congressional support for the program exceeded \$1.6 billion in fiscal year 2020 and \$1.9 billion in fiscal year 2021.

Because of this sustained effort and support, the Department has now completed cleanup at over 85 percent of the total identified sites.

Nonetheless, all should understand that cleanup is a long-term endeavor requiring sustained funding and persistent attention. In many cases, some of the hardest to address sites remain. Our estimated cost to complete cleanup exceeds \$29 billion.

Of increasing interest to all are the challenges related to unregulated or emerging chemicals of concern, particularly including perfluorinated compounds, or PFOS. Given the importance being placed on this family of chemicals, I would like to share with you my candid assessment on our efforts after 5 months on the job.

First, an overview of the Department's PFAS-related cleanup efforts. As of March 31 of this year, the Department had identified 698 installations where DOD used or potentially released PFAS. All of these installations have entered the CERCLA process.

We have completed the preliminary assessment and site investigation on 129 of these installations. Of these 129, 63 were found to require no further action, while 66 are proceeding to the remedial investigation and feasibility study per the CERCLA process.

We expect all of the preliminary assessments and site investigations on all installations to be completed by the first quarter of 2024.

The Department has also taken quick action to address PFOS chemicals in drinking water, both on and off base, and we are confident that no one is drinking water with PFOS or PFOA above EPA's lifetime health advisory of 70 parts per trillion where the Department of Defense is the known source.

Additionally, the Department has a strong internal governance body in the form of the PFAS Task Force and a record of serious engagement on this topic.

Second, I would like to share with you my assessment of the challenge that is ahead of us.

The rate of progress is defined primarily by the rules that govern our physical world. Physics, chemistry, and science establish the realm of the possible and dictate the parameters within which we work.

Based on what we know today and known technologies, frankly, it will be years before we fully define the scope of the problem, and with that definition can be reflected in our budget requests, and after that probably decades before cleanup is complete.

Despite this challenge, opportunities exist for improving what we are currently doing, and I would highlight these to you.

The first is to invest in science, challenge the parameters I mentioned above, expand options, and accelerate cleanup.

Second is to improve our internal processes. Every month matters. We should apply best management practice and insights from data to reduce DOD internal decision times.

We must expand community outreach. Frankly, the most important outreach occurs at the local level, but it is important that senior leaders demonstrate their commitment and lead by example. And I will start this on July 14 when I will represent the Department in a public townhall.

Finally, we must engage our partner agencies at the State and local level.

Dependencies on regulators are real. Engagement is critical. Our Secretary met with the EPA Administrator 2 weeks ago, and during that meeting they discussed PFAS at length and made it clear to all of us that collaboration is essential and will be the norm between the two agencies going forward.

The program is legally and technically complex, but its purpose is simple: to preserve the trust with the American people and protect the environmental bounty of this great land for current and future generations.

I am committed to this effort, and I look forward to your questions.

[The information follows:]

HOLD UNTIL RELEASED
BY THE COMMITTEE

House Appropriations Committee
Subcommittee on Defense

By: Mr. Richard Kidd
Deputy Assistant Secretary of Defense
(Environment and Energy Resilience)

Hearing: May 26, 2021

Chairwoman McCollum, Ranking Member Calvert, and distinguished members of the Subcommittee: Thank you for the opportunity to discuss the Department of Defense environmental restoration program. The Department is committed to addressing our releases of chemicals under the federal cleanup laws, and protecting the health of our personnel, their families, and the communities in which we serve. We must also protect the environmental resources that the country has entrusted in our care.

Thanks to strong and consistent support from Congress, the Department has been able to establish and maintain a mature, effective cleanup program. This program follows best available science to address the highest risks first, successfully addressing risks to human health and the environment and mitigating impacts from DoD activities. Nonetheless, all should understand that cleanup is a long-term endeavor, requiring sustained funding and persistent attention.

Many of the hardest clean-up challenges remain to be addressed. We are committed to continuously improving the responsiveness of the program, incorporating advanced technologies, best practice and new knowledge as rapidly as possible. And, while this program is both legally and technically complex, its underlying purpose is simple; to address the releases we made and keep the American people informed.

Defense Environmental Restoration Program: Structure and Cleanup Progress to Date

The Defense Environmental Restoration Program (DERP) (10 United States Code §§ 2700-2711) provides authorities to DoD to perform and fund its cleanup actions, and requires they be carried out in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980. Our response is further guided by U.S. Environmental Protection Agency (EPA) regulations and the best available science in the areas of toxicology, chemical detection/propagation, and remediation techniques. While the Department establishes overall goals and guidelines for the program, implementation is the responsibility of the individual DoD Components. Each Component is responsible for planning, execution, and oversight of clean-up activities on their respective installations. These activities reflect a long-standing commitment to follow a nation-wide risk-based framework to apply available funding to highest risk sites first.

The Defense Environmental Restoration Program addresses two categories of sites—the Installation Restoration Program (IRP) which manages the cleanup of chemicals released to the

environment, and the Military Munitions Response Program (MMRP) which addresses former military range sites known or suspected to contain unexploded ordnance, discarded military munitions, or munitions constituents. Our cleanup program includes response actions at active military bases, locations closed through the Base Realignment and Closure (BRAC)¹ process, and Formerly Used Defense Sites (FUDS)² properties within the United States.

By the end of Fiscal Year (FY) 2019, the Department, in cooperation with state agencies and the U.S. Environmental Protection Agency, has completed cleanup activities at 89% percent of IRP sites – out of a total of 34,066 sites – and is now monitoring the results to ensure these completed cleanups remain protective. For Munitions Response Sites (MRSs)³, DoD has completed cleanup at 64 percent out of a total of 5,500 sites. While we have made significant progress, the remaining sites represent more complex cleanups requiring more time, a remedy based on more advanced technology, or sites impacted by chemicals of emerging concern, such as Per- and Polyfluoroalkyl Substances (PFAS).

DoD Environmental Restoration Funding

Since the Defense Environmental Restoration Account(s) (DERA) were established in the 1980's, the Department has invested approximately \$45B to clean up environmental sites on our active bases and Formerly Used Defense Sites (FUDS), \$13B in the last 10 years alone. Of this amount over the last decade, approximately \$10B has gone to sites on active bases, and nearly \$3B has gone to sites on FUDS properties. Approximately 80% of this funding supported IRP, while 20% supported MMRP. Despite these investments, as of the FY2020 Annual Financial Report, the Department has an Environmental Liability of nearly \$28B in these areas, \$17B on active installations and \$11B on FUDS properties. These liability numbers may increase as emerging chemicals of concern are identified and their cleanup included.

In FY2021 the final Congressional authorization for the DERA was \$1.5B, including Congressional adds exceeding \$400M. Congress has generously added funding to the DoD Component Environmental Restoration accounts, increasing our President Budget requests for the DoD Environmental Restoration Accounts by more than \$1B since 2018 alone. This has allowed us to address impacts from hazardous substances or pollutant or contaminants, such as chemicals of emerging concern, including PFAS. We appreciate this investment that is essential in developing and executing a cleanup that takes several years.

The table below provides DoD's planned Environmental Restoration Account obligations from FY 2019 through FY 2021 as well as FY 2019 actual obligations. The table includes the President's Budget (PB) request (total and breakdown for IRP, MMRP, and Program Management (PM)), Congressional-adds, Funding Allocated, and Funding Obligated (total and breakdown for IRP and MMRP).

¹ BRAC locations were authorized for closure or realignment by Congress under one of the five BRAC rounds.

² FUDS are properties that were formerly owned by, leased to, or otherwise possessed by the United States and under the jurisdiction of the Secretary of Defense prior to October 17, 1986.

³ A discrete location within a munitions response area that is known to require a munitions response (32 CFR 179).

**Table: DoD Environmental Restoration Account Funding History from
FY 2019 – FY 2021**

(\$M) ¹	PB	IRP	MMRP	PM ²	Plus-up	Allocated	Obligated ³	IRP	MMRP	PM ²
FY 2021⁴	1,073.0	676.0	253.0	144.1	430.4	1,503.7	TBD	TBD	TBD	TBD
FY 2020⁵	1,071.7	623.3	256.6	191.9	344.0	1,415.7	TBD	TBD	TBD	TBD
FY 2019	1,050.8	672.8	220.0	157.9	184.3	1,235.2	1,199.9	850.3	214.1	135.4

¹ Numbers may not add due to rounding.

² Includes PM and other support costs that cannot be allocated to individual sites, as well as funding for investigations (i.e., preliminary assessments and site inspections) of known or suspected releases of per- and polyfluoroalkyl substances.

³ FY 2019 obligated amounts are less than the allocated amounts because Army did not obligate approximately \$21M and returned it to the central account; Navy did not obligate approximately \$0.4M; Air Force did not obligate approximately \$2M; Defense Logistics Agency (DLA) did not obligate approximately \$0.9M; and the Office of the Secretary of Defense (OSD) did not obligate approximately \$10M.

⁴ FY 2021 obligated amounts will be available during the FY 2023 President's Budget cycle.

⁵ FY 2020 obligated amounts will be available during the FY 2022 President's Budget cycle.

The CERCLA Cleanup Process

DoD follows the existing Federal cleanup law, the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, and long-standing EPA regulations for all chemicals in our cleanup program. CERCLA provides a consistent, science-based approach across the nation for cleanup and includes environmental regulators and public participation. The DERP statute provides authorities to DoD to perform and fund these actions, and requires they be carried out in accordance with CERCLA. DoD, like other Federal agencies, is specifically authorized under CERCLA Section 104 to take cleanup action to address "pollutants or contaminants" as well as chemicals designated as a CERCLA hazardous substance. DoD works in collaboration with EPA, other Federal agencies, and communities throughout this process.

Some of the key steps in the CERCLA process for carrying out remedial actions, and the approximate time it takes DoD to complete each step, are shown in the figure below:

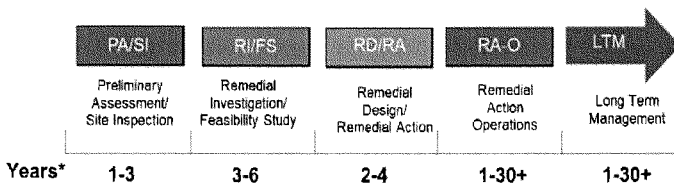


Figure: CERCLA Process and Estimated Timeline

In addition to CERCLA remedial actions, DoD can undertake removal actions which are shorter-term actions to address immediate threats to public health.

Risk-Based Prioritization throughout the Cleanup Process

DoD follows the CERCLA process to fully investigate a release and determine the appropriate cleanup actions based on risk. DoD's cleanup program is premised on prioritizing sites for cleanup using a risk-based process—essentially worst first. Risk-based prioritization and cleanup occurs throughout DoD's cleanup process. DoD uses the most appropriate and relevant toxicity information when assessing risk to human health under CERCLA. Under the CERCLA process, risk-based toxicity information is used nationwide to determine if a response is required. The CERCLA regulations provide a federal blueprint for the CERCLA program and include a cancer risk range and hazard index for non-carcinogens; these, together with federal and state standards, are then used as part of the process for establishing remediation goals. DoD prioritizes its cleanup response at its IRP sites and Munition Response sites based on the highest risk to address worse sites first to efficiently and effectively use DERP funding.

Because munition response sites have the potential for acute explosives safety risk different from the typical chemical exposure risk assessments covered by EPA regulations and long-standing guidance, DoD developed the Munitions Response Site Prioritization Protocol (MRSP) to prioritize its munitions response sites. For munitions sites, risk is determined by the explosives hazard of the unexploded ordnance and discarded military munitions; the unique, acute physiological effects of any chemical warfare material; as well as chronic health and environmental hazards posed by munitions constituents and any incidental environmental contaminants. The Department developed the MRSP in consultation with regulators and stakeholders to provide a consistent approach to prioritize munitions response actions for cleanup.

DoD also uses risk-based prioritization to sequence the start of Remedial Investigations (RI) for all cleanup sites. DoD's RI sequencing framework is called the Relative Risk Site Evaluation (RRSE). The RRSE groups sites into high, medium, and low categories based on an evaluation of site information using three factors: the contaminant hazard or source (i.e., where the release occurred and in what environment media), the migration pathway (i.e., how the release traveled through the environment), and the possible receptor (i.e., human and ecological receptors that may be exposed). The Department developed the RRSE framework in consultation with regulators and stakeholders to provide a consistent approach to prioritize the start/sequencing of Remedial Investigations.

Community Engagement throughout the Cleanup Process

Another fundamental tenet of DoD's cleanup program is community engagement. Throughout the cleanup process, we engage with the communities in which we serve. There are several opportunities for public participation as we move through the cleanup process, and DoD shares information on the status of the cleanup and site-specific cleanup data through several outreach practices. For example, before DoD selects the remedy in a decision document, it issues a proposed plan for the cleanup action, and provides an opportunity for public comment. DoD may

also hold public meetings to discuss the proposed cleanup action, post information about the cleanup on the installation website, and is required to have an information repository with the supporting cleanup data available to the community (often located at a local public library).

In addition to the traditional public participation opportunities mentioned above, DoD also has some DoD-unique community engagement practices for our cleanup sites. One of our key community engagement tools is the Restoration Advisory Board (RAB), which provides communities or individuals affected by DoD cleanup activities with a forum for focused dialogue on the installation's cleanup program. DoD establishes a RAB when there is sufficient and sustained community interest in the installation's on-going cleanup efforts. RABs are community-oriented forums that encourage and facilitate communication between citizens and installation decision-makers regarding cleanup at active or BRAC installations and formerly used defense site (FUDS) properties. RAB participants may include representatives from the community, installation, State, local or tribal governments, local activities, and federal, State or local regulatory agencies. Participants review cleanup progress and provide comments and advice to the installation's decision-makers.

Because the Department values this tool and its benefits so highly, we provide administrative and financial support for RABs to ensure they are sufficiently resourced to create effective partnerships. In addition, RAB members can use the Technical Assistance for Public Participation (TAPP) grant program to obtain private sector, independent technical assistance to help them better understand the scientific and engineering issues underlying an installation's environmental cleanup activities. RABs may use TAPP funding to translate crucial public documents and prepare documents using non-technical language. RABs are eligible to receive TAPP funding when they need support reviewing human health risks, assessing technology, interpreting technical documents, and participating in relative risk evaluations.

As of the end of FY2019, DoD was working with 244 RABs on active installations, BRAC locations, and FUDS properties. DoD has supported a relatively consistent number of RABs since it established the program in 1994. In FY2019, DoD obligated \$2.9 million to support RABs. Obligations vary from year to year based on community interest and participation, as well as cleanup requirements.

Issue of Concern: PFAS

The Department recognizes the growing Congressional and Public interest in addressing requirements related to the cleanup of Per and Polyfluoroalkyl Substances or PFAS. For this reason, we have invested significant effort into understanding and addressing the challenges posed by this particular class of chemicals.

PFAS are a large class of chemicals found in many consumer products, industrial products, as well as in a certain firefighting foam called aqueous film forming foam (AFFF). AFFF is mission critical to DoD because it quickly extinguishes petroleum-based fires, thus minimizing loss of life and valuable equipment. While DoD is only one of many users of AFFF, there is significant attention on DoD's use and the subsequent potential impact to human health and the environment.

The Department established a PFAS Task Force in July 2019. This Task Force, which includes all the representatives here today, provides strategic leadership and direction to ensure a coordinated, aggressive, and holistic approach on DoD-wide efforts to address PFAS. The Task Force continues unchanged and is postured to be responsive to the direction of this Administration. The PFAS Task Force continues to focus on three main goals:

- Mitigating and eliminating the use of the current aqueous film forming foam (AFFF);
- Fulfilling our cleanup responsibilities, and
- Understanding the impacts of PFAS on human health

Cleanup. One of the top priorities of the PFAS Task Force is cleanup, and DoD is committed to addressing DoD's PFAS releases under the Federal cleanup law, CERCLA, and sharing information with our DoD families and community members in an open and transparent manner. In May 2016, the Environmental Protection Agency (EPA) issued a drinking water lifetime health advisory (HA) of 70 parts per trillion for two PFAS, perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA). Since that time, DoD has followed the federal cleanup law, CERCLA, to address its releases of PFAS. DoD is performing an assessment at nearly 700 installations, where DoD may have used or potentially released PFAS. As part of the CERCLA process, DoD is addressing both drinking water (short-term action) and groundwater (long-term action) and works in collaboration with EPA, other Federal agencies, and communities throughout this process.

Drinking Water: DoD takes quick action to address drinking water and provides alternative water when PFOS or PFOA from DoD activities is found off-base in drinking water at levels above EPA's HA. DoD's actions are consistent with EPA's recommended actions, which include treatment of drinking water or providing alternative water supplies, such as bottled water or connecting residents served by private wells to public drinking water systems. No one is drinking water, whether on or off base, with PFOS and PFOA above EPA's HA level where DoD is the known source.

Ground Water: The remaining cleanup efforts are primarily to address PFAS in groundwater, which can be technically complex and take a long time to complete.

In total, DoD has obligated over \$1.2 billion to address PFAS releases through FY2020 and current estimates for FY2021 and beyond exceed \$2 billion. These estimates are expected to grow as ongoing assessments are completed.

The Department has been addressing PFAS responsibly, following the science and direction of Congress, for a number of years. Congress has provided the Department with significant additional funds to address PFAS clean-up as well as a clear set of requirements to guide our actions. The most notable of these cleanup-related National Defense Authorization Act (NDAA) requirements being:

- Addition of National Guard PFOS/PFOA sites to DERP (section 316 of the FY20 NDAA, section 314 of FY21 NDAA)
- Disposal of Materials Containing PFAS or AFFF (section 330 of the FY20 NDAA)
- Agreements to Share Monitoring Data (section 331 of FY20 NDAA)
- Cooperative Agreements with States to Address PFAS (section 332 of FY20 NDAA)

- Provision of Uncontaminated Water for Agricultural Purposes (section 343 of FY20 NDAA)
- Submission of a Remediation Plan for PFOS/PFOA & related funding requests (section 345 of FY20 NDAA)
- Notification to Agricultural Operations Located in Areas Exposed to DoD PFAS Use (section 335 of FY21 NDAA)
- AFFF spill and usage reporting to Congress (section 318 of the FY21 NDAA)

Issue of Concern: Military Munitions Response Program

Implementing the Department's Military Munitions Response Program (MMRP) continues to be technically and legally complex. DERP includes a specific provision concerning munitions response at our closed military ranges and use of the CERCLA process remains our preferred process. EPA issued regulations under the Resource Conservation and Recovery Act (RCRA) addressing military munitions in the late 1990s. Issues remain with parity of results and integration of this hazardous waste law's cleanup process and CERCLA.

Cleanup at munition response sites may also take longer because of technical challenges. For example, the potential acute explosives safety hazards from unexploded ordnance creates a unique situation for assessing risk and determining future land use restrictions. This is especially difficult given the variety of munitions used, site-specific conditions including that sites with military munitions may have been transferred out of DoD control, and technological challenges in distinguishing unexploded ordnance from munition debris without explosives safety concerns. To meet this challenge, DoD developed the Advanced Geophysical Classification process to determine whether a buried metal object is a military munitions or harmless debris. This technology allows DoD to focus resources on areas with potential explosives risks and collect high-quality data in order to make risk-based decisions. DoD worked in collaboration with federal and state regulators to build confidence in the process and decisions.

Because the MMRP generally takes longer to implement, the Department has focused on interim risk management activities to reduce the potential risk to human health and the environment where munition investigations are still ongoing or expected to occur in the future. These activities may include making explosives safety education materials available to stakeholders (e.g., property owners or users, representatives from communities surrounding the site). For example, at FUDS sites, DoD informs landowners at least every five years about the hazards that may remain on the property and actions to take if they come across potential munitions-related hazards.

Conclusion

DoD is taking deliberative and sustained action to address risks to human health and the environment resulting from DoD activities by following the CERCLA process. The DoD Components prioritize resources to meet cleanup goals in a risk-based manner. Our commitment is seen by the fact that DoD has completed cleanup at nearly 34,000 sites (85 percent). DoD will continue to address the effects of its releases to ensure that it protects the health of its DoD personnel, their families, and the communities in which they serve, as well as protect the environment.

Richard G. Kidd
Deputy Assistant Secretary of Defense for Environment and Energy Resilience
Office of the Assistant Secretary of Defense for Sustainment



Mr. Richard Kidd, a member of the Senior Executive Service, is the Deputy Assistant Secretary of Defense for Environment & Energy Resilience. In this position, he provides policy and governance for programs and activities that enable resilience and cyber-secure energy for weapon systems and installations. This includes budgetary, policy, and management oversight of programs related to climate change, compliance with environmental laws, prevention of pollution, management of natural and cultural resources, and cleanup of contaminated sites, as well as energy resilience, risk, and performance.

Prior to his current position, Mr. Kidd served as the Deputy Assistant Secretary of the Army for Strategic Integration where he led the strategy development, resource requirements, and overall business transformation processes for the Office within the Office of the Assistant Secretary of the Army for Installations, Energy and Environment. He was responsible for developing and monitoring performance metrics for the Army's installation management community as well as leading a strategic effort to examine options for future Army installations.

Throughout Mr. Kidd's career, he has served in various leadership positions including Executive Director for the Federal Permitting Improvement Steering Council (FPISC), a Federal entity in which he helped stood up. He was the Deputy Assistant Secretary for Energy and Sustainability within the Army and was responsible for the oversight and implementation of all programs and initiatives related to Energy Security and Sustainability. Mr. Kidd also held a position with the Department of Energy's Office of Energy Efficiency and Renewable Energy where he was responsible for leading the Federal Energy Management Program (FEMP).

Mr. Kidd received a Bachelor of Science from the United States Military Academy at West Point in 1986 and attained a Master's Degree in Public and Private Management from Yale University in Connecticut in 1993.

Ms. MCCOLLUM. Thank you very much.
Ms. Borman.

SUMMARY STATEMENT OF MS. BORMAN

Ms. BORMAN. Chair McCollum, Ranking Member Calvert, and members of the subcommittee, on behalf of the soldiers, families, and civilians of the United States Army, thank you for the opportunity to address your interest in and answer questions about the Army's Defense Environmental Restoration Account.

The Department of the Army's Restoration Program is a mature program managed and executed by a team of soldiers and civilians from across the Army, and I am proud to report that approximately 91 percent of our restoration sites have reached Response Complete milestone. This occurs when sites complete the proposed remedial action or require no further investigation.

The Army's universe of cleanup sites yet to achieve Response Complete is approximately 1,200 spread across our active and our closed installations. In order to make the most impact, we continually reassess the Cleanup Program with the intention of addressing the highest risk sites first. At the same time, we are committed to achieving Response Complete at all of our sites.

While the Army is proud of our successes and remains focused on continuous improvement in our Cleanup Program, we know that cleanup at many of the remaining sites is more complex and requires additional time and/or advanced technology.

The Army has been identifying and conducting cleanup at sites since the 1980s and has come a long way. Still, we remain fully aware of the magnitude of our mission and look forward to continued partnership with fellow Federal agencies, State regulators, and industry stakeholders to increase the efficiency in our cleanup efforts.

In addition, the Army is focused on responding to the challenges of PFAS and is resolute in making substantial investment necessary to continue forward progress, and we thank you for the support you have provided to date.

The Army is dedicated to being transparent about our cleanup process with both Congress and the public. To that end, as we complete the analysis of our PFAS investigations, we are taking steps to make our PFAS cleanup process and results more publicly transparent.

Our priority remains the health and safety of our servicemembers, their families, Army civilians, and the communities surrounding our installations. We will continue to prioritize and address our sites where risk to human health is the highest.

I assure you that the Army is fully committed to addressing our cleanup responsibilities. Thank you for the opportunity to present this testimony and for your continued support of the Army.

[The information follows:]

RECORD VERSION

STATEMENT BY

MS. AMY BORMAN
DEPUTY ASSISTANT SECRETARY OF THE ARMY
(ENVIRONMENT, SAFETY, AND OCCUPATIONAL HEALTH)

BEFORE THE

SUBCOMMITTEE ON DEFENSE
COMMITTEE ON APPROPRIATIONS
UNITED STATES HOUSE OF REPRESENTATIVES

FIRST SESSION, 117TH CONGRESS

ON DEFENSE ENVIRONMENTAL RESTORATION ACCOUNTS

MAY 26, 2021

NOT FOR PUBLICATION UNTIL RELEASED BY THE
COMMITTEE ON APPROPRIATIONS

Chair McCollum, Ranking Member Calvert, and distinguished Members of the Subcommittee, I am honored to appear before you today and I am pleased to address your interest in, and answer questions about, the Army's Defense Environmental Restoration Account (DERA). My name is Amy Borman. I am the Deputy Assistant Secretary of the Army for Environment, Safety and Occupational Health (DASA(ESOH)). My portfolio includes the policy, planning, budgeting, and execution of the Army's Environmental Restoration Program, also known as the Cleanup Program.

The Army conducts cleanup under the Defense Environmental Restoration Program (DERP) and in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This provides a consistent national approach for addressing cleanup and includes prioritizing sites throughout the United States using a risk-based process—essentially worst sites first. The Army uses DERP to address two types of environmental cleanup: the Installation Restoration Program (IRP), which manages the cleanup of chemicals released to the environment—things that may cause human health or ecological concerns, and the Military Munitions Response Program (MMRP)—primarily addresses explosive hazards. DERP cleanups primarily occur at Active and Reserve installations as well as closed installations excessed via the General Services Administration (GSA). The Army has implemented and continues to execute a strategy that enables sites that meet eligibility guidelines, to be cleaned up using DERA funding. The FY21 National Defense Authorization Act, authorized use of DERA funds to address Perfluorooctane Sulfonate (PFOS) and Perfluorooctanoic Acid (PFOA) at Army National Guard locations. Within the framework of CERCLA, the Army investigates releases, prioritizes responses, and assesses appropriate, cost-effective cleanup actions based on risks to human health and the environment.

I am proud to report that approximately 91 percent of our Restoration Sites have reached the Response Complete (RC) milestone, which occurs when sites complete the proposed remedial action or require no further investigation. This was an Office of the

Secretary of Defense's (OSD) goal we met in 2015; three years ahead of the goal's stated metric of 2018.

I assure you that the Army is fully committed to addressing our cleanup responsibilities. CERCLA is a process that can take many years and begins with site identification, involving a Preliminary Assessment/Site Inspection (PA/SI) to identify and assess the potential source of a release and the nature of the release (through sampling). Using data gathered in the PA/SI, the Army is able to prioritize sites for further action using a risk-based approach. Throughout the United States, the Relative Risk Site Evaluation (RRSE) methodology is used to assess the sequence for funding actions at IRP sites, and the Munitions Response Site Prioritization Protocol (MRSP) is used to assess the sequence for funding actions at MMRP Sites. Where PA/SIs indicate further investigation is warranted, the RRSE or MRSP is used to sequence and prioritize the sites for Remedial Investigation (RI); a CERCLA phase where site-specific risks to human health and the environment are analyzed through additional data collection and analysis including a risk assessment.

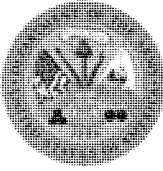
The Army's universe of cleanup sites yet to achieve RC is approximately 1,200 spread across active and closed installations. In order to make the most impact, we continually reassess the Cleanup Program with the intention of addressing the highest risk sites first. As cleanup sites are identified and progress through CERCLA phases, the actual timing and scope of response actions are tailored to site conditions and funding priorities. At the same time, we are committed to achieving RC at our sites. The stable and consistent funding provided by Congress to the DERA account has given us the financial certainty to make significant cleanup progress in this mature program.

Funding requirements in the form of cost estimates are developed using auditable and defensible standard accounting practices. These estimates include the cost to complete a project and also sufficient financial fidelity to identify the required funding by CERCLA phase. On an annual basis, the Cleanup Program provides input to the President's Budget build and the 5-year Program Objectives Memorandum cycle to Army and OSD. Annual funding priorities are: 1) ongoing remedial actions and long-term management of existing remedies to ensure continued protectiveness; 2) initiation

of remedial actions and/or commitments to stakeholders for implementation of remedies; 3) ongoing investigations; and 4) new investigations.

While the Army is proud of our successes and remains focused on continuous improvement in our Cleanup Program, we know that cleanup at many of the remaining sites is more complex and requires additional time and/or a remedy based on more advanced technology. The Army has been identifying and conducting cleanup at sites since the 1980s and has come a long way. Still, we remain fully aware of the magnitude of our mission and look forward to continued partnerships with fellow federal agencies, state regulators, and industry stakeholders to increase efficiency in our cleanup efforts. In addition, the Army is focused on responding to the challenges of PFAS and is committed to making the substantial investment necessary to continue forward progress. The Army is committed to being transparent about our cleanup progress, with both Congress and the public, and is taking steps to make data, particularly concerning PFAS, more accessible. The Army will also continue to notify the appropriate Congressional delegations when PFAS sampling or notifications are about to occur both on and off installations.

Our priority remains the health and safety of our Service members, their families, Army civilians, and the communities surrounding our installations. We will continue to prioritize and address sites where risk to human health is the highest. We greatly appreciate the funding provided in FY21 and commit to being a responsible steward of the resources entrusted to us. Thank you for the opportunity to present this testimony and for your continued support of the Army.



Biography

Department of the Army



Amy L. Borman

Deputy Assistant Secretary of the Army
Environment, Safety and Occupational Health
Washington, DC



Selected for the Senior Executive Service in 2020, Ms. Amy L. Borman serves as the Deputy Assistant Secretary of the Army for Environment, Safety and Occupational Health (ESOH). In this role, she provides executive leadership for all Army sustainability, environment, natural resources, safety and occupational health programs including Army National Guard and Reserve activities.

In addition, she provides leadership, management, and oversight of Army Acquisition Programs (ESOH issues); Chemical, Biological, Nuclear and Conventional Treaty Verification and Compliance; and Army Environmental Technology Programs. Ms. Borman serves as the Functional Chief for Career Program 12 (CP-12), Safety and Occupational Health. She serves as the Executive Agent for a number of critical Department of Defense (DoD) activities, to include the Unexploded Ordnance Center of Excellence; National Defense Center for Energy and the Environment; Recovered Chemical Warfare Materials Program; Voluntary Protection Program Center of Excellence; DoD Environment, Safety, and Occupational Health Network and Information Exchange; and the Formerly Used Defense Site (FUDS) Cleanup Program.

Ms. Borman provides oversight with regard to environmental, safety, and occupational health technology development, demonstration, and validation programs. She works closely with the Interstate Technology and Regulatory Council to integrate state and commercially developed ESOH technologies into the installation community.

CAREER CHRONOLOGY:

- Mar 2020 – Present: Deputy Assistant Secretary of the Army for Environment, Safety and Occupational Health, Office of the Assistant Secretary of the Army for Installations, Energy and Environment
- Oct 2015 – Mar 2020: Director, Environmental Technology, Office of the Assistant Secretary of the Army for Installations, Energy and Environment

- May 2011 – Sep 2015: Associate Technical Director, Engineer Research and Development Center
- Jan 2013 – Aug 2013: Engineer Research and Development Center Liaison to the Deputy Assistant Secretary of the Army for Research and Technology
- Nov 1999 – Apr 2011: Director of Programs, PRIZIM Inc.
- Nov 1996 – Nov 1999: ORISE Fellow, Environmental Protection Specialist, U.S. Army Ordnance Center and School, Aberdeen Proving Ground

COLLEGE:

- Indiana University, Bloomington IN, 1996, Master's, Environmental Science
- Augustana College, Sioux Falls SD, 1991, BA Chemistry

SUMMARY STATEMENT OF MR. OHANNESSIAN

Ms. MCCOLLUM. Thank you.

Mr. Ohannessian—was I even close, sir?

Mr. OHANNESSIAN. That is closer, yes.

Ms. MCCOLLUM. Would you please say it for everyone. Names are important, and I apologize.

Mr. OHANNESSIAN. Sure. My name is Karnig Ohannessian.

I think that is why most of my subordinates just call me Mr. O, because they can't say it either.

Chair McCollum, Ranking Member Calvert, distinguished members of the subcommittee, I am Karnig Ohannessian, and I am the Deputy Assistant Secretary of the Navy for Environment. I appreciate the opportunity to appear before you today to discuss the Department of the Navy's Environmental Restoration Program.

The Department of the Navy's Environmental Restoration Program is a mature program with a well-established record of protecting human health and the environment in short- and long-term response actions taken over the past three decades.

We are proud of the substantial progress and many successes we have made at the Department's more than 4,000 Environmental Restoration Program sites. We have achieved the Response Complete milestone for 83 percent of our sites.

The remaining sites are our most challenging sites and will require additional time to achieve final remedies, address new and emerging chemicals of concern, and complete long-term remedies that are in progress.

Per and Polyfluoroalkyl Substances, or PFAS, are at the forefront of the chemicals of emerging concern across the Nation. The Department is implementing a comprehensive strategy to manage and address the known or potential releases of PFAS from our activities on Navy and Marine Corps installations and facilities nationwide.

We are committed to taking proactive action to identify and mitigate the impacts of PFAS releases to human health and the environment within the framework of the Comprehensive Environmental Response, Compensation, and Liability Act.

The Department of the Navy remains committed to being good stewards of the environment while advancing our mission to defend and protect this great Nation.

I thank the leadership and membership of the subcommittee for your attention, interest, and ongoing support for the Department of the Navy's Environmental Restoration Program, and I look forward to answering your questions.

[The information follows:]

NOT FOR PUBLICATION
UNTIL RELEASED BY THE
HOUSE COMMITTEE ON APPROPRIATIONS

STATEMENT OF

MR. KARNIG OHANNESSIAN
DEPUTY ASSISTANT SECRETARY OF THE NAVY (ENVIRONMENT)

ON DEPARTMENT OF THE NAVY
ENVIRONMENTAL RESTORATION PROGRAM

BEFORE THE
HOUSE COMMITTEE ON APPROPRIATIONS
SUBCOMMITTEE ON DEFENSE

MAY 26, 2021

NOT FOR PUBLICATION
UNTIL RELEASED BY THE
HOUSE COMMITTEE ON APPROPRIATIONS

Introduction

Chair McCollum, Ranking Member Calvert, distinguished Members of the Committee, thank you for the opportunity to discuss the Department of the Navy (DON) Environmental Restoration Program (ERP). I appreciate the hard work of the Members and Staff of this Committee to ensure funding stability and principled oversight of DON's ERP to protect human health and the environment for the Sailors, Marines, civilian employees, their families and the communities who work and live on and around our installations across the Nation.

Summary

The DON ERP is a well-established, mature program. We have been diligently conducting site investigations and cleanup actions on our installations for over 35 years. We work every day to be good stewards of the environment, and are proud of the substantial progress and many successes we have made at the Department's 4,452 ERP sites to protect human health and the environment. The DON's environmental stewardship protects and preserves the mission capabilities of our installations and training areas, ensures operational flexibility, meets environmental laws and regulations, and sustains the resources and public support we need to carry out our mission. Our progress and successes are also due in great part to our strong partnerships with our State and Federal regulatory agency partners, and our open and transparent engagements and communications with community members around our installations.

The DON funds and implements the ERP under the Defense Environmental Restoration Program (DERP) in accordance with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) cleanup framework. The DON's ERP sites comprise 4,030 Installation Restoration Program (IRP) sites conducting investigations and cleanup of chemicals released to

the environment, and 422 Munitions Response Program (MRP) sites addressing former military sites known or suspected to contain unexploded ordnance, discarded military munitions or munitions constituents.

Prioritization

The DON prioritizes ERP sites by risk to human health and the environment. Upon identification of an IRP or MRP site, the DON swiftly initiates the first steps in the CERCLA process, the Preliminary Assessment (PA) and Site Inspection (SI), to gather sufficient data to determine whether there has been a release of a CERCLA hazardous substance, pollutant or contaminant that requires further action. We use the information from the PA/SI to assess the relative risk of each IRP and MRP site in accordance with the Department of Defense (DoD) Relative Risk Site Evaluation (RRSE) framework or Munitions Response Site Prioritization Protocol (MRSP), respectively. The DON conducts these relative risk evaluations in consultation with our regulatory agency partners and community stakeholders to provide a consistent approach to prioritize our response actions. The Department uses this information to sequence funding and projects for assessment and mitigation of the highest risk sites first. As an illustrative example of the risk-based approach, a site with a known release of a chemical to groundwater that is flowing off an installation and impacting or threatening to impact drinking water supplies above health-based regulatory standards would be a higher priority than a small fuel spill in the middle of a large installation that has impacted only a small amount of soil and is immobile.

Funding

DON environmental restoration project managers regularly evaluate the progress of each site to determine the funding requirements for the coming years. Site progress may speed up or slow

down based on numerous factors, including the levels and extent of chemicals found in various environmental media (e.g., soil and groundwater), regulatory review times and capacity, and community stakeholder views. We aggregate the site-level funding requirements and sequencing of projects to develop each year's funding request for the Environmental Restoration, Navy (ER,N) account as part of the President's Budget. As stated above, the DON ERP is a mature program, with a well-established record of protecting human health and the environment through short- and long-term response actions taken over the past three decades. The majority of our remaining work is to complete long-term remedies that are in progress, many of which will span several more decades to achieve final cleanup goals.

Status

The DON ERP has made great progress over the years implementing cleanup solutions to protect human health and the environment. We have achieved the CERCLA response complete milestone for 3,689 of our 4,452 sites, or 83 percent of our sites. Of those 3,689 sites at response complete, 3,067 sites have been cleaned up to levels that allow unrestricted use, with the other 622 sites needing minimal land use controls and monitoring to ensure the cleanup remedies remain protective. Another 245 sites have remedial technologies installed and are operating as designed to achieve final cleanup goals in the coming years, a milestone called remedy-in-place. The remaining 518 sites are our most challenging sites, requiring additional time to achieve final remedies, or addressing new and emerging chemicals of concern.

Emerging Issues

There are many chemicals of emerging concern across the nation, per- and polyfluoroalkyl substances (PFAS) being at the forefront. The DON is implementing a comprehensive strategy to manage and address the known or potential releases of PFAS from DON activities on Navy

and Marine Corps installations and facilities nationwide. We took early actions to ensure that Navy and Marine Corps installations and facilities have drinking water without perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA) above the U.S. Environmental Protection Agency (EPA) health advisory levels. The DON also proactively identified locations where PFAS may have migrated to off-installation drinking water sources. After identifying these locations, DON officials gathered water samples from public and private drinking water wells to test for PFAS. Where EPA lifetime health advisory levels were exceeded, DON provided a short-term solution of alternate water for drinking and cooking purposes, and is proceeding with developing and implementing long-term solutions. The DON continues identifying, evaluating and addressing PFAS releases resulting from our activities, and is committed to taking proactive action to identify and mitigate the impacts of PFAS releases to human health and the environment within the CERCLA framework.

Conclusion

The Sailors, Marines, civilian employees, their families and the communities who work and live on and around our installations deserve to do so in a healthy environment. The DON is committed to being a good steward of the environment while advancing our mission to defend and protect this great Nation. The progress and successes achieved by our DON environmental restoration team, regulatory agency partners and community stakeholders are shining examples of the DON's commitment to environmental stewardship in action. I thank the leadership and membership of this Committee for your attention, interest and ongoing support to the DON ERP. It is an honor to work with each of you, and I look forward to your questions.

Ms. McCOLLUM. Thank you.

And I want to thank you, Mr. Correll, for meeting with me yesterday too and giving me some background.

Mr. Correll.

SUMMARY STATEMENT OF MR. CORRELL

Mr. CORRELL. Thank you very much, Chair McCollum, Ranking Member Calvert, distinguished members of the subcommittee. Thank you for the opportunity to discuss the Department of the Air Force Environmental Restoration Or Cleanup Program and its funding accounts.

The Department's mature Cleanup Program focuses on airmen, guardians, families, and surrounding communities by reducing risk to human health and the environment due to our activities.

For installation restoration our first priority is to protect people by quickly taking action to ensure there is no pathway between hazardous substances, pollutants, or contaminants and a human receptor.

Once that is completed, we focus on taking a risk-based approach to addressing the long-term impacts to groundwater, soil, and surface water under the direction and authorities of the Comprehensive Environmental Response, Compensation, and Liability Act, or CERCLA.

The Department of the Air Force has 8,338 sites and can report that 6,555 or 79 percent of those sites are in the Response Complete phase of CERCLA, with the remaining 1,783 installation and munition restoration sites still in the cleanup or investigation phases.

Over the last 3 years, we have received \$456 million in added funds from Congress, and I would like to thank you for your support.

Our responses in all cases are based on the overall relative risk at individual sites. We rank all sites as either high, medium, or low risk based on the toxicity of the contaminants, the likelihood, speed, and impacts of the contaminants migrating, and whether the pathways for contaminants to reach human and ecological receptors exist.

We recognize the CERCLA process can confuse and concern our communities and, accordingly, we have a robust program of transparent interaction with stakeholders that range from formal Restoration Advisory Boards, to ad hoc community action meetings, to public-facing websites, to installation commander interactions. We are committed to providing stakeholders with validated and timely information on our cleanup activities.

Although our programs covers a myriad of contaminants, we realize that PFAS, and particularly PFOA and PFOS, are a major concern across the Nation. To date, the Department has spent \$685 million on PFOA and PFOS, is providing mitigation at 33 installations, has completed all 203 CERCLA preliminary assessments, has completed 38 site inspections, and has ordered 47 remedial investigation contracts.

We have ceased using all firefighting foam for training, treat all real world use as if it were a hazardous spill, and have retrofitted all our fire vehicles with firefighting foam for training that is

lower, that has no PFOS and trace PFOA. We have been and will continue to be as proactive as possible in addressing this national concern.

The Department of the Air Force is committed to responsible environmental management, which includes assuring our airmen, guardians, families, and surrounding communities are protected.

Thank you again for the opportunity to testify today, and I look forward to your questions.

[The information follows:]

Department of the Air Force



Presentation

Before the House Appropriations
Subcommittee on Defense

Environmental Restoration

Witness Statement of

Mr. Mark A. Correll
Deputy Assistant Secretary of the Air
Force for Environment, Safety and
Infrastructure

May 26, 2021

Not for publication until released by the House Appropriations
Subcommittee on Defense

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BIOGRAPHY



UNITED STATES AIR FORCE

MARK A. CORRELL

Mark A. Correll, a member of the Senior Executive Service, is the Deputy Assistant Secretary of the Air Force for Environment, Safety and Infrastructure, Headquarters U.S. Air Force, Arlington, Virginia. He provides executive leadership on all matters pertaining to formulation, review and execution of plans, policies, programs and budgets for Air Force built and natural infrastructure, environmental, installation energy, safety and occupational health programs. These include facility management, military construction, utilities privatization, energy security, contingency energy, environmental compliance and restoration, occupational safety and workplace health.



Mr. Correll was commissioned in the Air Force in 1981 as a graduate of the U.S. Air Force Academy, earning a degree in civil engineering. He commanded two civil engineer squadrons, a mission support group and an air base wing. He retired in 2010 in the rank of colonel. Prior to his current assignment, Mr. Correll served as the Air Force Deputy Civil Engineer. In that position he provided leadership, direction and technical knowledge to organize, train and equip a 60,000-person engineering force as well as development, construction, operation, maintenance, emergency response, readiness, housing and environmental quality of Air Force bases worldwide. He was appointed to the Senior Executive Service in 2010. Mr. Correll is registered as a licensed professional engineer in the state of Texas.

EDUCATION

- 1981 Bachelor of Science degree in civil engineering, U.S. Air Force Academy, Colorado Springs, Colo.
- 1984 Master of Science degree in engineering management, Air Force Institute of Technology, Wright-Patterson Air Force Base, Ohio
- 1987 Squadron Officer School, Maxwell AFB, Ala.
- 1993 Air Command and Staff College, Maxwell AFB, Ala.
- 2001 Air War College, Maxwell AFB, Ala.

CAREER CHRONOLOGY

1. June 1981 – May 1983, Chief, Readiness and Logistics, 375th Civil Engineer Squadron, Scott Air Force Base, Ill.
2. May 1983 – October 1984, Graduate Student, Air Force Institute of Technology, Wright-Patterson AFB, Ohio
3. October 1984 – July 1986, Chief, Resources and Requirements, 1606th Civil Engineering Squadron, Kirtland AFB, N.M.
4. July 1986 – March 1987, Commander, Civic Action team, Truk State, Federated States of Micronesia
5. March 1987 – October 1987, Chief, Operations, 1606th Civil Engineer Squadron, Kirtland AFB, N.M.
6. October 1987 – October 1988, Student, Air Staff Training Program, Headquarters U.S. Air Force, Arlington, Va.
7. October 1988 – August 1992, Action Officer, Civil Engineer Operations Division, Headquarters Military Airlift/Air Mobility Command, Scott AFB, Ill.
8. August 1992 – July 1993, Student, Air Command and Staff College, Maxwell AFB, Ala.
9. July 1993 – September 1996, Chief, Operations Flight, 305th Civil Engineer Squadron, McGuire AFB, N.J.
10. September 1996 – June 1998, Action Officer, Civil Engineer Environmental Division, Headquarters U.S. Air Force, Arlington, Va.

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11. June 1998 – July 2000, Commander, 31st Civil Engineer Squadron, Aviano Air Base, Italy
12. July 2000 – June 2001, Student, Air War College, Maxwell AFB, Ala.
13. June 2001 – July 2002, Commander, 60th Civil Engineer Squadron, Travis AFB, Calif.
14. July 2002 – July 2004, Commander, 374th Mission Support Group, Yokota Air Base, Japan
15. July 2004 – July 2006, Vice Commander, 72nd Air Base Wing, Tinker AFB, Okla.
16. July 2006 – July 2008, Commander, 72nd Air Base Wing, Tinker AFB, Okla.
17. July 2008 – August 2010, Civil Engineer, Air Education and Training Command, Randolph AFB, Texas
18. November 2010 – June 2014, Deputy Air Force Civil Engineer, Headquarters U.S. Air Force, Arlington, Va.
19. June 2014 – present, Deputy Assistant Secretary of the Air Force for Environment, Safety and Infrastructure, Headquarters U.S. Air Force, Arlington, Va.

AWARDS AND HONORS

Air Force Meritorious Civilian Service Award
Meritorious Executive Presidential Rank Award
Air Force Meritorious Civilian Service Award
Legion of Merit with two oak leaf clusters
Bronze Star Medal
Meritorious Service Medal with silver oak leaf cluster
Air Force Commendation Medal with oak leaf cluster
Air Force Achievement Medal with two oak leaf clusters

Professional Memberships and Associations

Society of American Military Engineers

(Current as of January 2019)

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Introduction

The Department of the Air Force (DAF) Environmental Restoration Program, also known as the DAF Environmental Cleanup Program, responds to releases of hazardous substances, pollutants, and contaminants resulting from our mission activities, including manufacturing, industrial, maintenance and other DAF operations.

The DAF Environmental Restoration program operates on a risk-based framework according to which sites posing the greatest environmental risk are prioritized first for cleanup to ensure we address our worst sites first. We comply with all applicable legal requirements governing cleanup, including the Defense Environmental Restoration Program (DERP) statute (10 U.S.C. § 2700-2711) and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and its implementing regulations, and are guided by policy issued by DoD.

The DAF Environmental Restoration Program addresses two categories of cleanup sites: the Installation Restoration Program (IRP) and the Military Munitions Response Program (MMRP) at active, Air Force Reserve, Air National Guard (ANG), Base Realignment and Closure (BRAC) and now US Space Force (USSF) installations in the United States and US territories. The Defense Environmental Restoration Account (DERA) is authorized to fund cleanup at active, Reserve, and USSF installations, and to fund cleanup of perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA) at certain ANG installations.

Environmental Restoration Program Objectives

The program's main priority is to protect our Airmen, Guardians, and civilian workforce and their families who live and work on our installations, as well as the surrounding communities by reducing risks to human health and the environment caused by our activities.

Our first objective is to identify, investigate and prevent human exposure to hazardous substances and pollutants or contaminants attributable to Air Force at active Air Force installations; off-site locations where contamination may have migrated; and sites that DAF formerly owned. Second, we work to complete the environmental restoration process for impacted soils, groundwater, or surface water, or sites known or suspected to contain unexploded

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ordnance, discarded military munitions or munitions constituents. Third, maximizing transparency, public participation and collaboration through engagement with our regulatory partners and the local communities that surround and support our installations on our cleanup activities is a key element of DAF mission objectives that enhances the mutual understanding of our processes, improves cooperation, and informs them about potential solutions that mitigate impacts.

DAF Cleanup Progress to Date

Since inception of the DAF Environmental Restoration Program, we have been committed to meeting legal obligations to minimize threats to public health and restore natural resources for future use. Our progress to date reflects the program's maturity and overall good program health due to the consistent/straight-line funding Congress has provided. The DAF Environmental Restoration Program identified a total of 8338 sites (7305 IRP sites and 1,033 MMRP sites) that required some level of investigation and cleanup. By the end of FY2020, through aggressive efforts to achieve DoD goals to promptly clean up sites, DAF has achieved the Response Complete phase of CERCLA at 79% or 6,555 of those DERA eligible cleanup sites. That leaves 1,783 IRP or MMRP sites requiring further cleanup or investigation. We have made significant progress in DAF MMRP by returning over 87% of the total acreage to mission use, totaling 659K acres.

We engage with our regulatory partners throughout the cleanup process and ensure they are included early in the planning process so as to obtain mutual agreement on execution objectives and timelines. We also acknowledge the need to proactively consult with affected federally recognized tribes.

In alignment with our priority to protect the health and safety of our Airmen, Guardians, and civilian workforce and their families who live and work on our installations, as well as the surrounding communities, DAF is committed to addressing adverse human health impacts from emerging chemicals of concern, such as per- and polyfluoroalkyl substances (PFAS), attributable to the DAF.

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DAF Environmental Restoration Funding

DAF Environmental Restoration Program funding has remained stable over the last three years.

The table below summarizes DAF planned Environmental Restoration Account PB,

Congressional plus-ups and obligated amounts for FY2019 through FY2020.

Table: DAF Environmental Restoration Account Funding History for FY2019–FY2021

<i>(\$M)</i> ¹	PB	IRP	MMRP	PM ²	Plus-up	Allocated	Obligated ³	IRP	MMRP	PM ²
FY2021 ⁴	303.9	249.4	38.7	15.9	205.3	509.2	TBD	TBD	TBD	TBD
FY2020 ⁵	302.7	200.9	73.9	27.9	182.0	485.0	485.0	428.7	27.0	29.3
FY2019	296.8	211.7	51.2	33.9	69.0	365.8	364.01	320.1	24.9	19.1

Steady funding DAF received over the last three fiscal years has enabled DAF to address additional PFOS/PFOA response actions and accelerate cleanup projects.

However, DAF is approaching the limit of our ability to execute additional funds above the next President's Budget request. Additional funding may not be effective in expediting investigation and cleanup of sites for a number of reasons. First, because DAF follows the step-wise CERCLA process to investigate releases and determine the necessary cleanup approach, each phase of CERCLA must be completed in order to inform the need for the next phase. The Site Inspection phase of CERCLA is currently under way for a number of sites. Second, the capacity of our state and federal regulatory partners and testing laboratories is approaching the limits of their bandwidth. Our regulatory partners are key stakeholders in the CERCLA process, and their ability to review and comment on decision documents to enable us to complete a phase in the CERCLA process is diminishing when all the Services are expediting processes to achieve faster cleanups. While DAF is a signatory of the Defense State Memorandum of Agreement (DSMOA), this supplementary state funding cannot overcome the staffing and budgetary limitations states are experiencing. And finally, the capacity of our contracting offices and

¹ Numbers may not add due to rounding.

² Includes Program Management (PM) and other support costs that cannot be allocated to individual sites, as well as funding for investigations (i.e. preliminary assessments (PAs) and site inspections (SIs) of known or suspected releases of PFAS.

³ FY 2019 obligated amount is less than the allocated amounts because DAF did not obligate approximately \$2M

⁴ FY 2021 obligated amounts will be available during the FY 2023 President's Budget cycle.

⁵ FY 2020 obligated amounts will be available during the FY 2022 President's Budget cycle.

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technical staff, who perform the inherently governmental functions necessary to support CERCLA processes, is also approaching the limits of their bandwidth.

Funding Prioritization

DAF cleanup efforts are planned, programmed, budgeted and executed to effectively and efficiently achieve DoD and DAF cleanup program goals. The DAF IRP and MMRP are risk-based programs that apply funding to projects that pose the highest risks to human health, safety and the environment following the DoD Relative Risk Site Evaluation (RRSE) framework for IRP and the Munitions Response Site Prioritization Protocol (MRSPP) for MMRP. The RRSE is used to evaluate the relative risk posed by one site in relation to other sites. DERA funding is applied to projects based on the relative priority of all DAF cleanup requirements. Sites entering the Remedial Investigation phase of CERCLA are evaluated based on a program-wide analysis of site data that considers three main factors: the hazard or risk the contaminant poses; the risk of that contaminant migrating; and whether a human or ecological receptor exists either through groundwater (human), surface water (human and ecological), sediment (human and ecological) and surface soils (human and ecological). Sites are then grouped into high, medium and low risk categories based on that evaluation of relative risk, and then sequenced to receive funding. This iterative process ensures we have a science-based, reproducible approach to sequence the many sites in our portfolio and ensures we apply our funding to our worst sites first.

Community Engagement

DAF recognizes that consistent engagement and collaboration with impacted communities is necessary to ensure our communication is transparent. As stated before, the safety and health of our Airmen, Guardians, civilian workforce and their families who live and work on our installations, as well as the surrounding communities are priorities. To that end, we utilize our public affairs personnel to proactively build sustained public understanding, trust and input on the actions we take to address adverse environmental impacts resulting from DAF activities. Whenever necessary, we work to allay any local community concern about the safety of drinking water supplies that may have experienced environmental impacts from our mission. We do so by engaging with the local community during critical decision-making processes related to our

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cleanup activities, obtaining their input, and addressing their specific issues as we gather data to develop informed cleanup solutions.

We realize the CERCLA process can be complicated, confusing and lengthy, and as such, DAF strives for transparency when communicating and collaborating with community and other stakeholders on the status of our cleanup investigations and planned response actions. We discuss and share validated data and plans with members of the regulatory community, and with elected officials and local community stakeholders.

Restoration Advisory Boards

One such engagement is achieved through the Restoration Advisory Board (RAB). The RAB is a community-based advisory body designed to be a focal point for the exchange of information between the Air Force and/or Space Force, and the community on our cleanup issues and activities. RAB meetings are open to the public, and typically include, but are not limited to reviewing and commenting on environmental documents and activities, providing information and status updates to the community, and receiving input from the community. DAF responds to RAB comments and questions, distributes the responses to RAB members, and includes them in meeting minutes that are made available in DAF's administrative record public website (<http://afcec.publicadmin-record.us.af.mil/Search.aspx>).

Due to COVID-19 restrictions during much of calendar year 2020, in-person RAB engagements had been limited—however, installations and Air Force entities used virtual engagements to reach stakeholders. Most notably, Air National Guard and Air Force Civil Engineer Center activities used web-based platforms to host virtual RABs.

Community Relations Plans

In addition to RABs, the DAF also utilizes Community Relations Plans that identify issues of possible community concern, providing a framework and structure for communication between the installation and the community. These plans outline how the public can participate in the decision-making process, and are part of the public record of community involvement during the investigation and remedial phases of CERCLA.

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Challenges*Continuing Resolution*

Executing environmental remediation contracts when the President's Budget is not locked until half-way through the fiscal year presents a challenge to the DAF cleanup program since funding must be received by the program ahead of contract negotiation and award. It puts the program behind the obligation curve, and creates a bow wave of work once funding is provided.

PFAS

In May 2016, the U.S. Environmental Protection Agency (EPA) issued a drinking water lifetime Health Advisory (HA) of 70 parts per trillion (ppt) for two PFAS, perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA). Since that time, the DAF has proactively responded to PFOS/PFOA releases above the EPA HA attributable to DAF mission-related activities by following the CERCLA process to identify and investigate releases, determine the appropriate response actions based on risk, and prioritize responses and cleanup.

First and foremost, we are investigating and addressing PFOS/PFOA in drinking water on DAF installations, and reporting results in annual Consumer Confidence Reports (CCR), which are drinking water quality reports that community water systems are required by law to deliver to customers each year. DAF takes swift action to address drinking water and provides alternative water when PFOS or PFOA from our activities is found off-base in drinking water at levels above EPA's HA. DAF's actions are consistent with EPA's recommended actions, which include treatment of drinking water or providing alternative water supplies, such as bottled water or connecting residents served by private wells to public drinking water systems. No one is drinking water above EPA's HA level where DAF is the known source.

Similarly, DAF takes quick action to address off-base drinking water. If PFOS/PFOA releases attributable to DAF activities are demonstrated to have impacted off-base drinking water at concentrations above the EPA lifetime HA, DAF takes immediate action to provide alternative drinking water sources as soon as practicable. Such response actions include providing bottled water, point-of-use filtration, whole-house filtration, municipal water supply hookup, municipal water treatment, and new well drilling. Drinking water removal actions were conducted at 33

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DAF installations, which included provision of bottled water, installation of treatment systems, and connections to municipal water supplies.

Through FY20, DAF completed Preliminary Assessments at 203 Active/Reserve, Air National Guard (ANG) and BRAC installations where aqueous film forming foam (AFFF), a known source of PFAS, may have been released to the environment, and we have completed 38 Site Inspections of the 190 required. Thus far the Remedial Investigation phase of CERCLA has been initiated at 47 installations. The remaining cleanup efforts are intended primarily to address PFAS in groundwater, efforts which can be technically complex and take a long time to complete.

To date, the DAF has expended \$737.6 million to address PFAS releases. We obligated over \$160.8 million in FY20 alone, and plan to obligate approximately \$37 million in FY21.

DAF leadership actively participates in the DoD PFAS Task Force, established in July 2019 providing strategic leadership and direction to ensure a coordinated, aggressive, and holistic approach on DoD-wide efforts to address PFAS.

The DAF fully supports Strategic Environmental Research and Development Program (SERDP) /Environmental Security Technology Certification Program (ESTCP) investment in studies aimed at developing fluorine-free surfactant formulations for use in AFFF fire-suppression operations. The DAF aggressively works to minimize future AFFF releases, by limiting the use of AFFF to emergency responses by requiring Secretariat level approval for use in research and development (R&D) and training. Additionally, any uncontained AFFF release – such as during an emergency response to an aircraft crash – is immediately contained and treated as a hazardous spill.

Successes

DAF is investing in technology transfer to support the SERDP/ESTCP efforts by piloting small scale projects to bridge the gap between bench-top research and development success and full

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scale technology implementation. Examples of DAF environmental remediation technology investments include the demonstration at Peterson AFB of an innovative multi-barrier treatment train to both remove and destroy PFAS in AFFF-impacted groundwater, combining nanofiltration and ultra violet (UV) treatment. At Cape Cod Air Force Station DAF is funding the evaluation of In-Situ Soil Stabilization as a remedy to reduce or eliminate leaching of PFAS to groundwater from source areas via chemical fixation. Other notable PFAS environmental restoration technology demonstrations include use of electrochemical treatment to destroy PFAS in ion exchange resins, and the use of supercritical water oxidation as a safer alternative to AFFF destruction than incineration.

Conclusion

The DAF's main priority is to protect our Airmen, Guardians, and civilian workforce and their families who live and work on our installations, as well as residents of the surrounding communities by reducing risks to human health and the environment caused by our activities. DAF Environmental Restoration programs operate on a risk-based framework where sites with the highest risk are prioritized first to ensure we address our worst sites first. We remain committed to fulfill our cleanup responsibilities and follow DoD cleanup policy and goals, and utilize the authorities provided by CERCLA and the DERP statute.

RESTORATION AND MILITARY MUNITION PRIORITIZATION

Ms. MCCOLLUM. Thank you.

We will begin with some questions. And I know my colleagues are going to have some really great ones for you, so I am going to just kind of go back in a general overview on a few things with you.

The Defense Restoration Accounts include funding for Installation Restoration Programs, and that is what is used for the cleanup of contamination from hazardous substances, and then the Military Munitions Response, which is used for the cleanup of munitions.

And so, would you take a second? And I think maybe this might be most appropriate for you, Mr. Kidd. How is the environmental restoration funding divided and prioritized between the Restoration Program and the Military Munitions Response Program? How is that division made?

Mr. KIDD. So, ma'am, the division is based on ground-up priorities developed by the services. Essentially we have approximately 2.5 times the amount of funds going to the Installation Restoration sites as we do to the Military Munitions Response Program sites.

Ms. MCCOLLUM. And the reason for that is?

Mr. KIDD. Ma'am, it is based on the assessed risk. We use two different risk categories based on the site at hand.

For the Installation Response sites, we use the Relative Risk Site Evaluation process, which Mr. Correll defined rather well, the nature and the extent of the contaminant or the source, the migration pathway, and then the potential impacts on human or ecological receptors.

For the Munitions Response Program site, the prioritization is based on protocols defined by explosive hazard, whether or not there could be chemical warfare material, and the risk to human health and the environment.

Much of the determination is based on the proximity to population centers, and many of the Munitions Response sites are further away from population centers than some of our Installation Response Program sites.

Ms. MCCOLLUM. So would you say, would it be a fair statement to say with emerging contaminants such as PFOS it has added to the prioritization in the accounts that you are funding with the Installation Restoration Program?

Mr. KIDD. So, ma'am, thanks to the support of Congress we have been able to address the emerging challenges from PFOS without having to reallocate funds between any of the other accounts.

Ms. MCCOLLUM. The Department has previously estimated that it needs \$29 billion to complete pending environmental restoration projects. How does that long-term price tag of cleanup inform the budget request on an annual basis?

Mr. KIDD. Ma'am, that figure is correct. We had a cost-to-complete figure in 2020 of a little more than \$29 billion. We spent \$1.6 billion in 2020, and the figure stayed about the same at \$29.5 billion.

So, cost to complete is an issue that we work to address. And part of the increase in the cost to complete is based upon what we learn as we do site assessments and investigation.

Ms. McCOLLUM. Does that \$29 billion estimate include what you think might be the cost for the PFOS contamination? Is that included in that amount?

Mr. KIDD. Ma'am, it does for now. We estimate that the cost to complete PFOS right now is \$2.1 billion. That number will certainly go up over time as we understand the parameters of the challenge that is ahead of us.

SHIPYARDS

Ms. McCOLLUM. There has been a lot of discussion in this committee about what we need to do to improve our shipyards, to build them for resilience and that. And I had a great conversation—thank you, Mr. O—about shipyards, and he has been thinking ahead about what will be involved because we will be disturbing and removing a lot of contaminants.

Have you included or will you be looking at including if it is in infrastructure bills the cost of remediation that will be incurred when we do shipyards, not only the physical shipyard on land but any disruption with the soils and the water underneath? I am assuming that that is probably not included in anything because we haven't moved forward on working on any of those projects. Are you planning ahead?

Mr. OHANNESSIAN. Thank you.

Where we know what the presence and occurrence of PFAS is, we have accounted for that in our cost to complete under the Environmental Restoration Program.

Should the work progress for shipyard infrastructure optimization and then we come across additional occurrences that we are not aware of, then we will determine how to address that.

If it is cleanup, it will probably stay in the Environmental Restoration Program, but it is hard for me to answer where they might end up if that is not where they end up. But I don't know the amount that it is going to be either.

What we know is in the Environmental Restoration Program and what we encounter if we encounter something new, we will address that appropriately.

Ms. McCOLLUM. Thank you very much.

Members, I just wanted to get some of the boring stuff out of the way so you can ask all the great questions.

So, Mr. Calvert.

PFOS TECHNOLOGY

Mr. CALVERT. Thank you, Madam Chair.

I am going to stay on PFOS for a while. It seems that that is a common concern around the country.

And as I noted in my opening statement, last year the committee addressed its ongoing concern about the prevalence of PFOS contamination on current and former military installations, and we continue to support groundwater remediation activities undertaken by the Department.

First, I would like to get a written response to this because I am sure there is a lot being done on this. But what are the DOD and the services doing to stop the continuing spread of PFOS from

these military bases? And if you can get back to me on that, I would appreciate it.

Right now I want to get into what we do to extract PFOS contamination groundwater by pumping and then treating, which is the common methodology that has been used over the years. Above ground is very expensive, as you all know, and very time-consuming.

As the witnesses are aware, there are commercially available alternatives to pumping and treating contaminated groundwater that are proven to safely contain PFOS within the aquifer and eliminate—I mean eliminate the spread.

What innovative technologies have DOD and the services identified that can remediate PFOS-contaminated groundwater either within the aquifer or once pumped out of the aquifer?

I guess that is for anyone that wants to take that on.

Mr. KIDD. Sir, thank you for that question.

As I noted in my opening remarks, investing in technology is perhaps one of the best ways to challenge the physical parameters that we work under and to accelerate cleanup.

We have a variety of programs in the Department that are intended to bring emerging technologies to maturity. These are the SERDP and the ESTCP programs.

We have invested over the years, in terms of just the treatment, we have a total of 83 projects with about \$53 million worth of investment in treatment efforts across the Department. These include electrocatalytic and catalytic approaches, in-ground bioaugmentation, and chemical oxidation, and other technologies as well.

If the firms that you mention have a mature commercialized technology that is ready to use today, they have a couple of different pathways to deploy that. First is to talk to the remediation companies that get the contracts from the Department. The second is to talk to the services that are actually doing the cleanup.

If it is not a mature technology, please refer them to me, and I will give them the opportunity to engage in either the SERDP or the ESTCP program.

PFOS CLEANUP

Mr. CALVERT. Well, I will do that.

I have been somewhat frustrated over the years because it seems that the culture is to continue to do what you have been doing over the years, pump and treat. And as you know, the molecule in PFOS is hard to get rid of even if it goes into a landfill or et cetera. So containing this is extremely important.

And as you mentioned, \$27 billion to complete pending environmental restoration projects, does that include the expected costs of cleaning up all these PFOS contamination sites across the country?

Mr. KIDD. Sir, our anticipated cost to complete is a little more than \$29 billion right now. It includes the known estimates for PFOS cleanup. We anticipate the total cost for PFOS will increase over time.

Mr. CALVERT. How do you prioritize those sites on these DOD installations. I will just stick with PFOS for a moment. How do you prioritize which sites get cleaned up first and so forth?

Mr. KIDD. Sir, we work within the CERCLA process and we use the Relative Risk Site Evaluation process to prioritize based on risk. So generally the highest risk first. We determine risk by the nature and extent of the contamination, the likelihood or pathway that it will migrate, and then the potential impacts that it could have on human or ecological receptors.

We can give you a more detailed briefing as to how we effect that prioritization.

Mr. CALVERT. Yes. And the reason I bring that up is, obviously, if you have PFOS in a remote rural area versus in a population, high population center, like, for instance, in southern California, and we are very dependent upon aquifers for our water supply, I would hope that those sites would be given priority, and I would imagine that throughout the country. Is that correct?

Mr. KIDD. Sir, I don't want to get in front of our services and our environmental specialists on the ground who are actually doing the work to prioritize the sites, but I would generally agree with your characterization, yes.

Mr. CALVERT. Okay. Thank you, Madam Chair. I will yield back for the moment.

Ms. MCCOLLUM. Thank you.

I have one DOD site that is not PFOS where I have a municipal treatment center, and I have two municipalities that are having to treat their water for PFOS, and I have been there. So this is something that is near and dear to me to get this right, Mr. Calvert. So thank you for your questions.

Ms. Kaptur, you are recognized.

MUNITIONS AND PFAS REMOVAL

Ms. KAPTUR. Thank you, Madam Chair, very much for this important hearing. The fact that it is a first ever is a real credit to you as chair. Thank you very much, and thank the ranking member as well.

I am going to become parochial and speak about the Great Lakes. Thank our very dedicated witnesses for testifying today.

I am interested in whether the Department has a map showing the various impingements in the Great Lakes region. Let me take you right down to where I represent, the Toussaint River.

Over two decades ago, we worked at the highest levels of the Department. They sent a helicopter to do mapping of the region because we had unexplained ordnance related to the use of Camp Perry during World War II and thereafter for a shooting range. And we have rivers that have been stopped up because of shells that have now been covered with sediment, 5 millimeter, up to 150 millimeters, some with chemicals inside.

The last I knew the Department pretty much never came back after they created a database. I would sure like to see what is in it and get a plan for remediation. Because all of our fishing charter boat operations have now stopped on that river, the Toussaint River, because of the silting up and the inability of us to solve the defense cleanup problem in that area. And the plume of shells extends way out into Lake Erie, toward the Lake Erie Islands.

So I wanted to get your commitment to help me figure out what to do next on this very important area.

I also wanted to ask you how DOD prioritizes the cleanup of your installations where PFAS has been confirmed. For example, in light of the health risks posed by PFAS, shouldn't the Department focus on installations near population centers?

Like, for example, we have a Toledo 180th Fighter Wing, that is Army Air, or Wright-Patterson Air Force Base in the western half of Ohio. They, in fact, are impacted, but close to population centers.

Is the population density a factor in your decisions on what to prioritize?

Mr. CORRELL. So, ma'am, Mark Correll from the Air Force.

Since both of those places you mentioned are Air Force installations, what I would say is it is one of the three factors. So are there population centers there? Yes, that is a consideration. And even beyond that, are they sensitive receptors? By that I mean we are more concerned about schools, child development centers, those kinds of sensitive locations.

But it is one of three considerations. The first is, what is the concentration and toxicity of the chemicals that we are talking about? And the second is, what is the migration and pathway to those receptors?

So, while it might be true that you are in a highly populated area, if there is no pathway for that chemical to get to the receptors that we are concerned about, the human or ecological receptors, then standalone, because it is highly dense, doesn't mean it will be a high priority.

If, however, all three of those come together and it is a highly toxic material and there is a pathway to receptors and there is a lot of receptors, then, yes, that would be a factor.

Thanks for the question, ma'am.

Ms. KAPTUR. Thank you.

What is a receptor?

Mr. CORRELL. A receptor would be a human, a person. And so, is there a way for this contaminant to get into someone in our community, our airmen, our guardians, our families, or the community nearby. It can also be other receptors, animals, et cetera.

MECHANICAL TRADES AND HEALTH ISSUES

Ms. KAPTUR. I would just mention that is not the purpose of this hearing, but just to let you know that of many of our airmen who have been involved in the mechanical trades repairing F-16s and A-7s and all the rest, many of them now have pulmonary lung disease, COPD.

And I hope that the Department is paying close attention to the facilities and the ventilation systems that these individuals who give their lives to this country work in. I think it is a serious problem, and you ought to look at your health outcomes.

That is not your job directly. It happens elsewhere in the Department. But it would be interesting to see how much we have to pay as a country in human lives, as well as the medical expenses associated with lung disease, related to repairing this equipment.

UNEXPLODED ORDNANCE

What about Toussaint River? How do I get any response on what do we do with unexploded ordnance in the Great Lakes? Is there a map? Is there a map that defines that?

And certainly for us in Ohio, how do we analyze the information that was collected nearly two decades ago where nothing has happened?

Mr. KIDD. Ma'am, I have looked to my colleagues on the left and right. I think we are going to have to take that one for the record, and we will get back to you with a more detailed response.

Thank you.

Ms. KAPTUR. Okay. Thank you. You all have very important jobs.

Thank you, Madam Chair.

Ms. MCCOLLUM. Thank you. The committee looks forward to that information.

Mr. Womack.

CAPACITY ISSUES

Mr. WOMACK. Thank you very much, Madam Chair.

Thanks to the witnesses.

Mr. Kidd, the Defense Department has a lot on its plate, and this question I am going to ask is also more at the 30,000-foot level, and it is about capacity.

A lot of times the things that we encounter from an environmental perspective rise out of neglect because we have to take resources, precious resources, and commit them elsewhere for other really important functions.

So, help me understand what kind of routine sort of infrastructure evaluations do you guys conduct to help inform leadership as to what I would call capacity issues when we have got this capacity.

Which leads to my second question. And that is, if we have more capacity than what we need—and this is not necessarily designed to broach the subject of BRAC—but if we have excess capacity, how much is that costing us to take care of as opposed to being able to use those resources to address some of the environmental concerns that have been raised in this hearing or commit to other very important DOD functions?

Mr. KIDD. So, Congressman, yes, that is a pretty high-level question.

I think all of the services over time have indicated that we do have excess capacity in terms of infrastructure and facilities.

In terms of whether or not we wish to have a BRAC or how much that is, I would suggest that we either take that for the record or that we shift that question to those on our team that deal with real property and facilities.

Mr. WOMACK. Okay. The numbers I get, like Army has got, like a third more capacity than it needs, Air Force about the same, maybe not as much on the Navy side, would that be an accurate portrayal of where we are in capacity?

Mr. KIDD. Sir, I would have to take that one for the record. I mean, I have been in the room with conversations with the people who are smart on these type of issues. I do know that the services

all have gone on record saying that they do have excess capacity. But I couldn't—I wouldn't want to characterize the degree of that at this juncture without more research, time, or to reach to our facilities experts.

CYBERSECURITY

Mr. WOMACK. Okay. My only other question is regarding cyber and how protected our infrastructure is from a cybersecurity standpoint. Our country has been hit with certain hacks and what have you, and the susceptibility of our infrastructure is always a concern of mine.

So what national efforts are being made to identify the most at-risk installations and protect our critical installations from either a disruption or some degraded infrastructure in the surrounding area?

Mr. KIDD. Congressman, thank you for that important question. Again, it is a little bit outside of the DERP, but it is sort of in all of our respective portfolios.

The current National Defense Strategy is very clear: The homeland is no longer a sanctuary. Our adversaries have the capability to attack us, to spread disinformation, to take down many of our key and critical systems.

We have a range of programs in the Department to address this, and we have a range of interagency collaborative efforts with the Department of Energy, FEMA, and the White House in regards to key critical infrastructure.

I took the same question last week from the Senate. We would be happy to come back and give you a more thorough briefing, but it is going to have to be at a different classification level than where we are today.

Thank you.

LIMITED RESOURCE CONCERNS

Mr. WOMACK. Okay. And I also realize that we are having this hearing before we see the details on the budget. Are you concerned that there are going to—I kind of characterize it as a food fight over in the Pentagon, everybody competing for limited resources.

Are you concerned that these resources are going to have to be redirected for other important operational and readiness sort of functions?

Mr. KIDD. Sir, I mean, I think that the Department, as mentioned earlier by one of the other members, the Department has a lot on its plate and a lot of priorities. And I have significant trust in the senior leaders of the Department to make those hard decisions about where our resources are applied.

Mr. WOMACK. Good answer.

Thank you so much. I yield back.

And, Madam Chair, I do have to scoot to another subcommittee. Thank you.

Ms. MCCOLLUM. We are so glad you were able to join us for part of this.

Mr. Cuellar.

Mr. CUELLAR. Thank you, Madam Chair and Ranking Member and to the witnesses.

Ms. MCCOLLUM. Mr. Cuellar, we are having a hard time hearing you. Mr. Cuellar, you are not coming through.

Mr. CUELLAR. I will call back again.

Ms. MCCOLLUM. Okay.

Mr. CUELLAR. Yeah, sorry. Thank you.

Ms. MCCOLLUM. Mr. Kilmer, I am going to go to you, and then I will go to Mr. Carter.

SHIPYARD MODERNIZATION AND ENVIRONMENTAL IMPACT

Mr. KILMER. Thanks, Madam Chair.

Mr. Ohannessian, as you know, there are four public Navy shipyards, and the chair mentioned this. All of them have legacy infrastructure dating back to the 19th and 20th centuries.

So given that, the Navy released its Shipyard Infrastructure Optimization Program, or SIOP, which is a 20-year, \$21 billion effort to revitalize and modernize our public shipyards.

These modernization efforts are really critical to ensure our shipyards are resilient and ready to support our national security. From what we have heard from the Navy, efforts will include upgrading and in some cases replacing dry docks, optimizing industrial processes, restoring facilities.

Given the potential environmental impacts, how is the Navy effectively planning to ensure that the revitalization of our public shipyards takes into account environmental management considerations?

Like so many Americans, I worry about the quality of the air we breathe and the water we drink. I would like to know what steps the Navy is taking to ensure the air and water quality aren't degraded during the SIOP investments.

Mr. OHANNESSIAN. Thank you, Congressman. And it is good to see you again.

And in addition to the specific piece that I mentioned before regarding environmental cleanup, you are quite correct, that is only a piece of what we are talking about when we think about the environmental planning piece writ large for the Shipyard Infrastructure Optimization Program.

And because of the concerns that you mentioned and the importance of the early planning, we have, in fact, integrated the environmental planning piece of it into the overall planning piece of the program writ large.

And that environmental planning not only has the cleanup, as I mentioned, and also protection of air and water, but other things as well: conservation, natural resources, cultural resources, historical resources, Tribal treaty rights.

All of these come into play, and there are a lot of stakeholders that we work with, State historic preservation offices, Tribes, non-governmental organizations, lots of stakeholders.

And recognizing that we have, in fact, stepped forward and made sure that those planning processes, we get a jump on them and they are integrated into the overall process because the last thing I want to do is to have my portfolio be the rate-limiting factor on the important modernization effort for the four public shipyards.

And we can talk more about that in a lot of detail separately. But overall I would say we have jumped on it and make sure that we stay within the planning processes throughout.

PFAS/PFOS MITIGATION EFFORTS

Mr. KILMER. Thank you.

Let me shift gears. Mr. Kidd, similar to a lot of towns across the country, the communities in my neck of the woods are, unfortunately, no strangers to the impacts of PFOS contamination.

In 2020 groundwater in the communities surrounding Naval Base Kitsap tested at dangerous levels for PFAS compounds. The Navy tested over 290 drinking water wells, with 83 wells showing some levels of PFOS, two wells containing an unsafe level of PFOS.

That could affect over 2,000 homes in Kitsap County, Washington, with the impacted number of families likely to grow.

This, obviously, is not just unique to my neck of the woods. We are also seeing it at Joint Base Lewis-McChord where PFAS contaminants were detected on base, necessitating shutting down several drinking wells. JBLM also installed over \$6 million worth of filtration equipment to keep PFAS contaminants from entering their on-base drinking water.

Given the prevalence of PFAS contamination at communities surrounding bases around the country, does the DOD have enough funding for PFAS testing and remediation and mitigation efforts? And how does the DOD plan to keep folks, not just in my community, but others, in the loop so that they know they have safe drinking water for their families?

Mr. KIDD. Sir, thanks for that question.

As I heard it, you asked three questions, one about funding. You actually told a story about rapid response in regards to drinking water. And then about community engagement.

Is that my breakdown of your—

Mr. KILMER. Correct.

Mr. KIDD. If I understand that.

Also, I would just like to tell you, as an Oregonian and a one-time resident of Kitsap County, I am familiar with that beautiful part of the country, and I have great fondness for that area.

So, first of all, your story about the response provided in terms of drinking water.

The Department has moved rapidly to address drinking water off base through the CERCLA process and on base where we have tested our installations.

We have tested more than 500 installations, and we found 34 that needed some immediate removal action. And through the CERCLA process, we have identified 49 off-base sites where we were above the EPA health advisory level of 70 parts per trillion.

In all cases we reacted very quickly, sometimes measured in single-digit days, to provide drinking water to the affected communities.

In terms of community engagement, this is very important. In my opening comments, I noted how important it is that we interact closely with the communities, both formally and informally.

We support the Restoration Advisory Board process providing technical assistance and support to the tune of about \$2.5 million a year.

In some cases, it is working very well; in others, not so well. And what we would like to do is find the best practices in the Department and sort of update the RAB handbook with a best practices guide, and I think we can do that in the coming months without too much trouble.

In terms of the funding requirements for PFAS, Congress has been very generous and has gotten us well down the road on this task. And it is complex, and some of my colleagues can jump in here because they build the budget requests from the service up.

But right now, the majority of our effort is in investigating the problem, defining the scope and the nature of the problem, and going through that prioritization effort that we have all spoken about. Right now we have enough funds.

As we better define the problem, the scope of our cleanup responsibilities is likely to go up. So if I were to predict a funding pattern, it would probably be something kind of flat line for the next couple of years, and then as the information comes in, it will go up.

And I defer to my colleagues, since they actually build the budget requests, if they want to jump in here.

Ms. MCCOLLUM. We are going to have to move on, Mr. Kilmer, but great questions.

Mr. KILMER. Thanks, Madam Chair.

Ms. MCCOLLUM. And water moves. So maybe you could let the committee know how you are going to continue to do testing because water continues to move.

We have Mr. Carter, then Mr. Cuellar if he is back on, and then Mr. Aguilar.

Mr. Carter.

MUNITIONS RESPONSE PROGRAM FUNDING AND WORKFORCE ISSUES

Mr. CARTER. Thank you.

The Military Munitions Response Program, this program is executed in a manner consistent with the budget request. Can you tell me what amount was actually executed for MMRP for fiscal year 2020? Was it equal or above the level in the budget request? And how much fiscal year 2020 projects were new starts and not modifications to existing awards?

Mr. KIDD. Sir, I could probably answer that question if I flip through all of the pages of my notebook. But if you don't mind, I would like to take that one for the record, and we can give you the exact numbers and response.

Mr. CARTER. That is fine. That is fine.

Can you give us, the subcommittee, any idea how the fiscal year 2021 obligations and expenditures are looking to date?

Mr. KIDD. Sir, I am tracking that. I can't give us an exact obligation rate for 2021 right now, but I believe we are generally on pathway to be pretty close to what was fully appropriated at \$1.9 billion across the whole program.

Again, if I understand the question, it is what is our current obligation rate, and we will take that one for the record.

Mr. CARTER. Okay. Here is something I am a little worried about. Munitions response requires specific expertise to execute cleanup of unexploded ordnances safely and efficiently. It is my understanding that the industrial base that the Department relies upon to perform the cleanup and remediation at Military Munitions Response Program sites has undergone significant contraction over several years.

I am concerned that once the Department does decide to accelerate cleanup of MMRP sites, the industrial base may no longer have the talent and capacity to perform this vital work.

What does the availability of workforce skilled in munitions response have in the Department's ability to speed up or to speed along cleanup?

What are the main obstacles that exist to completing cleanup of military munitions?

And are you concerned about the shrinking workforce?

And what is your plan to remedy the situation?

Mr. CORRELL. So I will start. Mark Correll from the Air Force.

So our Munitions Response Program is pretty mature and, in fact, is much smaller than some of the other services. Where we stand right now is we have 181 open sites. We are about 87 percent complete, so we have only got about 13 percent more acreage to return.

Some of the risk factors, though, with MMRP are the acute pieces of this, so the potential for a UXO and then obviously the constituents. The terrain can be a challenge, the technologies necessary.

And then one of the big issues with MMRP is the cost of getting to negative. And what I mean by that is regulators are unwilling, and rightly so, to accept anything other than zero percent risk, 100 percent cleanup.

And so getting to that can take some time to make sure that we have identified and defined that throughout the process. It doesn't mean we are not interested. But it is pretty very far along, and we are now getting towards the end state of that.

So I am not sure that there is a lot to do to speed that up, but we will work with the regulators where we can.

Mr. CARTER. Well, what about the workforce challenges that may be on the horizon?

Mr. CORRELL. So at least from an Air Force perspective, our hope is we are 13 percent away from we don't need to use that workforce as much anymore because we will be complete with the things we know about.

I have been to the NAOC conferences and talked to them. I understand what their concerns are. And so we will continue to work with them to make sure that workforce is as robust as it needs to be for the Department.

Mr. CARTER. Well, I have got a lot of fire range at Fort Hood, and we are worried. We are very concerned about unexploded ordnance. And that is why I am asking these questions.

And I thank you, Madam Chairman. I will yield back.

Mr. CALVERT. Madam Chair, maybe I can come in here and thank the judge in advance for taking over for me. I have to go to a pre-scheduled appointment.

Mr. CARTER. Glad to do it.

Mr. CALVERT. Thank you, Judge. I appreciate it.

Ms. MCCOLLUM. We are in good hands with Judge Carter.

Mr. CARTER. Bad voice, but good hands.

Ms. MCCOLLUM. So I would like the Army not to respond now, but to respond back written to Mr. Carter's question, because I believe, it is my understanding from what I have read, you probably have the largest share of the unexploded ordnance out there.

We heard from the Air Force, which has probably the least amount. And from what I am learning, the Navy's is kind of under water and not likely to be too terribly disturbed right now because they used to drop things before they came into port during the war.

So we would like the Army to get back to us on that, your priority list and where you are on that. Because it was an Army munitions site that got cleaned up in my district. So I want to know that for Mr. Carter.

Mr. Cuellar, welcome back.

LACKLAND AIR FORCE BASE

Mr. CUELLAR. Thank you. The hazards of traveling.

Thank you, Madam Chair, and I want to thank all of the witnesses.

And I also want to follow up with what Judge Carter mentioned.

I also want to know, I think Texas has about 383 MMRP sites, I just want to know if there is any in my area, in the San Antonio area or in south Texas. If you can all get back to us on that.

And then the second one, I guess it goes to the Assistant Secretary of the Air Force, and this has to do the Defense Environmental Restoration.

And, Mr. Correll, I don't know if you were there some years ago when I was working with the San Antonio Water Works, and they were trying to put a pipe to provide more water for the southern part of San Antonio and for the Lackland Air Force folks there.

But we were told that it was an environmental hazard. What they had to do was go around Lackland instead of going through, because they didn't want to disturb it. So that cost, I think at the end it was like \$100 million.

I want to know what is the latest on Lackland Air Force Base? Where is it on the priority? What are the next steps? And then, of course, on those munitions cleanup programs sites that might be in my congressional district or area.

Mr. CORRELL. Thank you, Congressman Cuellar, and thanks for your help with SAWS. So you were the catalyst that got this two-way solution at the former Lackland Air Force Base. So the challenge for the rest of the group was digging a water line through closed and capped environmental sites. So these were landfills that had long since been closed.

With Congressman Cuellar's help, we were able to negotiate a deal with SAWS that took that line around the base. It did not end up costing them an additional \$100 million. In exchange, the Air Force took over the infrastructure on Lackland Air Force Base and will ultimately take over the water infrastructure as well, which I assume is what you were talking about. So, we were able to solve that problem without creating an environmental problem.

With regard to the existing, if you are referring to the PFOS/PFOA pieces of what is happening in Joint Base San Antonio in general, the data I have shows that at this point in time, we have no issues in San Antonio that require mitigation.

We do have sites where we have identified that we will ultimately have to do remedial investigation. But as we discussed before, there aren't currently any pathways between those sites and any of the people or other receptors, as I called them, that are going to be impacted by PFOS.

We will get to cleaning that up. The good news is there is no emergency need at this point in time.

We will take for the record your MMRP question. Thank you, sir.

Mr. CUELLAR. Thank you so much.

Anything on the other sites from the Army?

Ms. BORMAN. Sir, we will take for the record whether or not we have any MMRP sites located in your district. And we will also look across and determine whether or not you have any FUD sites and where those are located. And we will get back to you with that list.

Mr. CUELLAR. All right. Thank you.

FORMERLY USED DEFENSE SITE

Ms. MCCOLLUM. For the record, would you explain what a FUD site is?

I won't take that away from your time, Mr. Cuellar.

Please explain. I know what a FUD site is, but—

Ms. BORMAN. Yes. So a FUD site is a Formerly Used Defense Site, and this is a piece of property that was underneath the jurisdiction of the Secretary of Defense, of the Defense Department, and was transferred out of our jurisdiction before October of 1986. And so they are properties that are no longer underneath our jurisdiction.

Mr. CUELLAR. All right. Thank you.

Well, I want to thank all of you. I know this takes a lot of money to do this type of work. But I just want to say thank you so much. And we will follow up with the questions that I had. But thank you so much to all of you all.

I yield back, Madam Chair.

Ms. MCCOLLUM. Thank you. We look forward to that list from the Army.

Mr. Aguilar, then Mrs. Kirkpatrick, Mr. Crist, and Mr. Ryan.

Mr. Aguilar.

RESTORATION COMPLETE MILESTONES

Mr. AGUILAR. Thank you, Madam Chair, and thanks to the panel.

Just a couple questions.

Ms. Borman, in your written testimony, you noted that 91 percent of your projects have reached the Restoration Complete milestone and that there were a remaining 1,200 sites that have yet to reach that milestone.

I just kind of wanted to wrap my head around how you categorize the remaining projects. More specifically, are the remaining

projects more complex than the 91 percent? Are these newly identified sites? Or do they present similar remediation challenges?

Ms. BORMAN. Yes. Thank you for the question.

The remaining 1,200 sites that we have, approximately 83 percent of those are installation sites. The other 17 are related to military munitions.

And these are our most complex sites. And what I mean by this is they could be groundwater sites where we are still in the process of trying to track where the groundwater is going. They could be complex sites from the mixture of chemicals that are in the groundwater that had been used and that in some cases we may not yet have the technology available to properly remediate those.

But of the 1,200 sites that we do have, a little over 400 of those are already in some sort of monitoring or remedial action—have some sort of remedial action ongoing. And we are in the investigation process of the remaining sites.

Mr. AGUILAR. But it is fair to say that of the remaining sites, that those are going to be more labor intensive, more costly, longer time horizons. And, as you mentioned, sometimes we are going to need help from the technology side that may not be there yet.

Ms. BORMAN. That is correct.

DOD AND EPA PRIORITIZATION

Mr. AGUILAR. Okay. I appreciate it.

Mr. Ohannessian, the Navy's Environmental Restoration Program leverages DOD's relevant frameworks, either the Relative Risk Site Evaluation framework or the Munitions Response Site Prioritization Protocol to prioritize projects by those that present the greatest risk to human health and safety.

Can you share how the Environmental Restoration Program coordinates with EPA to prioritize the cleanup of the remaining sites?

Mr. OHANNESSIAN. Yes, sir.

At each of the locations where we have work going on, we do work with our regulatory partners. That is the EPA, but often also State regulatory agencies. And the public has input as well. So, together we figure out what is the plan going forward to work on for the next year, next 2 years, and so forth.

And so, the risk piece of it comes into play not just amongst ourselves within the Department of the Navy, but with the regulators as well. And then we lay out what can we work on collectively as much as we can. And then that gets rolled up into our programming and, ultimately, our budget request in the President's budget.

Mr. AGUILAR. Are there cases where there is some conflict between the EPA and what you folks are doing? And how do you resolve that?

Mr. OHANNESSIAN. Of course, there is interagency coordination, and there is a back and forth. But I don't recall an instance where we were not on the same page as far as what work to work on next and where to ask for the funding.

Mr. AGUILAR. From a prioritization standpoint, you feel that things have been in sync with the EPA in coordination and partnership?

Mr. OHANNESSIAN. Yes.

Mr. AGUILAR. Okay. I appreciate that.
 Madam Chair, I will yield back. Thank you.
 Ms. MCCOLLUM. Thank you.
 Mrs. Kirkpatrick.

PROTECTION OF DRINKING WATER FROM PFAS

Mrs. KIRKPATRICK. Thank you, Madam Chair. Thank you so much for having this hearing. I really appreciate it.

My question is for Mr. Correll.

I represent a district in southern Arizona that is home to Davis-Monthan Air Force Base and neighbor Morris Air National Guard Base at Tucson International Airport. A large portion of my district resides in an EPA-designated sole source aquifer and closed basin water system.

In these systems the watershed does not have an active surface water connection to an ocean where contamination can move out of the community.

PFAS contaminants have been found in production wells above the safe level near Davis-Monthan and threaten primary and backup sources of drinking water.

The spread of contaminants has been initially mitigated, thanks to the rapid actions of the city's water department. However, this has come at a significant financial cost to the city, and 24 wells have been either completely shut down or placed in a restricted use status.

The city is bearing the brunt of the effort to protect over 700,000 residents.

How does the Department of the Air Force account for different types of water systems when evaluating priorities for remediation?

Do you account for closed water systems and sole source aquifers?

How is the Air Force supporting local municipalities who need to protect their citizens' drinking water while they wait for the Department to run its often lengthy process?

How do you balance the risk of contaminants spreading from nondrinking water to drinking water?

Mr. Correll, in your testimony you stated that the Air Force and your partners are at capacity with how much funding you can execute. This is a concerning statement as PFAS only becomes a larger problem. What resources do you need to overcome this capacity issue?

I yield back.

Mr. CORRELL. Thank you, Congresswoman.

So I have had the opportunity to meet with the mayor of Tucson, and so we have had this discussion personally, and so I am very familiar with the issues there.

There are two parts to how we respond to any of these, but particularly at Tucson as you are interested in. The first is what we call an interim removal action.

What we are looking for there is how do we make sure where we have been the cause that we make sure we are able to keep folks from drinking water above the EPA health advisory today. And that comes from support to the city, as well as to individual private

well owners, with regard to either bottled water, filtration systems, and the like. And so, we are doing that in that area today.

Longer term, the answer—you asked about whether or not we consider the fact that it is a sole source aquifer, and the answer is yes, that is a consideration, as we talk about what is the level of toxicity, what are the chances the speed and movement and migration potential for contaminants in your water supply.

If it is such that it is not going to go anywhere, that can be bad, as it is where you are talking about where it is a sole water source. And, yes, that would be a consideration as well in terms of what are the pathways. If it is the sole pathway, then, yes, that is going to put it higher on the priority list.

Our environmental folks at the Air Force Civil Engineer Center look at and create what is called a Program Requirements Document every year. So they are looking at what is the data at each one of these sites so that we can help decide which ones do we need to do first and which ones do we need to do next.

What I will tell you in terms of resources is our first priority, as I mentioned, is to make sure nobody is drinking the water above the EPA health advisory level. Once we get to that, then we are going to take a little more measured approach to make that happen. We can make that measured approach go faster, but it doesn't mean anyone is necessarily safer.

As we go through the full CERCLA process, we will identify those migration pathways. And if we do, then we will take the next piece, which we call an interim remedial action, which is where we may put in a pump-and-treat system or something else to keep that from moving as we identify it going forward.

It is a very robust process. It is time-consuming, and I know that frustrates some folks. But we are working through that in Tucson and other locations.

I thank you for the question, ma'am.

Mrs. KIRKPATRICK. Thank you, Mr. Correll. Thank you so much. And thank you, Madam Chair. I yield back.

RESEARCH OF UNDERGROUND WATER SOURCES

Ms. MCCOLLUM. Thank you.

I am going to use my prerogative and do a tag-on question.

So in Minnesota, our Department of Natural Resources, we know how the water flows, we know where it is going. So what do you mean when you say you are researching how plumes of water are flowing underground?

I mean, I don't know Arizona, but I am assuming you are working with the States on this, because the States usually have all of this in their inventory of water. So, you wouldn't have to reinvent the wheel.

Mr. CORRELL. So actually, ma'am, they have some information. But when we go through the remedial investigation process, that is where we actually have to look at on a site-specific basis exactly what is going on. So not trying to get too geeky here, but we talk about stratigraphy, hydrology, where does the water move, paleochannels, there is ancient rivers underneath. When those details are not available we find that out.

Ms. MCCOLLUM. Okay. So sometimes you don't have everything you need is what you are saying, so you have to do more.

Mr. CORRELL. Correct.

Ms. MCCOLLUM. Okay. Because I have, as I said, I have water being filtrated by—to take a lot of different chemicals out. So I have a municipal system that is being filtered that was part of FUDS. And then on the reclaimed land that returned over from GSA, we have filtration on a closed cycle for the life of the planet.

I knew what you were talking about, Mrs. Kirkpatrick, and you have my support to see what we can do to have things done.

Mr. Crist, and then Mr. Ryan.

INSTALLATIONS AND CLIMATE CHANGE

Mr. CRIST. Thank you, Madam Chair.

I have seen reports that two-thirds of critical military installations are threatened by climate change. Please tell me how challenges associated with climate change, such as sea level rise and increased flooding risk, are impacting the Defense Environmental Restoration Program. And are you all actively tracking climate threats on a facility-by-facility level?

Thank you.

Mr. KIDD. Sir, the Department recognizes the reality of climate change and the threat that it poses to our mission, and particularly to our installations and the services that those installations provide, not only to our servicemembers but to the surrounding communities.

At the end of April, we published the Defense Climate Assessment Tool findings, which basically have taken an installation-level assessment of 1,400 installations at the United States and overseas about the effects of climate change across eight areas, two time scenarios—two timeframes, and two emission scenarios.

That is the first order of—sort of the first level in an analytic process that will eventually distill down to and include a variety of site-specific details and models, to include areas where we have installation or munitions response sites.

Mr. CRIST. Does anyone else care to respond?

Mr. OHANNESSIAN. Sure. Adding to that, just going to the clean-up piece of it, the cleanup process does have a built-in feature of always monitoring and revisiting to address changing conditions. So, climate change would be a changing condition that we would see and react to as necessary. But, fortunately, the process has that in there already, and we are able to respond if we see something happen.

Mr. CRIST. Thank you.

And then what proactive approaches should we be considering when forecasting future mitigation and restoration needs, especially as it relates to our work as appropriators?

Mr. KIDD. Sir, the climate change assessment modeling that the Department is doing, along with other agencies in the Federal Government, will allow us to model the predictive future effects of climate change and extreme weather on our installations.

We are then going to have to make some decisions with what we do with that information. And it could be sort of defend, abandon,

or adapt. And I think the Department's approach is adaptation across all the systems within the organization.

This week we will send our draft climate adaptation plan to the White House and, depending on that review, it should be made public within the next 30 to 60 days. That will start to give you a sense and feel for some of these activities.

But this is a multidecade challenge of both adaptation and mitigation, and it is too early to predict where we are going to end up. But we recognize the reality of the problem. We are investing in the decision tools, analytics, and workforce that will be needed to answer the very tough questions like the ones you just posed.

TECHNOLOGICAL CHALLENGES

Mr. CRIST. Thank you.

And then, finally, what are the scientific and technological challenges in completing the remediation of these sites? And what research and development is needed to improve effectiveness or lower cost?

Mr. KIDD. Sir, are you speaking to all sites or to PFAS sites?

Mr. CRIST. All sites.

Mr. KIDD. Sir, I would just say we do have a robust research and development program in the Department, the ESTCP and SERDP activities. There is also pathways for new technologies to come into the cleanup process as part of CERCLA.

And I will let my colleagues jump in here if they want to add anything.

Mr. CORRELL. Thank you.

I think, at least from my perspective, not necessarily Department of the Air Force's, what I would like to see is more of—and I think Chair McCollum mentioned this a little bit—is if we can get more of what we call the in situ, in the ground technologies, as opposed to having to bring the contaminant out, mitigate it, and then either dispose of it or put something back in, that is an area where we would love to see technology improve.

Mr. CRIST. Great. Thank you very much.

And, thank you, Madam Chair. I yield back.

Ms. MCCOLLUM. Thank you.

We have time to do some more questions. I know there are members who are still—their names are still on the screen, but they are not on the screen. I am going to ask Mr. Carter if he has another question.

If you want to ask another question, please turn your camera on, other than I have some questions to close up.

Mr. Carter.

Mr. Carter? Oh, there, they are fixing your microphone. There you go.

Mr. CARTER. Are we good?

Ms. MCCOLLUM. We are good. I can hear you.

FUNDING FOR FUD AND MMRP PROCESS

Mr. CARTER. Okay. I hate to keep getting back to the unexpended ordnances, but traditionally is funding provided for the—to request in Formerly Used Defense Sites and Military Munitions Response Program?

Mr. Kidd, do you plan to use this approach of increases in the same manner? And did you understand the question?

Mr. KIDD. Sir, I understood the question.

The short answer is, yes, we will keep the same process. For FUD specific, as you know, the Army is the executing agent.

And, Ms. Borman, do you have anything you would want to add?

Mr. CARTER. Kind of changing my position a little bit, but one of the questions that I have wondered, because I can remember several times we have had this question come up in past years about cleaning up sites.

When you start remediating a site, does the Department and the services commit to seeing the project through all at once? Or if another site were to emerge with a higher risk, could an ongoing project be put on the back burner?

And what is the process for evaluating the need to shift resources? And how is it done?

Mr. CORRELL. Sir, I will start for the Air Force.

And the answer to your first question is, yes, if a higher risk site comes up then we will put others on the back burner to address that higher risk.

How is that done? It is done at the Air Force Civil Engineer Center. They do what is called a program review document.

That program review document consists of a senior review team that meets 16 different times during the course of the year to evaluate all the regions and sites and assigns a risk or either four, which is high, or one, which is low, or somewhere in between. We then evaluate what they think those risks are.

Now, for IRP or MMRP, there are slightly different risks. We have talked about what the relative risk is, and we have talked a little bit about the UXO versus the constituent piece that is the MMRP. But it is all part of the cleanup program. So they will evaluate those.

It is not like if some things are slightly worse, we are all of a sudden going to stop investing. So there will be some consideration in there. But if a significantly worse project comes into play, we are going to put that ahead, and we will use that process to get there.

Mr. CARTER. And what kind of schedule would you have to get back to the projects that you pull off of?

Mr. CORRELL. Sir, again, that is going to be—so on an annual basis we are going to look at these.

When we pull off a site—I would not characterize it as pulling off. So, generally speaking, if we are going to award a contract, we are going to finish the contracts that were funded.

The notion that we would just completely stop at a site, unlikely. More likely, we would de-emphasize it, we would slow it down, so that we could shift resources over to the higher priority, not likely that we would just stop it.

Mr. CARTER. Well, I can recall some of my colleagues in California complaining that you pulled off of some of the sites of the closed bases there and it has taking—a joke—an act of Congress to get you back on there. So I just wanted to know if there is a timetable that you are trying to stick to.

Ms. MCCOLLUM. Well said, and I think well delivered, Mr. Carter.

Mr. CARTER. Okay. Thank you.

Ms. MCCOLLUM. Great. Because I am going to do a follow-up written question for the record on the same thing.

Ms. Kaptur.

NATIONAL MAPPING

Ms. KAPTUR. Thank you, Madam Chair, very much.

And, again, thank our witnesses. I think many of us hope that with your testimony today and looking toward the future to build back better, that defense environmental cleanup might well be a part of future bills that we consider in addition to the annual appropriations bill.

I just wanted to show you a map. I don't know if this is going to be very clear or not. But this is a map of the Great Lakes region, and actually it has colors on it that indicate levels of stress. I come from one of the most stressed of all the Great Lakes, Lake Erie, and Lake Ontario is more stressed than our lake.

I am wondering, in terms of the work you do, whether you have similar national mapping you can make available to the committee indicating, from worst to best, different coasts, different parts of the country, in terms of the contaminants and environmental degradation that you deal with every day to make it more understandable to us, so that we can get a sense nationally of where the stress is greatest and the different types of cleanups that you face.

Do you have that kind of very strategic mapping to give clarity to this issue for members of this subcommittee and other Members of Congress as well?

Mr. OHANNESSIAN. For the Navy, I would say we do not have it depicted on a map format, no.

Mr. CORRELL. I am not aware of it for the Air Force either.

Ms. BORMAN. I am not aware for the Army either.

Ms. KAPTUR. What would one have to do in order to give clarity to this issue, in terms of mapping, so we could understand the whole of it, not just little parts here and there? What would it take?

Mr. KIDD. So, Congresswoman, the power of GIS information is very compelling, and we have seen it used to great effect. Basically what you are asking for is a multilayered GIS website where you could introduce a range of different information that could be graphically portrayed so that users could pull up where a PFOS site might be or where a munitions response site might be.

I mean, it is certainly within the realm of the possible. It would be an extensive amount of work required to get there. But I understand the potential and what you are asking for.

Ms. KAPTUR. Because we would like to help you, and I think greater clarity helps delivering results. And we are sort of in a murky—I feel murky right now. And we have had this challenge in other areas.

I encourage you to give me a budget estimate of what it would cost or who you would go to to get this done—and done well—for the sake of the country, and whether you would do it or other agencies of the government, the private sector. Give us a sense of the cost.

Mr. KIDD. Ma'am, we will certainly take that one for the record. And we can build a cost estimate of a comprehensive GIS portrayal of the Department's Environmental Response Program.

Ms. KAPTUR. Yes. And I am going over time, but just to say, I would like to know if my area, are we medium bad, are we minimally bad, are we horrible compared to other places in the country based on the material content that is contaminated? That is really important for us to know.

Ms. MCCOLLUM. I think they heard you.

Mr. KIDD. Oh, we heard you. I was just looking at the red light that is on my screen, so I wasn't going to take any more of your time.

But, again, I mean, certainly I understand the value of a picture and how a picture is worth a thousand words. And in another lifetime and in another career, I had cleared ordnance for the State Department. I ran our international overseas ordnance program.

And the power of a map was very compelling because it told people where they could go and where they couldn't go and how they could safely deliver a humanitarian response. So I understand the power of a map.

CHAIR MCCOLLUM REQUEST

Ms. MCCOLLUM. So, Mr. Carter, with your permission, I am going to—we have got feedback.

Mr. CARTER. Go ahead.

Ms. MCCOLLUM. I am going to lay out questions, some questions for the record on here, and then I do have a few follow-ups I am going to ask.

Mr. CARTER. That sounds great. Thank you.

Ms. MCCOLLUM. Okay.

For the record, I am going to be asking for some information on how Tribes are addressed on this issue for prioritizing and mitigation for activities on Tribal lands and how you engage with them. We know you engage with States and local governments, but we have nation-to-nation obligations with our Tribes.

I am also going to be submitting for the record, fiscal year 2021 had an increase of \$20 million was provided to the Office of the Deputy Assistant for Environment to address your workload, and we are going to be asking if you are going to need more than that based on PFOS.

We don't have the President's budget in front of us, of course, and some of those answers might be in there. But we are going to be asking you about staffing and if you have adequate staffing.

COVID IMPACT ON RESTORATION PROJECTS

One of the things I think that you have heard from the members here—and there was a lot of engagement, a lot of people stayed on listening, even though they didn't have another question—we are going to ask each one of you how COVID also impacted your restoration projects, if you were able to obligate all your funding as you expected. Or maybe you can answer that yes or no right now. But if you can't, you can get back to us.

Do you know if you were able to obligate?

Mr. OHANNESSIAN. Yes.

Ms. BORMAN. Yes.

Mr. CORRELL. Yes.

Ms. MCCOLLUM. Yes? Okay. So that is good to know.

I would like to—and these are more if you could answer now.

After 30 years—so in 2017, after 30 years of precedent, the DOD General Counsel changed its position and concluded that the Air National Guard could no longer use Defense Environmental Restoration Account, DERA, to pay for environmental cleanup because it did not meet the legal definition of owner or operator for the most affected Air National Guard bases.

In subsequent years, the NDAA has sought to create clarity on this issue on the law for the Guard to access DERA funding, but it is not clear. The Department feels that this issue has been resolved.

Mr. Kidd, is the Guard currently able to assess Defense Environmental Restoration Account funding, or are they still restricted?

Mr. KIDD. Ma'am, they are able to access it for PFOS issues.

Ms. MCCOLLUM. For PFOS.

Mr. CORRELL. So there is actually a little more to that, sir.

Mr. KIDD. Okay. Thanks.

Mr. CORRELL. So, what the recent legislation did was said for PFOS and PFOA that it would fall under the DERA program. However, some of our locations are former active locations.

There is also an aspect of if contamination occurred when an installation was active—so, let's say, we have Ohio, for example, Rickenbacker Air National Guard Base used to be Lockbourne Air Force Base. If the contamination occurred when it was active, then it can still be eligible for DERA. It is not just for PFOS and PFOA, but it depends on the status of the location.

Ms. MCCOLLUM. We are going to follow up or maybe have the authorizers follow up, if we need, to make sure that that doesn't ping-pong back and forth, that there is clarity on that moving forward if we need to do anything legislatively so we don't have another counsel change of position.

INSTALLATION RESTORATION PROGRAM PRIORITIZATION

I am going to go back to the Installation Restoration Program prioritization. So the Department of Defense, under your Installation Restoration Program, you address contaminants from hazardous substance pollutants at installations. Base Realignment and Closures are under BRAC. So you have got all these different categories that you go under.

But as a total, as of December—excuse me, September 2019, DOD identified over 34,000 IRP sites that may require cleanup.

Could you tell me if the projects that are receiving the environmental restoration funding, are they evaluated and prioritized in the fiscal year? Is there a list of projects that shift in priority? Because I think we have heard that from you a little bit, that something kind of rises to the top. How often does that happen and re-evaluated? And how do you resequence projects?

You can take that for the record. But I think you have heard that from a lot of members what is happening here. Especially if you have started working with a contractor or let a contract and then all of a sudden you kind of put stuff on pause, that contractor has

with that contract done a business plan after it, and so how do you synchronize that?

And do you have an estimated cost for the complete cleanup for the Installation Restoration Program?

PLUS FUNDING FOR ENVIRONMENTAL RESTORATION

Another section that I would like to touch on is Congress has been appropriating funding for the environmental restoration accounts above budget requests, and the general Department and services have been able to fully obligate the funding in the fiscal years it was appropriated.

So could you tell us—and we will put this in writing for you—how the requested amount was determined for the fiscal year, and is the request based on work that can be completed in that fiscal year? Or are the services getting environmental restoration funding that they are requesting to the Department as part of a budget formulation?

So we want to understand the breakdown of how you are obligating these dollars a little bit.

Another question is—and this goes back, again, on the higher risk issue on it is something that keeps coming up time and time again in questions from members and from staff, because we want to do some oversight to see how we are moving forward on that. We would like it to be a little more transparent.

COMMUNITY ENGAGEMENT

And then you mentioned your participation with communities. So if you have engaged the community that you are going to clean something up or you have informed Congress that you are going to clean something up and then something rises to the top, do you have to go back and disengage the community and say, “Well, just put it on hold?”

What do you do after you have had community processes, especially after you have identified a source, whether it is unexploded ordnance, whether it is PFOS, whether it is something else?

You have engaged the community. You have told the community you are going to clean it up. You have let the contracts. You are going to finish it, right, in a timely fashion?

Mr. CORRELL. As I mentioned before, contracts we have awarded, we are not going to cancel them and stop them. We may have to divert resources to a higher priority. And, again, our priorities are high, medium, and low.

Ms. MCCOLLUM. Excuse me. I am having a hard time understanding that. You are not going to cancel them, but you are going to reprioritize other projects.

Mr. Carter is agreeing with me.

Mr. CORRELL. When I say—so reprioritize, it is high, medium, and low. So what could happen is I can have some number in the high category, some in the medium, some in the low. We are planning to work on a medium one, another one comes in that is high, we are going to go after that high one. It doesn't mean the high is going to stop. It means some of the others are going to slow down.

Ms. MCCOLLUM. But you have let a contract. You have engaged the community. You have told the taxpayers that you are going to clean this up and you have kind of given them a timeframe, right? And you have actually gone out and solicited contracts. So, now businesses made their business plan based on that contract and you are saying that you could slow it down. So, when you are slowing it down, 6 months, a year, 3 years, 5 years?

Mr. CORRELL. In your question for the record, you have asked for us to give you the specifics of how we do that as part of—

TIMELINE OF CLEANUPS

Ms. MCCOLLUM. Yes. We would love that. We would love that not just for the Air Force but for others as well too.

So, that goes to the question, so then how long does a typical cleanup take? And what kind of constraints will end up being in the cleanup process? And as you said, something all of a sudden—if it is a life, health, safe emergency, I think everybody would understand that rising to the top for something, but we want to know what is going on.

And how do you work with State and local regulators? I know in an area that we just worked with the Army on, Round Lake, it took us 10 years, working with State agencies and with local regulators, including the Minnesota Pollution Control Agency.

What is your average timeframe on things like this? If somebody is saying, “No, we want it done our way,” and you go into negotiations on someone on cleanup, I think letting something stay open—and this is not any of you in particular—for 10 years is kind of—well, I am from the Federal Government, and I don’t want to say it takes us 10 years to make a decision on how we are going to clean something up when we know it has to be cleaned up, so on that.

WORKFORCE ISSUES

And then I think the workforce issue is important all around as you are staffing up and doing more. Are you anticipating having problems with being able to find contractors and workforce on that?

CHAIR MCCOLLUM CLOSING REMARKS

We will give you those for the record.

But this was our first hearing on this, and I just want to thank you all for your professionalism. I want to thank you all for the work that you do behind the scenes.

You are all very dedicated to doing the very best you can with the resources that you have. Everybody can tell your sincerity about wanting to get this done.

But we also have an oversight responsibility, and we have to report back to the taxpayer. And as you know, PFOS is important, but it is not important to the point where people don’t want the munitions looked at.

How do we make sure that we are moving progressively forward and we don’t put one problem so high up on the list that communities don’t see other issues being addressed and we just, for lack of a better term, we just let them sit there?

And I think Mr. Crist with climate change and everything like that, too, now you have a whole new portfolio that you are looking at with risks.

We sincerely mean, I sincerely mean, and I think I speak on behalf of the committee, we really do appreciate the job that you do. Usually we see people wearing uniforms, and it is a very different kind of discussion. But you are the life, health, and safety for our servicemembers and for our communities and for future generations and protecting the environment, and those are very important jobs. And for that, we thank you for doing that.

We look forward to seeing the budget, working with you in partnership to get as much of this cleaned up as fast as we can get it cleaned up, and hopefully even work to not have as much contamination in the future.

Mr. Carter, with that, unless you have anything you want to add, I am going to adjourn the meeting.

MR. CARTER CLOSING REMARKS

Mr. CARTER. Thank you, Madam Chairman. And I want to commend you for going into this very important subject. It is about time we got into this and stay on top of it, because we are all concerned.

And I do thank everybody involved in a mind-bending challenge. But I think you can do it, and I commend you for trying.

Thank you, Madam Chairman.

CHAIR MCCOLLUM REMARKS ON MEMORIAL DAY

Ms. MCCOLLUM. So as we go into Memorial Day, we remember those who died in service to this country, but we thank those, like yourself, who are working to make our environment safer. Thank you very much.

And with that, this meeting is adjourned.

[Answers to submitted questions for the record follow:]

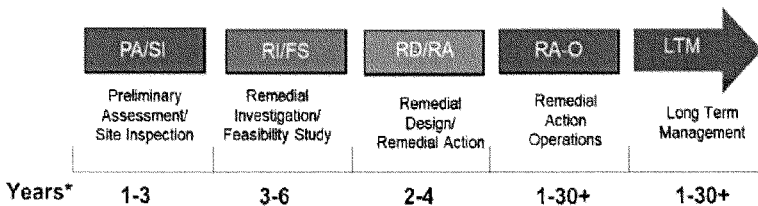
The Honorable Betty McCollum
Chair, Appropriations Committee, Subcommittee for Defense
Questions for the Record

Witnesses: All

Question One: How long does a typical cleanup take? And what kind of constraints end up being in the cleanup process? Are you anticipating having problems with being able to find capacity with contractors and the workforce? If delays become apparent, what mechanisms do you utilize to communicate with the local community and to regulators?

Answer: There is no typical clean-up time. Removal actions can occur quickly within weeks or months, while long term pump and treat activities can take decades. The clean-up time is determined by the physical characteristics of each individual site.

DoD follows the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) federal cleanup law, as amended, to fully investigate, prioritize responses, and determine appropriate cleanup actions based on risks to human health and the environment. CERCLA provides a consistent approach across the Nation for cleanup, however, because this cleanup process is tailored to site-specific conditions, a typical cleanup time does not exist. Some of the key steps in the CERCLA process for carrying out remedial actions, and the approximate time it takes DoD to complete each step, are shown in the figure below:



While not shown on this general timeline, DoD can undertake removal actions which are shorter-term actions to address immediate threats to public health. These removal actions can sometimes occur within days depending on the urgency of the site. In some cases, sites do not have to go through the entire CERCLA process, for example during the preliminary assessment or remedial investigation phase we may determine no further action is required. In other cases, the site may be so complex or large that it will take years to assess, require a remedy based on more advanced technology, and take decades before cleanup is complete.

At this juncture we are not experiencing capacity issues with our contractors and do not anticipate them in the future. The Military Departments have a comprehensive acquisition strategy whereby they annually assess and take actions to ensure they have staffing and contract capacity for our anticipated workload over a five-year horizon.

If delays in the cleanup process occur, we use our public involvement methods, such as restoration advisory boards (RABs) which are a forum for exchange of information between installations and their communities, to communicate with the public. The Department communicates with and substantively involves regulators throughout the cleanup process.

Question Two: With projects that are receiving the environmental restoration funding, what are the processes and steps on how they are evaluated and prioritized in the fiscal year? Is there a list of projects that shift in priority with a historical record of the changes in priority that occurred? How often does that happen and reevaluated?

Answer: The Department has not halted or suspended on-going projects due to new priorities. Instead, any newly identified priorities are addressed by shifting future projects and these shifts are coordinated with our regulatory partners and communicated to our community stakeholders. As cleanup sites progress through CERCLA phases, the actual timing and scope of response actions are tailored to site conditions.

DoD's cleanup program is premised on prioritizing sites for cleanup using a risk-based process--essentially worst first. Risk-based prioritization and cleanup occurs throughout the CERCLA process. DoD uses risk-based methodologies to determine the sequence for funding actions at Installation Restoration Program sites and Munitions Response Sites (MRSS) based on the highest risk to address worse sites first. The Relative Risk Site Evaluation (RRSE) framework is used for evaluating relative risk and sequencing Remedial Investigations for hazardous substance, and pollutant or contaminant sites. For MRSSs, DoD uses the Munitions Response Site Prioritization Protocol (MRSP).

DoD is committed to seeing project remediation through the cleanup process once initiated. While it is unlikely that a site would suddenly emerge with a higher risk due to the comprehensive investigation process under CERCLA, if they do, the new site is prioritized to start before existing sites with lower risk where cleanup activities have not yet been initiated.

Question Three: How are Native American Tribes are addressed on this issue for prioritizing and mitigation for activities on Tribal lands and does the department engage with them?

Answer: DoD coordinates with affected Tribes regarding prioritization of our cleanup efforts, and especially where cleanup actions may be needed off our installations due to contaminant migration. Additionally, the DoD Instruction 4710.02, *DoD Interactions with Federally-Recognized Tribes*, requires DoD Components to consult with Indian tribes on proposed actions, plans, and ongoing activities that may have the potential to significantly affect protected Tribal resources, Tribal rights, or Indian lands. Installations work on a government-to-government basis with a Tribe if actions are needed on their land and we seek their permission to access their land to carry out our cleanup actions. The foundation of Tribal consultation is built on respect for Tribal sovereign nation status through recurring and meaningful consultation.

While separate and not a part of the DERP program, the Department also has a Native American Lands Environmental Mitigation Program (NALEMP) which is specifically focused on addressing other environmental issues on Indian lands from former DoD activities.

Question Four: In FY21 an increase of \$2 million was provided for the Office of the Deputy Assistant Secretary for Environment to address an increased workload.

- Does the office have adequate staffing at the Department-level to respond to the growing workload related to PFAS and what additional resources might you need? What could you do with additional staffing?

Answer: We are working within the Department resources to reallocate staff to meet our pressing PFAS cleanup needs.

- For the Services, do you feel you have adequate staffing?

Army Answer: The Army is re-directing staff to support PFAS activities from other functional elements via temporary assignment. Army is exploring whether these personnel changes should be made permanent.

Navy Answer: Yes.

Air Force Answer: Yes

Question Five: In 2020 groundwater in the communities surrounding Naval Base Kitsap tested at dangerous levels for PFAS compounds. We are also seeing it at Joint Base Lewis-McChord where PFAS contaminants were detected on base, necessitating shutting down several drinking water wells. So given the prevalence of PFAS contamination at communities surrounding bases across the country, how you are going to continue to do testing related to PFAS because water continues to move?

Answer: Since 2016, the Department of Defense (DoD) has been assessing our installations to identify where there is the potential for Per and Polyfluoroalkyl Substances (PFAS) to migrate off-installation to public and private drinking water wells, investigating and addressing DoD releases of perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA), and taking actions to address impacted drinking water. DoD follows the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) federal cleanup law of 1980 (also known as “Superfund”), and long-standing U.S. Environmental Protection Agency (EPA) regulations for all chemicals in its cleanup program, including PFAS. DoD is conducting or has completed Preliminary Assessments/Site Inspections (PAs/SIs) at 698 Military Installations and National Guard Facilities and plans to begin or continue Remedial Investigations (RIs) at nearly 146 locations in Fiscal Year (FY) 2021. As DoD conducts the RIs, additional sampling will be conducted to evaluate groundwater flow direction and determine the extent of the PFAS impacted area.

Question Six: Do you have an estimated cost for the complete cleanup for the Installation Restoration Program?

DoD Component	Estimated Cost to Complete Cleanup at Installation Restoration Program Sites* (\$M)
Active Army	\$2,534.0
Active Department of the Navy	\$2,958.9
Active Air Force	\$5,832.1
Active Defense Logistics Agency	\$52.3
Active Subtotal[^]	\$11,377.4
Formerly Used Defense Sites (FUDS)	\$2,792.5
Active and FUDS Total[^]	\$14,169.9

* Includes estimated funding for the Installation Restoration Program from Fiscal Year 2021 through completion; reflects installation project funding allocated to individual sites and does not include program management and other support costs.

[^] May not add due to rounding.

Question Seven: How was the requested amount determined for the fiscal year? Is the request based on work that can be completed in that fiscal year? Or are the services getting environmental restoration funding that they are requesting to the Department as part of a budget formulation? We want to understand the breakdown of how you are obligating these dollars.

Answer: The DoD annual budget request is based on a number of factors, including cleanup schedules, how much work would be ready to award in a fiscal year, and the amount of work that can be managed by DoD and our regulatory partners. Having a relatively steady annual appropriation allows stable and efficient progress to be made across the portfolio of sites and gives us the financial certainty to make significant cleanup progress in this mature program. The environmental restoration funding dollars are primarily obligated by contracting with qualified contractors to perform the required cleanup work.

Question Eight: If you have engaged the community or informed Congress that you are going to clean something up and then another project rises to the top and you have to put the first project on hold:

- How do you address that with the community?
- What do you do after you have had community processes, especially after you have identified a source, whether it is unexploded ordnance, whether it is PFOS, whether it is something else?
- After engaging the community to notify them that you are going to cleanup a site and have let the contracts, are you going to finish the project in a timely fashion?
- You have let the contracts. Are you going to finish it in a timely fashion?

Answer: The Department has not halted or suspended on-going projects due to new priorities. Instead any newly identified priorities are addressed by shifting future projects and these shifts are coordinated with our regulatory partners and communicated to our community stakeholders. As cleanup sites progress through CERCLA phases, the actual timing and scope of response actions are tailored to site conditions.

Question Nine: How do you work with State and local regulators?

Answer: For decades, the DoD has worked closely and partnered with our federal, State, and local regulators on the environmental restoration program at each of our installations. We work together to assess the historic releases, prioritize sites, scope plans for site investigations and testing, coordinate work plans, share data results, evaluate risks and determine needed response actions to protect human health and the environment, and manage and oversee implementation of response actions through completion.

Question Ten: The work force issue is important all round as you are staffing up and doing more. Are you anticipating having problems with being able to find contractors and workforce on that?

Answer: The Military Services have a comprehensive acquisition strategy whereby they annually assess and take actions to ensure they have staffing and contract capacity for our anticipated workload over a five-year horizon. DoD has not had staffing or contractor capacity issues to date, and we do not anticipate them in the future.

Munitions Response Sites in Texas

DoD Component	Fund Source	Installation Name	City	County	Congressional District	Site ID	Site Name
Army	DERA	CAMP BARKELEY	TUNUNAK	Taylor County	19	BARK-001-R-001	SMALL ARMS RANGE
Army	DERA	CAMP BOWIE (STATE)	BROWNWOOD	Brown County	11	CB-001-R-01	CLOSED PISTOL RANGE
Army	DERA	CAMP BOWIE (STATE)	BROWNWOOD	Brown County	11	CB-002-R-01	CLOSED RIFLE RANGE
Army	DERA	FORT BLISS	FORT BLISS	El Paso County		FTBLS-001-R-01	DONA ANA RANGE - MCNEW SURPLUS
Army	DERA	FORT BLISS	FORT BLISS	El Paso County		FTBLS-002-R-01	FORT MANUEVER AREA 1 & 2
Army	DERA	FORT BLISS	FORT BLISS	El Paso County		FTBLS-003-R-01	WINFEE'S NOSE
Army	DERA	FORT BLISS	FORT BLISS	El Paso County		FTBLS-004-R-01	CLOSED CASSTNER FIRING RANGE
Army	DERA	FORT BLISS	FORT BLISS	El Paso County		FTBLS-005-R-01	FORT BLISS DONA ANA RANGE
Army	DERA	FORT BLISS	FORT BLISS	El Paso County		FTBLS-006-R-01	BIGGS OBIOD SITE I
Army	DERA	FORT BLISS	FORT BLISS	El Paso County		FTBLS-006-R-02	BIGGS OBIOD SITE II
Army	DERA	FORT BLISS	FORT BLISS	El Paso County		FTBLS-007-R-01	NORTH CASSTNER RANGE AOI
Army	DERA	JFHQ TX ARNG	AUSTIN	Travis County		TXHQ-008-R-01	INDNODS LAKE CROOK ARTILLERY RANGE
Army	DERA	JFHQ TX ARNG	AUSTIN	Travis County		TXHQ-008-R-02	INDNODS LAKE CROOK ARTILLERY RANGE
Army	DERA	JFHQ TX ARNG	AUSTIN	Travis County		TXHQ-011-R-02	LA REFORMA TRAINING SITE
Army	BRAC	LONGHORN ARMY AMMUNITION PLANT	TEXARKANA	Bowie County	4	LSAAP-001-R-01	ABANDONED PISTOL RANGE
Army	DERA	LONGHORN ARMY AMMUNITION PLANT	TEXARKANA	Harrison County	1	LHAAP-001-R-01	SOUTH TEST AREA / BOMB TEST AREA
Army	DERA	LONGHORN ARMY AMMUNITION PLANT	TEXARKANA	Harrison County	1	LHAAP-002-R-01	STATIC TEST AREA
Army	DERA	LONGHORN ARMY AMMUNITION PLANT	TEXARKANA	Harrison County	1	LHAAP-003-R-01	GROUND SIGNAL TEST AREA
Army	DERA	LONGHORN ARMY AMMUNITION PLANT	TEXARKANA	Harrison County	1	LHAAP-004-R-01	PISTOL RANGE
Army	DERA	RED RIVER ARMY DEPOT	TEXARKANA	Bowie County	4	RRAD-001-R-01	VULCAN RANGE
Army	DERA	RED RIVER ARMY DEPOT	TEXARKANA	Bowie County	4	RRAD-002-R-01	VULCAN RANGE -TD
Army	DERA	RED RIVER ARMY DEPOT	TEXARKANA	Bowie County	4	RRAD-003-R-01	POPPING FURNACE - BLDG 722
Army	DERA	RED RIVER ARMY DEPOT	TEXARKANA	Bowie County	4	RRAD-004-R-01	POPPING FURNACE - BLDG 1027
Army	DERA	RED RIVER ARMY DEPOT	TEXARKANA	Bowie County	4	RRAD-005-R-01	POPPING FURNACE - BLDG 1025
Army	DERA	RED RIVER ARMY DEPOT	TEXARKANA	Bowie County	4	RRAD-006-R-01	D-AREA Y-SITE D060201
Army	DERA	RED RIVER ARMY DEPOT	TEXARKANA	Bowie County	4	RRAD-007-R-01	GRENADE RANGE
Army	BRAC	RED RIVER ARMY DEPOT	TEXARKANA	Bowie County	4	RRAD-008-R-01	NW SURVEILLANCE FUNCTION TEST RANGE
Army	BRAC	RED RIVER ARMY DEPOT	TEXARKANA	Bowie County	4	RRAD-009-R-01	SW SURVEILLANCE FUNCTION TEST RANGE
Army	DERA	RED RIVER ARMY DEPOT	TEXARKANA	Bowie County	4	RRAD-010-R-01	TRACER TEST RANGE
Army	DERA	RED RIVER ARMY DEPOT	TEXARKANA	Bowie County	4	RRAD-011-R-01	DEMOLITION AREA CREEKS
Army	DERA	RED RIVER ARMY DEPOT	TEXARKANA	Bowie County	4	RRAD-011-R-02	DEMO AREA
Army	DERA	RED RIVER ARMY DEPOT	TEXARKANA	Bowie County	4		WASHRACK/STORAGE/TRAILS

Munitions Response Sites in Texas

DoD Component	Fund Source	Installation Name	City	County	Congressional District	Site ID	Site Name
Army	DERA	RED RIVER ARMY DEPOT	TEXARKANA	Bowie County	4	RAD-011-R-03	UNPERMITTED DEMOLITION AREAS
Navy	DERA	CORPUS CHRISTI NAS	CORPUS CHRISTI	Nueces County	27	UXO 000001	CORPUS CHRISTI NAS
Navy	DERA	CORPUS CHRISTI NAS	CORPUS CHRISTI	Nueces County	27	UXO 000002	CORPUS CHRISTI NAS
Navy	DERA	CORPUS CHRISTI NAS	CORPUS CHRISTI	Nueces County	27	UXO 000003	CORPUS CHRISTI NAS
Navy	DERA	CORPUS CHRISTI NAS	CORPUS CHRISTI	Nueces County	27	UXO 000004	CORPUS CHRISTI NAS
Navy	DERA	CORPUS CHRISTI NAS	CORPUS CHRISTI	Nueces County	27	UXO 000005	CORPUS CHRISTI NAS
Navy	DERA	CORPUS CHRISTI NAS	CORPUS CHRISTI	Nueces County	27	UXO 000006	CORPUS CHRISTI NAS
Navy	DERA	CORPUS CHRISTI NAS	CORPUS CHRISTI	Nueces County	27	UXO 000007	CORPUS CHRISTI NAS
Navy	BRAC	DALLAS NAS	DALLAS	Dallas County	30	UXO 000001	DALLAS NAS
Navy	BRAC	DALLAS NAS	DALLAS	Dallas County	30	UXO 000002	DALLAS NAS
Navy	DERA	FT WORTH TX NAS JRB	NO CITY	Tarrant County	12	UXO 000001	FT WORTH TX NAS JRB
Navy	DERA	FT WORTH TX NAS JRB	NO CITY	Tarrant County	12	UXO 000002	FT WORTH TX NAS JRB
Navy	DERA	FT WORTH TX NAS JRB	NO CITY	Tarrant County	12	UXO 000003	FT WORTH TX NAS JRB
Navy	DERA	KINGSVILLE NAS	KINGSVILLE	Kleberg County	34	UXO 000001	KINGSVILLE NAS
Navy	DERA	KINGSVILLE NAS	KINGSVILLE	Kleberg County	34	UXO 000002	KINGSVILLE NAS
Air Force	DERA	AIR FORCE PLANT 4	FORT WORTH	Tarrant County	12	ML 103	TARGET GUN BUTT
Air Force	BRAC	BERGSTROM	AUSTIN	Travis County	25	FR401	FORMER AIRCRAFT FIRING-IN BUTT (FORMER FAC 4571)(SWMU 123)
Air Force	BRAC	BERGSTROM	AUSTIN	Travis County	25	GR408	RIFLE GRENADE TRAINING AREA
Air Force	BRAC	BERGSTROM	AUSTIN	Travis County	25	SR400	FORMER SKEET & TRAP RANGE (SWMU 204)
Air Force	BRAC	BERGSTROM	AUSTIN	Travis County	25	SR402	INDOOR SMALL ARMS RANGE (BUILDING 181D) (SWMU 120)
Air Force	BRAC	BERGSTROM	AUSTIN	Travis County	25	SR404	FORMER SKEET & TRAP RANGE (FACILITY 4500) (SWMU 122)
Air Force	BRAC	BERGSTROM	AUSTIN	Travis County	25	SR405	SMALL ARMS RANGE (FACILITY 4505) (SWMU 121)
Air Force	BRAC	BERGSTROM	AUSTIN	Travis County	25	SR406	FORMER RIFLE RANGE (SWMU 205)
Air Force	BRAC	BERGSTROM	AUSTIN	Travis County	25	XU403	FORMER AMMO DETONATION/BURN PIT (SWMU 206) (FORMER FAC 4518) A K
Air Force	BRAC	BERGSTROM	AUSTIN	Travis County	25	XU407	EOD PROFICIENCY TRAINING RANGE (SWMU 99)
Air Force	BRAC	CARSWELL	FORT WORTH	Tarrant County	12	XU400	SMALL EOD RANGE
Air Force	DERA	DYESS	ABILENE	Taylor County	19	ED844	OT-12 (FORMER EOD AREA)
Air Force	DERA	DYESS	ABILENE	Taylor County	19	ED844B	OT-12 (FORMER EOD AREA)
Air Force	DERA	DYESS	ABILENE	Taylor County	19	F842	FIRING-IN BUTT 1
Air Force	DERA	DYESS	ABILENE	Taylor County	19	F843	FIRING-IN BUTT 2
Air Force	DERA	DYESS	ABILENE	Taylor County	19	TS845	SKEET RANGE 1
Air Force	DERA	DYESS	ABILENE	Taylor County	19	TS845A	SKEET RANGE 1A
Air Force	DERA	DYESS	ABILENE	Taylor County	19	TS846	SKEET RANGE 2
Air Force	DERA	DYESS	ABILENE	Taylor County	19	TS846A	SKEET RANGE 2A

Munitions Response Sites in Texas

DoD Component	Fund Source	Installation Name	City	County	Congressional District	Site ID	Site Name
Air Force	DERA	DYESS	ABILENE	Taylor County	19	TS847	SKREET RANGE 3
Air Force	DERA	DYESS	ABILENE	Taylor County	19	TS847A	SKREET RANGE 3A
Air Force	DERA	DYESS	ABILENE	Taylor County	19	TS848	SKREET RANGE 4
Air Force	DERA	DYESS	ABILENE	Taylor County	19	TS848A	SKREET RANGE 4A
Air Force	DERA	ELLINGTON	HOUSTON	Harris County	18	MB742	NORTH MUNITIONS DUMP SITE
Air Force	DERA	ELLINGTON	HOUSTON	Harris County	22	MB743	SOUTH MUNITIONS DUMP SITE
Air Force	DERA	ELLINGTON	HOUSTON	Harris County	22	MU741	ORDNANCE STORAGE AREA
Air Force	DERA	ELLINGTON	HOUSTON	Harris County	22	MU744	SMALL ARMS AND FLARE STORAGE
Air Force	DERA	ELLINGTON	HOUSTON	Harris County	22	SR218	MAGAZINES
Air Force	DERA	ELLINGTON	HOUSTON	Harris County	22	TS740A	SMALL ARMS
Air Force	DERA	ELLINGTON	HOUSTON	Harris County	18	TS740B	SKREET RANGE (NORTH MUNITIONS DUMP)
Air Force	DERA	GOODFELLOW	SAN ANGELO	Tom Green County	11	FR888	SOUTH FIRING RANGE
Air Force	DERA	GOODFELLOW	SAN ANGELO	Tom Green County	11	PR889	NORTH PISTOL RANGE
Air Force	DERA	GOODFELLOW	SAN ANGELO	Tom Green County	11	TS659	SOUTH SKREET RANGE
Air Force	DERA	JBSA-CAMP BULLIS	SAN ANTONIO	Bexar County	23	FR001	STOKES MORTARS RANGE
Air Force	DERA	JBSA-CAMP BULLIS	SAN ANTONIO	Bexar County	23	FR001A	STOKES MORTARS RANGE
Air Force	DERA	JBSA-CAMP BULLIS	SAN ANTONIO	Bexar County	23	FR004	75MM MUNITIONS AREA
Air Force	DERA	JBSA-CAMP BULLIS	SAN ANTONIO	Bexar County	23	SR002	MACHINE GUN RANGE
Air Force	DERA	JBSA-CAMP BULLIS	SAN ANTONIO	Bexar County	23	SR002B	MACHINE GUN RANGE
Air Force	DERA	JBSA-CAMP BULLIS	SAN ANTONIO	Bexar County	23	SR003	100 TARGET RANGE
Air Force	DERA	JBSA-FORT SAM HOUSTON	SAN ANTONIO	Bexar County	21	AT001	FTSH-001-R-01 - CHEMICAL DEFENSE TRAINING AREA
Air Force	DERA	JBSA-FORT SAM HOUSTON	SAN ANTONIO	Bexar County	21	AT009	FTSH-009-R-01 - FIRE TRAINING AREA
Air Force	DERA	JBSA-FORT SAM HOUSTON	SAN ANTONIO	Bexar County	21	AT011	FTSH-011-R-01 - SALADO CREEK TRAINING AREA
Air Force	DERA	JBSA-FORT SAM HOUSTON	SAN ANTONIO	Bexar County	21	AT018	FTSH-018-R-01 - TRENCH WARFARE COMPLEX
Air Force	DERA	JBSA-FORT SAM HOUSTON	SAN ANTONIO	Bexar County	21	FR003	FTSH-003-R-01 - MEADE FIELD
Air Force	DERA	JBSA-FORT SAM HOUSTON	SAN ANTONIO	Bexar County	21	SR002	FTSH-002-R-01 - DODD FIELD SMALL ARMS RANGE
Air Force	DERA	JBSA-FORT SAM HOUSTON	SAN ANTONIO	Bexar County	21	SR004	FTSH-004-R-01 - 1926 PISTOL RANGE
Air Force	DERA	JBSA-FORT SAM HOUSTON	SAN ANTONIO	Bexar County	21	SR005	FTSH-005-R-01 - STAFF POST FIRING RANGE
Air Force	DERA	JBSA-FORT SAM HOUSTON	SAN ANTONIO	Bexar County	21	SR008	FTSH-008-R-01 - OLD PERSHING RANGE
Air Force	DERA	JBSA-FORT SAM HOUSTON	SAN ANTONIO	Bexar County	21	SR010	FTSH-010-R-01 - PENTATHLON RANGE - TD

Munitions Response Sites in Texas

DoD Component	Fund Source	Installation Name	City	County	Congressional District	Congressional District	Site ID	Site Name
Air Force	DERA	JBSA-FORT SAM HOUSTON	SAN ANTONIO	Bexar County	21	SR012	FTSH-012-R-01 - 200-YARD RIFLE RANGE	
Air Force	DERA	JBSA-FORT SAM HOUSTON	SAN ANTONIO	Bexar County	21	SR016	FTSH-016-R-01 - PISTOL RANGE - TD	
Air Force	DERA	JBSA-FORT SAM HOUSTON	SAN ANTONIO	Bexar County	21	SR019	FTSH-019-R-01 - 1928 PISTOL RANGE - TD	
Air Force	DERA	JBSA-FORT SAM HOUSTON	SAN ANTONIO	Bexar County	21	SR020	FTSH-020-R-01 - 200-YARD RIFLE RANGE - TD	
Air Force	DERA	JBSA-FORT SAM HOUSTON	SAN ANTONIO	Bexar County	21	SR022	FTSH-022-R-01 - STAFF POST FIRING RANGE - TD	
Air Force	DERA	JBSA-FORT SAM HOUSTON	SAN ANTONIO	Bexar County	21	SR023	FTSH-023-R-01 - STAFF POST FIRING RANGE - TD2	
Air Force	DERA	JBSA-FORT SAM HOUSTON	SAN ANTONIO	Bexar County	21	SR024	FTSH-024-R-01 - STAFF POST FIRING RANGE - TD3	
Air Force	DERA	JBSA-FORT SAM HOUSTON	SAN ANTONIO	Bexar County	21	SR025	FTSH-025-R-01 - 200-YARD RIFLE RANGE 2	
Air Force	DERA	JBSA-FORT SAM HOUSTON	SAN ANTONIO	Bexar County	21	SR026	FTSH-026-R-01 - STAFF POST FIRING RANGE 2	
Air Force	DERA	JBSA-FORT SAM HOUSTON	SAN ANTONIO	Bexar County	21	SR027	FTSH-027-R-01 - PISTOL RANGE	
Air Force	DERA	JBSA-FORT SAM HOUSTON	SAN ANTONIO	Bexar County	21	SS021	FTSH-021-R-01 - DODD FIELD SMALL ARMS RANGE - TD	
Air Force	DERA	JBSA-FORT SAM HOUSTON	SAN ANTONIO	Bexar County	21	TM017	FTSH-017-R-01 - STONEWALL JACKSON FIELD	
Air Force	DERA	JBSA-FORT SAM HOUSTON	SAN ANTONIO	Bexar County	21	XU006	FTSH-006-R-01 - CHEMICAL WARFARE DEMONSTRATION ARE	
Air Force	DERA	JBSA-FORT SAM HOUSTON	SAN ANTONIO	Bexar County	21	XU007	FTSH-007-R-01 - CLOSED PERSHING FIELD	
Air Force	DERA	JBSA-FORT SAM HOUSTON	SAN ANTONIO	Bexar County	21	XU013	FTSH-013-R-01 - STONEWALL JACKSON FIELD - TD	
Air Force	DERA	JBSA-LACKLAND	SAN ANTONIO	Bexar County	20	AL240	KELLY BOMBING RANGE NORTH (UXO30) (MUNITIONS DEBR)	
Air Force	DERA	JBSA-LACKLAND	SAN ANTONIO	Bexar County	20	AL240A	KELLY BOMBING RANGE NORTH (UXO30) (UNCONTAMINATED)	
Air Force	DERA	JBSA-LACKLAND	SAN ANTONIO	Bexar County	20	AL241	UPTMORE & ASSOCIATES 433RD PRACTICE BOMBING TARGET (CONTAMINATED)	
Air Force	DERA	JBSA-LACKLAND	SAN ANTONIO	Bexar County	20	AL269	433RD PRACTICE BOMBING TARGET (CONTAMINATED)	
Air Force	DERA	JBSA-LACKLAND	SAN ANTONIO	Bexar County	20	AL269A	433RD PRACTICE BOMBING TARGET (UNCONTAMINATED)	
Air Force	DERA	JBSA-LACKLAND	SAN ANTONIO	Bexar County	20	AL722	KELLY BOMBING RANGE SOUTH (UXO31) (MUNITIONS DEBR)	
Air Force	DERA	JBSA-LACKLAND	SAN ANTONIO	Bexar County	20	AL722A	KELLY BOMBING RANGE SOUTH (UXO31) (UNCONTAMINATED)	
Air Force	DERA	JBSA-LACKLAND	SAN ANTONIO	Bexar County	23	DP689	AOC14 ASH PIT	

Munitions Response Sites in Texas

DoD Component	Fund Source	Installation Name	City	County	Congressional District	Site ID	Site Name
Air Force	DERA	JBSA-LACKLAND	SAN ANTONIO	Bexar County	20	FR242	OLD EAST RANGES
Air Force	DERA	JBSA-LACKLAND	SAN ANTONIO	Bexar County	20	FR274	OR006 1960 FIRING RANGE
Air Force	DERA	JBSA-LACKLAND	SAN ANTONIO	Bexar County	20	FR284	OR004 1940 RIFLE RANGE
Air Force	DERA	JBSA-LACKLAND	SAN ANTONIO	Bexar County	20	FR720	OR001 1917 FIRING (CONTAMINATED)
Air Force	DERA	JBSA-LACKLAND	SAN ANTONIO	Bexar County	20	FR720A	OR001 1917 FIRING (UNCONTAMINATED)
Air Force	DERA	JBSA-LACKLAND	SAN ANTONIO	Bexar County	23	OB665	OT012 OB/OD
Air Force	DERA	JBSA-LACKLAND	SAN ANTONIO	Bexar County	23	OB668	OT011 OB/OD
Air Force	DERA	JBSA-LACKLAND	LACKLAND AFB	Bexar County	20	SA725	ORDNANCE STORAGE #1
Air Force	DERA	JBSA-LACKLAND	SAN ANTONIO	Bexar County	20	SR272	OR004 1940 PISTOL RANGE
Air Force	DERA	JBSA-LACKLAND	LACKLAND AFB	Bexar County	20	SR724	100 POINT SMALL BORE RIFLE RANGE
Air Force	DERA	JBSA-LACKLAND	SAN ANTONIO	Bexar County	20	TG273	OR005 AIRCRAFT GUN TESTING RANGE
Air Force	DERA	JBSA-LACKLAND	SAN ANTONIO	Bexar County	20	TS270	OR002 SKEET RANGE (CONTAMINATED)
Air Force	DERA	JBSA-LACKLAND	SAN ANTONIO	Bexar County	20	TS270A	OR002 SKEET RANGE (UNCONTAMINATED)
Air Force	DERA	JBSA-LACKLAND	SAN ANTONIO	Bexar County	20	TS271	OR003 SKEET RANGE (CONTAMINATED)
Air Force	DERA	JBSA-LACKLAND	SAN ANTONIO	Bexar County	20	TS271A	OR003 SKEET RANGE (UNCONTAMINATED)
Air Force	DERA	JBSA-LACKLAND	LACKLAND AFB	Bexar County	20	TS667	SR004 SKEET RANGE
Air Force	DERA	JBSA-LACKLAND	LACKLAND AFB	Bexar County	20	TS723	1940'S SKEET RANGE
Air Force	DERA	JBSA-RANDOLPH	RANDOLPH AFB	Bexar County	28	CD257	POTENTIALLY LEAD-CONTAMINATED SOIL
Air Force	DERA	JBSA-RANDOLPH	RANDOLPH AFB	Bexar County	28	FR253	FIRING RANGE 1
Air Force	DERA	JBSA-RANDOLPH	RANDOLPH AFB	Bexar County	28	PR254	SOUTH RAMP PISTOL RANGE
Air Force	DERA	JBSA-RANDOLPH	RANDOLPH AFB	Bexar County	28	TS255	SOUTH RAMP SKEET RANGE
Air Force	DERA	JBSA-RANDOLPH	RANDOLPH AFB	Bexar County	28	TS255A	SOUTH RAMP SKEET RANGE
Air Force	DERA	JBSA-RANDOLPH	RANDOLPH AFB	Bexar County	28	TS256	GOLF COURSE SKEET RANGE
Air Force	DERA	JBSA-RANDOLPH	RANDOLPH AFB	Bexar County	28	TS256A	GOLF COURSE SKEET RANGE
Air Force	DERA	JBSA-RANDOLPH	RANDOLPH AFB	Bexar County	28	TS258	CC STREET SKEET RANGE
Air Force	BRAC	KELLY	SAN ANTONIO	Bexar County	20	FR400	FIRING RANGE TEST CELL AREA (OR007)
Air Force	BRAC	LAUGHLIN	DEL RIO	Bexar County	23	SR401	SMALL ARMS FIRING RANGE, INDOOR (BUILDING 3430)
Air Force	DERA	LAUGHLIN	DEL RIO	Val Verde County	23	ML873	M-203 PRACTICE GRENADE RANGE
Air Force	DERA	LAUGHLIN	DEL RIO	Val Verde County	23	SR872	FORMER WEST PISTOL RANGE
Air Force	BRAC	REESE	LUBBOCK	Lubbock County	19	SR400	FORMER WEST SKEET RANGE SKEET RANGE

Munitions Response Sites in Texas

DoD Component	Fund Source	Installation Name	City	County	Congressional District	Site ID	Site Name
Air Force	BRAC	REESE	LUBBOCK	Lubbock County	19	SR401	SMALL ARMS FIRING RANGE
Air Force	BRAC	REESE	LUBBOCK	Lubbock County	19	SR402	RIFLE RANGE
Air Force	DERA	SHEPPARD	WICHITA FALLS	Wichita County	13	TS880	FORMER SKEET RANGE NO. 1
Air Force	DERA	SHEPPARD	WICHITA FALLS	Wichita County	13	TS881	FORMER SKEET RANGE NO. 2
FUDS	DERA	ABILENE BOMBING GUN RANGE	NO CITY	Runnells County	11	010EW	BOMBING RANGE
FUDS	DERA	ABILENE BOMBING GUN RANGE	NO CITY	Runnells County	11	020EW	02-STRAFING RANGE
FUDS	DERA	ABILENE BOMBING GUN RANGE	NO CITY	Runnells County	11	030EW	03-ELM CREEK
FUDS	DERA	ALOE ARMY AIRFIELD	VICTORIA	Runnells County	27	040EW	SMALL ARMS RANGES
FUDS	DERA	AMARILLO AAF SM FIR RANGE	AMARILLO	Potter County	13	000EW	SMALL ARMS RANGE
FUDS	DERA	AMARILLO AIR FORCE BASE	AMARILLO	Potter County	13	030EW	OB/OD RANGE
FUDS	DERA	AMARILLO AIR FORCE BASE	AMARILLO	Potter County	13	070EW	SKEET RANGE
FUDS	DERA	AMARILLO AIR FORCE BASE	AMARILLO	Potter County	13	080EW	SMALL ARMS RANGES & CHEMICAL AREA
FUDS	DERA	AMARILLO AIR FORCE BASE	AMARILLO	Potter County	13	090EW	RIFLE RANGE
FUDS	DERA	BIG SPRING PBR NO. S-11	HYMAN	Mitchell County	11	010EW	BOMBING RANGE
FUDS	DERA	BIG SPRING PBR NO. S-2	GARDEN CITY	Glasscock County	11	010EW	BOMBING RANGE
FUDS	DERA	BIG SPRING PBR NO. S-5	GARDEN CITY	Glasscock County	11	010EW	BOMBING RANGE
FUDS	DERA	BLUEBONNET ORD PLANT	MCGREGOR	McLennan County	17	010EW	EXPLOSIVE CONTAMINANTS
FUDS	DERA	BOMBING TARGET B-1	CHAPMAN RANCH	Nueces County	27	010EW	BOMBING TARGET B-1
FUDS	DERA	BOMBING TARGET B-10	ARMSTRONG	Nueces County	34	010EW	BOMBING TARGET B-10
FUDS	DERA	BOMBING TARGET B-11	SARITA	Kendall County	34	010EW	BOMBING TARGET B-11
FUDS	DERA	BOMBING TARGET B-13	SARITA	Kendall County	34	010EW	BOMBING TARGET B-13
FUDS	DERA	BOMBING TARGET B-14	SARITA	Kendall County	34	010EW	BOMBING TARGET B-14
FUDS	DERA	BOMBING TARGET B-2	NO CITY	Kleberg County	34	010EW	BOMBING TARGET B-2
FUDS	DERA	BOMBING TARGET B-3	NO CITY	Kleberg County	34	010EW	BOMBING TARGET B-3
FUDS	DERA	BOMBING TARGET B-4	NO CITY	Kleberg County	34	010EW	BOMBING TARGET B-4
FUDS	DERA	BOMBING TARGET B-5	SARITA	Kendall County	34	010EW	BOMBING TARGET B-5
FUDS	DERA	BOMBING TARGET B-6	ARMSTRONG	Kendall County	34	010EW	BOMBING TARGET B-6
FUDS	DERA	BOMBING TARGET B-7	NO CITY	Kleberg County	34	010EW	BOMBING TARGET B-7
FUDS	DERA	BOMBING TARGET B-8	SARITA	Kleberg County	34	010EW	BOMBING TARGET B-8
FUDS	DERA	BOMBING TARGET B-9	ARMSTRONG	Kendall County	34	010EW	BOMBING TARGET B-9
FUDS	DERA	BREMEN PREC BOMB RGE #1	DALHART	Dallam County	13	010EW	PRECISION BOMBING RANGE NO. 1
FUDS	DERA	BROWNSVILLE ARMY AIRFIELD	BROWNSVILLE	Cameron County	34	010EW	BROWNSVILLE ARMY AIRFIELD SKEET RANGE
FUDS	DERA	CACTUS ORDNANCE WORKS	DUMAS	Moore County	13	000EW	AMMO STORAGE
FUDS	DERA	CAMP BARKELEY (FORT BARKLEY)	ABILENE	Taylor County	19	040EW	MANEUVER AREA NO. 1
FUDS	DERA	CAMP BARKELEY (FORT BARKLEY)	ABILENE	Taylor County	19	050EW/CWM	CHEMICAL WARFARE MATERIALS

Munitions Response Sites in Texas

DoD Component	Fund Source	Installation Name	City	County	Congressional District	Site ID	Site Name
FUDS	DERA	CAMP BARKELEY (FORT BARKELEY)	ABILENE	Taylor County	19	070EW	MANEUVER AREA NO. 2
FUDS	DERA	CAMP BARKELEY (FORT BARKELEY)	ABILENE	Taylor County	19	080EW	GRENADE RANGE
FUDS	DERA	CAMP BARKELEY (FORT BARKELEY)	ABILENE	Taylor County	19	090EW	SMALL ARMS AND ARTILLERY RANGES
FUDS	DERA	CAMP BARKELEY (FORT BARKELEY)	ABILENE	Taylor County	19	100EW	NATIONAL GUARD TRAINING AREA
FUDS	DERA	CAMP BOWIE	BROWNWOOD	Brown County	11	140EW	ARTILLERY IMPACT AREAS
FUDS	DERA	CAMP HOWZE (FELDERHOFF)	GAINESVILLE	Cooke County	13	100EW	ARTILLERY RANGE
FUDS	DERA	CAMP HOWZE (FELDERHOFF)	GAINESVILLE	Cooke County	13	120EW	GRENADE RANGE
FUDS	DERA	CAMP HOWZE (FELDERHOFF)	GAINESVILLE	Cooke County	13	130EW	MANEUVER AREA
FUDS	DERA	CAMP HOWZE (FELDERHOFF)	GAINESVILLE	Cooke County	13	140EW	MOSS LAKE
FUDS	DERA	CAMP HOWZE (FELDERHOFF)	GAINESVILLE	Cooke County	13	150EW	ROE REFUGAL AREA
FUDS	DERA	CAMP HOWZE (FELDERHOFF)	GAINESVILLE	Cooke County	13	160EW	ARTILLERY RANGE, SOUTHEAST
FUDS	DERA	CAMP HOWZE (FELDERHOFF)	GAINESVILLE	Cooke County	13	170EW	ARTILLERY RANGE, NORTHWEST
FUDS	DERA	CAMP HOWZE (FELDERHOFF)	GAINESVILLE	Cooke County	13	180EW	ARTILLERY RANGE, NORTH
FUDS	DERA	CAMP HOWZE (FELDERHOFF)	GAINESVILLE	Cooke County	13	190EW	ARTILLERY RANGE, NORTHEAST
FUDS	DERA	CAMP HOWZE (FELDERHOFF)	GAINESVILLE	Cooke County	13	200EW	ROCKET AND RIFLE GRENADE RANGES
FUDS	DERA	CAMP HOWZE (FELDERHOFF)	GAINESVILLE	Cooke County	13	210EW	MORTAR AND RIFLE GRENADE RANGE
FUDS	DERA	CAMP HOWZE (FELDERHOFF)	GAINESVILLE	Cooke County	13	220EW	ARTILLERY RANGE, FELDERHOFF PROPERTY
FUDS	DERA	CAMP HOWZE (FELDERHOFF)	GAINESVILLE	Cooke County	13	230EW	GRENADE RANGE, FELDERHOFF PROPERTY
FUDS	DERA	CAMP HOWZE (FELDERHOFF)	GAINESVILLE	Cooke County	13	020EW	MULTI USE RANGE COMPLEX NO. 1
FUDS	DERA	CAMP HULEN (PALACIOS IND. CO.)	PALACIOS	Matagorda County	27	030EW	MULTI USE RANGE COMPLEX NO. 2
FUDS	DERA	CAMP HULEN (PALACIOS IND. CO.)	PALACIOS	Matagorda County	27	040EW	MULTI USE RANGE COMPLEX NO. 3
FUDS	DERA	CAMP HULEN (PALACIOS IND. CO.)	PALACIOS	Matagorda County	27	050EW	SKEET RANGE
FUDS	DERA	CAMP HULEN (PALACIOS IND. CO.)	PALACIOS	Matagorda County	27	010EW	WESTERN RANGE AREA B
FUDS	DERA	CAMP MAXEY	PARIS	Lamar County	4	030EW	WESTERN RANGE AREA A
FUDS	DERA	CAMP MAXEY	PARIS	Lamar County	4	040EW	WESTERN RANGE AREA C
FUDS	DERA	CAMP MAXEY	PARIS	Lamar County	4	050EW	WESTERN RANGE AREA D
FUDS	DERA	CAMP MAXEY	PARIS	Lamar County	4	060EW	WESTERN RANGE AREA E
FUDS	DERA	CAMP MAXEY	PARIS	Lamar County	4	070EW	EASTERN RANGE AREA A
FUDS	DERA	CAMP MAXEY	PARIS	Lamar County	4	080EW	EASTERN RANGE AREA B
FUDS	DERA	CAMP MAXEY	PARIS	Lamar County	4	090EW	EASTERN RANGE AREA C

Munitions Response Sites in Texas

DoD Component	Fund Source	Installation Name	City	County	Congressional District	Congressional District	Site ID	Site Name
FUDS	DERA	CAMP MAXEY	PARIS	Lamar County	4	100EW	GRENADA RANGE AREA	
FUDS	DERA	CAMP MAXEY	PARIS	Lamar County	4	110EW	CAVE TRAINING AREA	
FUDS	DERA	CAMP MAXEY	PARIS	Lamar County	4	120EW	MINE AND BOOBY TRAP TRAINING AREA	
FUDS	DERA	CAMP MAXEY	PARIS	Lamar County	4	130EW	PAT MAYNE LAKE	
FUDS	DERA	CAMP MAXEY	PARIS	Lamar County	4	150EW	BIVOUAC AREA	
FUDS	DERA	CAMP SWIFT	BASTROP	Bastrop County	10	27 020EW	MRS 2 SMALL ARMS/ARTILLERY RANGES	
FUDS	DERA	CAMP SWIFT	BASTROP	Bastrop County	10	27 040EW	MRS 4 MAIN ARTILLERY RANGE AND IABZ	
FUDS	DERA	CAMP SWIFT	BASTROP	Bastrop County	10	27 050EW	MRS 5 MAIN ARTILLERY RANGE AND IABZ	
FUDS	DERA	CAMP SWIFT	BASTROP	Bastrop County	10	27 060EW	MRS 6 MAIN ARTILLERY RANGE AND IABZ	
FUDS	DERA	CAMP SWIFT	BASTROP	Bastrop County	10	27 070EW	MRS 7 MAIN ARTILLERY RANGE IABZ	
FUDS	DERA	CAMP SWIFT	BASTROP	Bastrop County	10	27 080EW	MRS 8 MAIN ARTILLERY RANGE AND IABZ	
FUDS	DERA	CAMP SWIFT	BASTROP	Bastrop County	10	27 090EW	MRS 9 MAIN ARTILLERY RANGE AND IABZ	
FUDS	DERA	CAMP SWIFT	BASTROP	Bastrop County	10	27 100EW	MRS 10 TRAINING/MANEUVER AREA	
FUDS	DERA	CAMP SWIFT	BASTROP	Bastrop County	10	27 110EW	MRS 11 ARTILLERY RANGE	
FUDS	DERA	CAMP SWIFT	BASTROP	Bastrop County	10	27 120EW	MRS 12 ARTILLERY RANGE/GAS TRAINING AREA	
FUDS	DERA	CAMP SWIFT	BASTROP	Bastrop County	10	27 130EW	MRS 13 ARTILLERY RANGE & TRNGMAN AREA	
FUDS	DERA	CAMP SWIFT	BASTROP	Bastrop County	10	27 140EW	MRS 14 ARTILLERY RANGE & TRNGMAN AREA	
FUDS	DERA	CAMP SWIFT	BASTROP	Bastrop County	10	27 150EW	MRS 15 TRAINING/MANEUVER AREA	
FUDS	DERA	CAMP SWIFT	BASTROP	Bastrop County	10	27 160EW	MRS 16 UNCHARACTERIZED AREAS NROE	
FUDS	DERA	CAMP SWIFT	BASTROP	Bastrop County	10	27 170EW	MRS 17 UNCHARACTERIZED AREAS	
FUDS	DERA	CAMP SWIFT	BASTROP	Bastrop County	10	27 180EW	MRS 18 NO FURTHER ACTION	
FUDS	DERA	CAMP WOLTERS	MINERAL WELLS	Parker County	12	110EW	ORDNANCE BURIAL	
FUDS	DERA	CAMP WOLTERS	MINERAL WELLS	Parker County	12	120EW	MULTIPLE USE RANGES	
FUDS	DERA	CAMP WOLTERS	MINERAL WELLS	Parker County	12	130EW	MANEUVER AREA	
FUDS	DERA	CAMP WOLTERS	MINERAL WELLS	Parker County	12	140EW	COMBAT RANGES	
FUDS	DERA	CAMP WOLTERS	MINERAL WELLS	Parker County	12	23 010EW	SMALL ARMS RANGE SOUTH	
FUDS	DERA	CAMP WOLTERS	MINERAL WELLS	Parker County	12	23 020EW	ARTILLERY AND ANTI-TANK RANGES	
FUDS	DERA	CAMP WOLTERS	MINERAL WELLS	Parker County	12	23 030EW	DEMOLITION AREA	

Munitions Response Sites in Texas

DoD Component	Fund Source	Installation Name	City	County	Congressional District	Congressional District	Site ID	Site Name
FUDS	DERA	CHILDRESS AAF BOMB RANGE #16	PADUCAH	Cottle County	13		010EW	CHILDRESS BOMBING RANGE #16
FUDS	DERA	CHILDRESS AAF BOMB RG #10	GUTHRIE	King County	13		010EW	CHILDRESS BOMBING RANGE #10
FUDS	DERA	CHILDRESS AAF BOMB RG #12	GUTHRIE	King County	13		010EW	CHILDRESS BOMBING RANGE #12
FUDS	DERA	CHILDRESS AAF BOMB RG #13	NO CITY	Cottle County	13		010EW	CHILDRESS BOMBING RANGE #13
FUDS	DERA	CHILDRESS AAF BOMB RG #14	PADUCAH	Cottle County	13		010EW	CHILDRESS BOMBING RANGE #14
FUDS	DERA	CHILDRESS AAF BOMB RG #15	NO CITY	Hall County	13		010EW	CHILDRESS BOMBING RANGE #15
FUDS	DERA	CHILDRESS AAF BOMB RG #18	NO CITY	Floyd County	13		010EW	CHILDRESS BOMBING RANGE #18
FUDS	DERA	CHILDRESS AAF BOMB RGE # 3	MATADOR	Motley County	13		010EW	CHILDRESS BOMBING RANGE #3
FUDS	DERA	CHILDRESS AAF BOMB RGE # 5	MATADOR	Motley County	13		010EW	CHILDRESS BOMBING RANGE #5
FUDS	DERA	CHILDRESS AAF BOMB RGE # 8	NO CITY	Dickens County	13		010EW	CHILDRESS BOMBING RANGE #8
FUDS	DERA	CHILDRESS AAF BOMB RGE #1	NO CITY	Motley County	13		010EW	BOMBING RANGE
FUDS	DERA	CHILDRESS AAF BOMB RGE #2	MOTLEY	Motley County	13		010EW	CHILDRESS BOMBING RANGE #2
FUDS	DERA	CHILDRESS AAF BOMB RGE #4	TURKEY	Hall County	13		010EW	CHILDRESS BOMBING RANGE #4
FUDS	DERA	CHILDRESS AAF BOMB RGE #6	MATADOR	Motley County	13		010EW	CHILDRESS BOMBING RANGE #6
FUDS	DERA	CHILDRESS AAF BOMB RGE #7	DICKENS	Dickens County	13		010EW	BOMBING RANGE
FUDS	DERA	CHILDRESS AAF BOMB RGE #9	GUTHRIE	King County	13		010EW	BOMBING RANGE
FUDS	DERA	CITY OF FORT WORTH, ET AL, PROPERTIES (CROCKETT)	FORT WORTH	Tarrant County	8	33	010EW	SMALL ARMS RANGES
FUDS	DERA	CITY OF GALVESTON	GALVESTON	Galveston County	14		010EW	CROCKETT PARK
FUDS	DERA	CITY OF GRAND PRAIRIE	GRAND PRAIRIE	Dallas County	5	33	010EW	POTENTIAL DEW
FUDS	DERA	CUDDIHY FIELD	CORPUS CHRISTI	Nueces County	27		030EW	RANGE COMPLEX NO. 1
FUDS	DERA	CYCLONE HILL PRECISION BOMBING RANGE	LUFKIN	Angelina County	1		010EW	CYCLONE HILL BOMBING RANGE
FUDS	DERA	DA-FT WOR DEF NIKE BAT 20	TERRELL	Kaufman County	5		040EW	AMMO STORAGE
FUDS	DERA	DALHART AAF	DALHART	Hartley County	13		030EW	POTENTIAL BURIAL AREA
FUDS	DERA	DALHART AAF	DALHART	Hartley County	13		060EW	DOUBLE SKEET RANGE
FUDS	DERA	DALHART AAF	DALHART	Hartley County	13		060EW	SMALL ARMS RANGE COMPLEX
FUDS	DERA	DALHART AF AUX FIELD #1	DALHART	Hartley County	13		000EW	ASR COMPLETE
FUDS	DERA	DALHART GRO GUNN RANGE	DALHART	Hartley County	13		010EW	ASR RAC SCORE

Munitions Response Sites in Texas

DoD Component	Fund Source	Installation Name	City	County	Congressional District	Site ID	Site Name
FUDS	DERA	DALHART PREC BOMB RGE 3-4	DALHART	Dallam County	13	000EW	DALHART PBR 3-4
FUDS	DERA	DRISCOLL FIELD 36	DRISCOLL	Nueces County	27	010EW	AUXILIARY AIRFIELDS
FUDS	DERA	EAGLE MOUN AAC MAINT FAC	FT WORTH	Tarrant County	6	33 020EW	SKET RANG
FUDS	DERA	EAGLE PASS AAF	EAGLE PASS	Maverick County	23	040EW	PISTOL RANG
FUDS	DERA	EAGLE PASS AAF	EAGLE PASS	Maverick County	23	050EW	SKET RANG
FUDS	DERA	ELLINGTON FIELD GUNNERY RANGE	JAMAICA BEACH	Galveston County	14	020EW	GROUND GUNNERY RANG
FUDS	DERA	FIVE POINTS	ARLINGTON	Tarrant County	6	33 010EW	PREVIOUS REMEDIATION AREA
FUDS	DERA	FIVE POINTS	ARLINGTON	Tarrant County	6	33 02PRPOEW	PRACTICE BOMB TARGET
FUDS	DERA	FIVE POINTS	ARLINGTON	Tarrant County	6	33 030EW	NON-RIGHTS-OF-ENTRY (ROE) AREAS
FUDS	DERA	FIVE POINTS	ARLINGTON	Tarrant County	6	33 040EW	RANG SAFETY FAN
FUDS	DERA	FLAMINGO PROPERTIES CO (REV.)	HITCHCOCK	Galveston County	14	050EW	OE STORAGE
FUDS	DERA	FORMER CAMP FANNIN	TYLER	Smith County	1	010EW	2.36-INCH ROCKET AREA
FUDS	DERA	FORMER CAMP FANNIN	TYLER	Smith County	1	030EW	60MM MORTAR AREA
FUDS	DERA	FORMER CAMP FANNIN	TYLER	Smith County	1	040EW	60/81MM MORTAR AREA
FUDS	DERA	FORMER CAMP FANNIN	TYLER	Smith County	1	050EW	M8 RIFLE GRENADE AREA
FUDS	DERA	FORMER CAMP FANNIN	TYLER	Smith County	1	060EW	NON-RIGHTS-OF-ENTRY (ROE) AREAS
FUDS	DERA	FORMER CAMP FANNIN	TYLER	Smith County	1	070EW	INVESTIGATED-NO SUSPECTED CONTAMINATION
FUDS	DERA	FORMER CAMP FANNIN	TYLER	Smith County	1	030EW	BURIAL PITS
FUDS	DERA	FORT CLARK	BRACKETVILLE	Kinney County	23	040EW	OLD RIFLE RANG
FUDS	DERA	FORT CLARK	BRACKETVILLE	Kinney County	23	050EW	LIVE GRENADE RANG
FUDS	DERA	FORT CLARK	BRACKETVILLE	Kinney County	23	070EW	GRENADE COURT (PRACTICE)
FUDS	DERA	FORT CLARK	BRACKETVILLE	Kinney County	23	080EW	MULTIPLECOMBINED USE AREA
FUDS	DERA	FORT CLARK	BRACKETVILLE	Kinney County	23	090EW	MOCK VILLAGE
FUDS	DERA	FORT CLARK	BRACKETVILLE	Kinney County	23	090EW	SMALL ARMS RANG COMPLEX NO. 1
FUDS	DERA	FORT CLARK	BRACKETVILLE	Kinney County	23	100EW	ARTILLERY RANG COMPLEX NO. 2
FUDS	DERA	FORT CLARK	BRACKETVILLE	Kinney County	23	110EW	ARTILLERY RANG COMPLEX NO. 3
FUDS	DERA	FORT RINGOLD	RIO GRAND CITY	Starr County	28	030EW	RINGOLD TARGET RANG
FUDS	DERA	FOSTER AIR FORCE BASE	VICTORIA	Victoria County	27	040EW	SHOOT-IN BUTT
FUDS	DERA	FOSTER AIR FORCE BASE	VICTORIA	Victoria County	27	060EW	SKET RANG
FUDS	DERA	FT MCINTOSH	LAREDO	Webb County	28	010EW	POTENTIAL OE HAZARD

Munitions Response Sites in Texas

DoD Component	Fund Source	Installation Name	City	County	Congressional District	Congressional District	Site ID	Site Name
FUDS	DERA	GALVESTON ARMY AIRFIELD BOMBING RANGE	SURFSIDE	Brazoria County	14	22	020EW	GALVESTON BOMBING/STRAFIN RANGE
FUDS	DERA	GALVESTON COUNTY(CROCKETT)	GALVESTON	Galveston County	14		010EW	ARTILLERY RANGES WATER AREA
FUDS	DERA	GALVESTON COUNTY(CROCKETT)	GALVESTON	Galveston County	14		020EW	ARTILLERY LAND AND SKEET RANGE AREAS
FUDS	DERA	GALVESTON INDEPEN SCHOOL DISTRICT (CROCKETT)	GALVESTON	Galveston County	14		010EW	BURNET SCHOOL
FUDS	DERA	HARLINGEN AFB	HARLINGEN	Cameron County	34		040EW	WESTERN SMALL ARMS RANGES
FUDS	DERA	HARLINGEN AFB	HARLINGEN	Cameron County	34		050EW	EASTERN SMALL ARMS RANGES
FUDS	DERA	HONDO ARMY AIR FIELD	HONDO	Medina County	23		000EW	SKEET RANGE
FUDS	DERA	HONDO ARMY AIR FIELD	HONDO	Medina County	23		030EW	PISTOL RANGE
FUDS	DERA	HOSKING'S MOUND AF BOMBING RNG	HOSKING'S MOUND	Brazoria County	14	22	010EW	BOMBING TARGETS (PRACTICE)
FUDS	DERA	JAMES CONNALLY AFB	WACO	McLennan County	17		060EW	SKEET RANGE COMPLEX
FUDS	DERA	JEFFERSON COUNTY AIRFIELD	NEDERLAND	Jefferson County	14		020EW	BURIAL PIT AREA
FUDS	DERA	KIEL PRECISION BOMBING RANGE 2	DALHART	Dallam County	13		010EW	KIEL PBR #2
FUDS	DERA	LAGUNA MADRE GUNNERY RANGE	BAYVIEW	Cameron County	34		010EW	RANGE CLEARANCE
FUDS	DERA	LAGUNA MADRE GUNNERY RANGE(PADRE ISLAND)	PORT ISABEL	Cameron County	34		010EW	LAGUNA MADRE AERIAL GUNNERY RANGE
FUDS	DERA	LAREDO AFB	LAREDO	Webb County	28		050EW	SMALL ARMS RANGES
FUDS	DERA	MARFA AAF	MARFA	Presidio County	23		020EW	SMALL ARMS RANGES
FUDS	DERA	MATAGORDA ISLAND AF RANGE	PORT O'CONNOR	Calhoun County	27		030EW	RANGE COMPLEX
FUDS	DERA	MATAGORDA PENINSULA BOMBING RANGE	PORT O'CONNOR	Matagorda County	27		030EW	AERIAL GUNNERY RANGE NO. 1
FUDS	DERA	MATAGORDA PENINSULA BOMBING RANGE	PORT O'CONNOR	Matagorda County	27		040EW	AERIAL GUNNERY RANGE NO. 2
FUDS	DERA	MATAGORDA PENINSULA BOMBING RANGE	PORT O'CONNOR	Matagorda County	27		050EW	FIRING-IN-BUTT
FUDS	DERA	MATAGORDA PENINSULA BOMBING RANGE	PORT O'CONNOR	Matagorda County	27		060EW	DOUBLE SKEET RANGE
FUDS	DERA	MATAGORDA PENINSULA BOMBING RANGE	PORT O'CONNOR	Matagorda County	27		070EW	OB/OD
FUDS	DERA	MATAGORDA PENINSULA BOMBING RANGE	PORT O'CONNOR	Matagorda County	27		080EW	AERIAL GUNNERY RANGE NO. 3
FUDS	DERA	MATAGORDA PENINSULA BOMBING RANGE	PORT O'CONNOR	Matagorda County	27		090EW	RANGE COMPLEX NO. 1

Munitions Response Sites in Texas

DoD Component	Fund Source	Installation Name	City	County	Congressional District	Site ID	Site Name
FUDS	DERA	MC GEE BEND PREC BOMB RGE	JASPER, TEXAS	Jasper County	36	01OEW	MC GEE BEND BOMBING RANGE
FUDS	DERA	MIDLAND AAF TAR RGE NO 2	NO CITY	Andrews County	11	01OEW	BOMBING TARGET RANGE
FUDS	DERA	MIDLAND AAF TAR RGE #10	NO CITY	Marin County	11	01OEW	MIDLAND PBR #10
FUDS	DERA	MIDLAND AAF TAR RGE #11	NO CITY	Marin County	11	01OEW	MIDLAND PBR #11
FUDS	DERA	MIDLAND AAF TAR RGE #12	NO CITY	Glaucock County	11	01OEW	MIDLAND PBR #12
FUDS	DERA	MIDLAND AAF TAR RGE #13	MIDLAND	Midland County	11	01OEW	MIDLAND PBR #13
FUDS	DERA	MIDLAND AAF TAR RGE #14	MIDLAND	Midland County	11	01OEW	MIDLAND PBR #14
FUDS	DERA	MIDLAND AAF TAR RGE #15	SPRABERRY	Glaucock County	11	01OEW	MIDLAND PBR #15
FUDS	DERA	MIDLAND AAF TAR RGE #16	MIDLAND	Midland County	11	01OEW	MIDLAND PBR #16
FUDS	DERA	MIDLAND AAF TAR RGE #17	MIDLAND	Midland County	11	01OEW	MIDLAND PBR #17
FUDS	DERA	MIDLAND AAF TAR RGE #18	NO CITY	Upton County	23	01OEW	MIDLAND PBR #18
FUDS	DERA	MIDLAND AAF TAR RGE #19	NO CITY	Upton County	23	01OEW	MIDLAND PBR #19
FUDS	DERA	MIDLAND AAF TAR RGE #20	NO CITY	Upton County	23	01OEW	MIDLAND PBR #20
FUDS	DERA	MIDLAND AAF TAR RGE #21	NO CITY	Upton County	23	01OEW	MIDLAND PBR #21
FUDS	DERA	MIDLAND AAF TAR RGE #22	NO CITY	Ector County	11	01OEW	MIDLAND PBR #22
FUDS	DERA	MIDLAND AAF TAR RGE #4	ANDREWS	Andrews County	11	01OEW	MIDLAND PBR #4
FUDS	DERA	MIDLAND AAF TAR RGE #5	ANDREWS	Andrews County	11	01OEW	MIDLAND PBR #5
FUDS	DERA	MIDLAND AAF TAR RGE #7	ANDREWS	Andrews County	11	01OEW	MIDLAND PBR #7
FUDS	DERA	MIDLAND AAF TAR RGE #8	NO CITY	Andrews County	11	01OEW	MIDLAND PBR #8
FUDS	DERA	MIDLAND AAF TAR RGE #9	NO CITY	Marin County	11	01OEW	MIDLAND PBR #9
FUDS	DERA	MIDLAND AAF TAR RGE NO 1	ANDREWS	Andrews County	11	01OEW	MIDLAND PBR #1
FUDS	DERA	MIDLAND AAF TAR RGE NO 3	NO CITY	Andrews County	11	01OEW	MIDLAND PBR #3
FUDS	DERA	MIDLAND AAF TAR RGE NO 6	ANDREWS	Andrews County	11	01OEW	MIDLAND PBR #6
FUDS	DERA	MIDLAND ARMY AIR FIELD	MIDLAND	Midland County	11	01OEW	SKEET RANGE
FUDS	DERA	MIDLAND ARMY AIR FIELD	MIDLAND	Midland County	11	02OEW	BURIAL PIT'S NO. 1 & 2
FUDS	DERA	MIDLAND PREC BOMB RGE #23	NO CITY	Upton County	23	01OEW	PRACTICE BOMBING RANGE
FUDS	DERA	MOVING SHOTGUN RANGE	CHAPMAN RANCH	Nueces County	27	01OEW	MOVING TARGET RANGES
FUDS	DERA	NAS KINGSVILLE	KINGSVILLE	Kieberg County	34	01OEW	AMMO STORAGE
FUDS	DERA	NATIONAL OCEANIC ATMOSPHERIC AGENCY (FT. CROC)	GALVESTON	Galveston County	14	01OEW	POTENTIAL ORDNANCE TARGET
FUDS	DERA	NAVY AUXILIARY FIELD SITE NO 55	RIVIERA	Kieberg County	34	01OEW	NAVY AUX FIELD #55 BOMB TARGET
FUDS	DERA	NAVY AUXILIARY FIELD(INS)	PORT ISABEL	Cameron County	34	03OEW	BURIAL PIT
FUDS	DERA	NAVY AUXILIARY FIELD(INS)	PORT ISABEL	Cameron County	34	04OEW	PISTOL RANGE & SKEET RANGE 2
FUDS	DERA	NAVY AUXILIARY FIELD(INS)	PORT ISABEL	Cameron County	34	05OEW	SKEET RANGE 1 & OB/OJ RANGE
FUDS	DERA	PALACIOS AFB	PALACIOS	Malagorda County	27	01OEW	SKEET RANGE
FUDS	DERA	PALACIOS AFB	PALACIOS	Malagorda County	27	02OEW	SHOOTING-IN-BUTT
FUDS	DERA	PAMPA ARMY AIRFIELD (K06TX016101)	PAMPA	Gray County	13	01OEWCWYM	SUSPECTED BURIAL AREA

Munitions Response Sites in Texas

DoD Component	Fund Source	Installation Name	City	County	Congressional District	Congressional District	Site ID	Site Name
FUDS	DERA	PAMPA ARMY AIRFIELD	PAMPA	Gray County	13		020EW	SMALL ARMS RANGES
FUDS	DERA	(K06TX016101)	PECOS	Reeves County	23		010EW	SMALL ARMS RANGES
FUDS	DERA	PECOS AAF	PECOS	Reeves County	23		010EW/CWM	POTENTIAL ORDNANCE
FUDS	DERA	PECOS AAF CRYSTAL FLD #5	PECOS	Reeves County	23		010EW	POTENTIAL ORDNANCE
FUDS	DERA	PECOS AAF RAD RGE SITE	PECOS	Reeves County	23		010EW	AUXILIARY LANDING FIELD
FUDS	DERA	PECOS AAF TOY AUX FLD #4	PECOS	Reeves County	23		000EW	DEMOLITION BOMBING RANGE NO. 1
FUDS	DERA	PECOS AAF A-G GUNNERY	NO CITY	Pecos County	23		010EW	DEMOLITION BOMBING RANGE NO. 2
FUDS	DERA	PECOS AAF A-G GUNNERY	NO CITY	Pecos County	23		020EW	AIR TO GROUND GUNNERY RANGE
FUDS	DERA	PECOS AAF A-G GUNNERY	NO CITY	Pecos County	23		010EW	TARGET RANGE #1
FUDS	DERA	PECOS AAF BOMB RGE #1	NO CITY	Pecos County	23		010EW	PYOTE AAF BOMBING RANGE #3
FUDS	DERA	PECOS AAF BOMB RGE #3	NO CITY	Pecos County	23		000EW	PYOTE AAF BOMBING RANGE #4
FUDS	DERA	PECOS AAF BOMB RGE #4	NO CITY	Pecos County	23		010EW	BOMBING RANGES
FUDS	DERA	PECOS AAF GROUND	PYOTE	Ward County	23		020EW	GROUND GUNNERY RANGE
FUDS	DERA	GUNNERY RANGE	PYOTE	Ward County	23		030EW	SKEET RANGE
FUDS	DERA	GUNNERY RANGE	PYOTE	Ward County	23		010EW	PYOTE AAF BOMBING RANGE #2
FUDS	DERA	GUNNERY RANGE	NO CITY	Pecos County	23		020EW/CWM	POTENTIAL OEW
FUDS	DERA	PYOTE AAF PIRA BOM RGE #2	SAN ANTONIO	Brewer County	20	35	010EW	CLOSE COMBAT RANGE
FUDS	DERA	RANDOLPH MIL AF	TEXARKANA, TEXAS	Bowie County	4		020EW	SMALL ARMS RANGES
FUDS	DERA	RED RIVER ARS RIF RANGE	TEXARKANA, TEXAS	Bowie County	4		010EW	AMMO STORAGE
FUDS	DERA	RED RIVER ARS RIF RANGE	TEXARKANA, TEXAS	Bowie County	4		020EW	SMALL ARMS COMPLEX
FUDS	DERA	ROCKPORT AIRPORT	ROCKPORT	Aransas County	27		030EW	SKEET RANGE
FUDS	DERA	RODD FIELD	CORPUS CHRISTI	Nueces County	27		000EW	AMMO STORAGE
FUDS	DERA	S PLAINS ARMY AIR FIELD	LUBBOCK	Lubbock County	19		010EW	PRACTICE BOMBING RANGE NO. S-1
FUDS	DERA	SABINE PASS HARBOR FORTS	PORT ARTHUR	Jefferson County	14		010EW	PRACTICE BOMBING RANGE NO. S-2
FUDS	DERA	SAN ANGELO AAF PB NO. S-2	ELDORADO	Schleicher County	23		010EW	PRACTICE BOMBING RANGE NO. S-3
FUDS	DERA	SAN ANGELO AAF PB NO. S-3	ELDORADO	Schleicher County	23		010EW	PRACTICE BOMBING RANGE NO. S-4
FUDS	DERA	SAN ANGELO AAF PB NO. S-5	NOELKE	Schleicher County	23		010EW	PRACTICE BOMBING RANGE NO. S-5
FUDS	DERA	SAN ANGELO AAF PB NO. S-6	NO CITY	Crockett County	23		010EW	PRACTICE BOMBING RANGE NO. S-6
FUDS	DERA	SAN ANGELO AAF PB NO. S-8	ELDORADO	Schleicher County	23		010EW	PRACTICE BOMBING RANGE NO. S-8
FUDS	DERA	SAN ANGELO AAF PB NO. S-9	NO CITY	Crockett County	23		010EW	PRACTICE BOMBING RANGE NO. S-9
FUDS	DERA	SAN ANGELO ARMY AF	SAN ANGELO	Tom Green County	11		010EW	BOMBING TARGET

Munitions Response Sites in Texas

DoD Component	Fund Source	Installation Name	City	County	Congressional District	Congressional District	Site ID	Site Name
FUDS	DERA	SAN ANGELO ARMY AF	SAN ANGELO	Tom Green County	11	020EW	020EW	SMALL ARMS RANGE COMPLEX
FUDS	DERA	SAN ANGELO ARMY AF	SAN ANGELO	Tom Green County	11	030EW	030EW	RIFLE RANGE
FUDS	DERA	SAN ANTONIO ARSENAL	SAN ANTONIO	Bexar County	20	35	010EW	SMALL ARMS TESTING RANGE
FUDS	DERA	SAN JACINTO ORD DEPOT	HOUSTON	Harris County	2	36	010EW	SAN JACINTO ORDNANCE DEPOT - MMRP
FUDS	DERA	SAN JACINTO ORD DEPOT	HOUSTON	Harris County	2	36	020EW/CWM	SAN JACINTO ORDNANCE DEPOT - CWM
FUDS	DERA	SCHOLES FIELD	GALVESTON	Galveston County	14	020EW	020EW	SKEET RANGE
FUDS	DERA	SCHOLES FIELD	GALVESTON	Galveston County	14	030EW	030EW	SMALL ARMS RANGES
FUDS	DERA	STINSON FIELD	GALVESTON	Galveston County	14	040EW	040EW	FIRING-IN-BUTT
FUDS	DERA	TEXAS A & M UNIVERSITY (CROCKETT)	SAN ANTONIO	Bexar County	20	35	020EW/CWM	TRAINING AREA
FUDS	DERA	WEBB AIR FORCE BASE	BIG SPRING	Howard County	19	120EW	120EW	SMALL ARMS RANGE
FUDS	DERA	WEBB AIR FORCE BASE	BIG SPRING	Howard County	19	130EW	130EW	POTENTIAL OE
FUDS	DERA	WEBB AIR FORCE BASE	BIG SPRING	Howard County	19	140EW	140EW	SKEET RANGE NO. 1
FUDS	DERA	WEBB AIR FORCE BASE	BIG SPRING	Howard County	19	130EW	130EW	DOUBLE SKEET, PISTOL, MACHINE GUN RANGES
FUDS	DERA	WEBB AIR FORCE BASE	BIG SPRING	Howard County	19	140EW	140EW	DEMONSTRATION BOMBING RANGE SKEET & PISTOL RANGES NO. 2

State	Installation	Site Name	MIRSPP Score
HI	AMERICAN SAMOA LTA	MAPUSAGAFU PITS TRAINING AREA	2
NV	HAWTHORNE ARMY DEPOT	KICKOUT OUTSIDE NEW BOMB AREA	2
ID	JFHQ ID ARNG	NDNODS Garwood Gravel Pit Trn. Area	2
ID	JFHQ ID ARNG	NDNODS Buhl NGTR	2
ID	JFHQ ID ARNG	NDNODS John Day Creek Demo Pit	2
MT	JFHQ MT ARNG	NDNODS Culbertson LTA 2	2
AK	NG KASIGLUK ARMORY	KASIGLUK SOUTH VILLAGE RANGE	2
AL	REDSTONE ARSENAL	Field Training Exercise Area E	2
HI	AMERICAN SAMOA LTA	MALAELOA TRAINING AREA	3
VA	FORT BELVOIR	Grenade Court	3
VA	FORT BELVOIR	Pig Farm Range-TD	3
VA	FORT BELVOIR	Lorton Combat Range	3
VA	FORT BELVOIR	Tracy Road Range	3
GA	FORT BENNING	GRENADE AND BAYONET COURT	3
NY	FORT HAMILTON	HAMILTON PARADE GROUND #1	3
LA	FORT POLK	LUA CYPRESS AND LONGLEAF	3
LA	FORT POLK	LUA COOTERS BOG	3
LA	FORT POLK	Mill Creek 1,2 & 3 Training Area A	3
LA	FORT POLK	NATIONAL CEMETERY	3
NV	HAWTHORNE ARMY DEPOT	ASROC RANGES (TD)	3
IA	IOWA ARMY AMMUNITION PLANT	Line 6 - Outside Blast Radii	3
IA	IOWA ARMY AMMUNITION PLANT	WEST BURN PADS SOUTH OF THE ROAD	3
IA	IOWA ARMY AMMUNITION PLANT	MANEUVER AREA	3
ID	JFHQ ID ARNG	NDNODS Bonners Ferry Demolition Pit	3
ID	JFHQ ID ARNG	NDNODS Athol Pit Training Area	3
MO	JFHQ MO ARNG	NDNODS Moberly Small Arms Range	3
MO	JFHQ MO ARNG	NDNODS Wappapello Demolition Range	3
NM	JFHQ NM ARNG	NDNODS Walnut Road Range	3
OH	JFHQ OH ARNG	NDNODS Shreve Range	3
SD	JFHQ SD ARNG	NDNODS SAR - Mitchell WWTF	3
SD	JFHQ SD ARNG	NDNODS Yankton Controlled FTA	3
UT	JFHQ UT ARNG	NDNODS St. George LTA	3
VT	JFHQ VT ARNG	Camp Colonel Webb	3

TX	LONGHORN ARMY AMMUNITION PLANT	STATIC TEST AREA	3
MO	MTA CAMP CLARK NEVADA	RIFLE AND PISTOL RANGE - XD	3
MO	MTA CAMP CLARK NEVADA	RIFLE AND PISTOL RANGE	3
MO	MTA CAMP CLARK NEVADA	SUBMACHINE GUN RANGE - XD	3
UT	MTA-1 CAMP WILLIAMS WEST FED	WOOD HOLLOW TRAINING AREA	3
AK	NG CHEFONAK ARMORY	SOUTH KINIA MTN QUALIFICATION AREA	3
AK	NG EEK ARMORY	EEK QUALIFICATION RANGE	3
AK	NG EEK ARMORY	EEK SMALL ARMS FIRING RANGE	3
AK	NG GOODNEWS BAY ARMORY	GOODNEWS BAY MANEUVER AREA 2	3
AK	NG KIANA ARMORY	KIANA QUALIFICATION RANGE	3
AK	NG SAVOONGA ARMORY	SAVOONGA FIRING RANGE 3	3
AK	NG SCAMMON BAY ARMORY	SCAMMON BAY RANGE EAST	3
AK	NG UNALAKLEET ARMORY	UNALAKLEET BLUFFS RANGE	3
AK	NG WAINWRIGHT ARMORY	WAINWRIGHT SMALL ARMS RANGE	3
ID	ORCHARD RANGE TS BOISE	SNAKE RIVER TRAINING FACILITY	3
UT	TOOELE ARMY DEPOT	NE DEMIL AREA	3
NJ	CAMP PEDRICKTOWN	BURNING GROUND #1	4
MO	FORT LEONARD WOOD	Range 68A - Squad Tactics	4
MO	FORT LEONARD WOOD	Range 34 - Carbine Transition	4
IA	IOWA ARMY AMMUNITION PLANT	INCENDIARY DISPOSAL AREA	4
IA	JFHQ IA ARNG	NDNODS Oskaloosa SA Range	4
MO	JFHQ MO ARNG	NDNODS Swope Park	4
NM	JFHQ NM ARNG	NDNODS Hasler Valley Firing Range	4
NM	JFHQ NM ARNG	NDNODS Clayton Airport Range	4
NY	JFHQ NY ARNG	Malone LTA	4
UT	JFHQ UT ARNG	NDNODS Winchester Hills UXO Site	4
VA	JFHQ VA ARNG	NDNODS Small Arms Range Complex 3	4
VT	JFHQ VT ARNG	Camp Governor Woodbury	4
AK	KALTAG FEDERAL SCOUT ARMORY	Kaltag Gravel Pit	4
HI	KILAUEA MILITARY RESERVATION	KA'U DESERT IMPACT/TRAINING AREA	4
ID	KIMAMA TS RUPERT	SMALL ARMS RANGE 1	4
ID	KIMAMA TS RUPERT	TRAINING AREA 1	4
HI	MAKUA MILITARY RESERVATION	NFA Portion of MTA (TD)	4
UT	MTA-1 CAMP WILLIAMS WEST FED	ARTILLERY IMPACT AREA BUFFER ZONE	4

UT	MTA-L CAMP WILLIAMS WEST FED	KD RANGE	4
AK	NG AKIACHAK ARMORY	AKIACHAK WEAPONS QUALIFICATION 2	4
AK	NG CHEFORNAK ARMORY	CHEFORNAK QUALIFICATION RANGE 2	4
AK	NG EEK ARMORY	EEK EXPLOSIVES TRAINING AREA	4
AK	NG EMMONAK ARMORY	KWIGUK PASS JOINT EXERCISE RANGE	4
AK	NG HOOPER BAY ARMORY	HOOPER BAY RANGE	4
AK	NG HOOPER BAY ARMORY	CREEKSIDE RANGE 2	4
AK	NG KWETHLUK ARMORY	BIRCH HILL WEAPONS QUAL AREA	4
AK	NG ST MARYS ARMORY	ST. MARYS RANGE NO. 1	4
AK	NG TUNUNAK ARMORY	WEAPONS QUALIFICATION AREA 4	4
AK	SELAWIK SCOUT ARMORY	Selawik River Qualification Range	4
PA	TOBYHANNA ARMY DEPOT	FAR-A, Powder Smoke Ridge	4
UT	TOOELE ARMY DEPOT SOUTH	GRAVEL PIT AREA (SWMU-02)	4
NM	WHITE SANDS MISSILE RANGE	ATHENA BOOSTER DROP ZONE 1	4
MA	DEVENS RESERVE TRAINING FACILITY	DEVENS RIFLE RANGE #3A	5
VA	FORT BELVOIR	Small Arms Range Complex	5
VA	FORT BELVOIR	Fairfax Range	5
MO	FORT LEONARD WOOD	Ranges 20 and 21 - Close Combat	5
MO	FORT LEONARD WOOD	CENTRAL GRENADE RANGE	5
IA	JFHQ IA ARNG	NDNODS Sheldon 1,000-yard Range	5
MO	JFHQ MO ARNG	NDNODS Jefferson City Firing Range	5
NM	JFHQ NM ARNG	NDNODS Hicks Range	5
NY	JFHQ NY ARNG	Geneva Range	5
VT	JFHQ VT ARNG	NDNODS St. Johnsbury Target Range	5
WI	JFHQ WI ARNG	NDNODS Oconomowoc Small Arms Range	5
WA	JOINT BASE LEWIS-MCCHORD	MACHINE GUN RANGE	5
UT	MTA-L CAMP WILLIAMS WEST FED	ROSE CANYON TRAINING AREA	5
UT	MTA-L CAMP WILLIAMS WEST FED	Southwest Area	5
AK	NG EEK ARMORY	EEK PATROL AREA	5
AK	NG EEK ARMORY	EEK MANEUVER AREA	5
AK	NG HOOPER BAY ARMORY	AIRSTRIPE RANGE	5
AK	NG HOOPER BAY ARMORY	CEMETERY HILL	5
AK	NG SHISHMAREF ARMORY	SHAPE CHARGE TEST AREA	5
AK	NG SHUNGNAK ARMORY	SHUNGNAK KOBUK RIVER RANGE	5

AK	NG WAINWRIGHT ARMORY	WAINWRIGHT QUALIFICATION RANGE	5
AK	SELAWIK SCOUT ARMORY	Selawik Rifle Range	5
HI	WHEELER ARMY AIRFIELD	SMALL ARMS RANGE 1	5
NM	WHITE SANDS MISSILE RANGE	CONDORON FIELD	5
AK	HOONAH ARMORY	HOONAH MANEUVER AREA	6
IA	JFHQ IA ARNG	NDNODS Red Oak 2.5-meter Range	6
MT	JFHQ MT ARNG	Deer Lodge Local Training Area	6
UT	MTA-1 CAMP WILLIAMS WEST FED	Southeast Area	6
AK	NG HOOPER BAY ARMORY	CREEKSIDE RANGE 1	6
ID	ORCHARD RANGE TS BOISE	WEATHER STATION	6
MA	DEVENS RESERVE TRAINING FACILITY	FORMER EOD RANGE	7
AK	NG HOOPER BAY ARMORY	VILLAGE TRAINING AREA	7
AK	NG SHAKTOOLIK ARMORY	SHAKTOOLIK SMALL ARMS RANGE	7
NV	HAWTHORNE ARMY DEPOT	MONO LAKE	8
HI	AMERICAN SAMOA LTA	ALAVA MOUNTAIN "PIONEER" ROAD	9
HI	AMERICAN SAMOA LTA	CENTRAL AUNUU TRAINING AREA	9
HI	AMERICAN SAMOA LTA	MASEFAU/VAINUU MTN. TRAINING AREA	9
IL	CHARLES MELVIN PRICE SUPPORT CENTER	EOD DEMOLITION RANGE B	9
PR	FORT ALLEN	WEST FT. ALLEN	9
VA	FORT BELVOIR	Gunston Road 1000" Rifle Range	9
VA	FORT BELVOIR	Lorton Combat Range-TD	9
VA	FORT BELVOIR	Lorton Landscape Range	9
VA	FORT BELVOIR	Pig Farm Range	9
GA	FORT BENNING	GRENADE MUNITIONS BURIAL SITE	9
NC	FORT BRAGG	Skeet Range	9
NC	FORT BRAGG	Former Pope ASP, 5 Acre Site	9
KY	FORT CAMPBELL	RANGE 42	9
MD	FORT GEORGE G MEADE	Training Area MRS	9
AZ	FORT HUACHUCA	INFILTRATION RANGE	9
KY	FORT KNOX	1918 RIFLE RANGE	9
LA	FORT POLK	NORTHWESTERN STATE UNIVERSITY	9
HI	FORT SHAFTER	Skeet Range	9
GA	FORT STEWART	ANTI-AIRCRAFT RANGE -1	9
NV	HAWTHORNE ARMY DEPOT	PRE-1940 DETONATING PITS (TD)	9

TN	HOLSTON ARMY AMMUNITION PLANT	BURNING GROUND	9
TN	HOLSTON ARMY AMMUNITION PLANT	EXPLOSIVES TESTING AREA	9
AK	HOLY CROSS ARMORY	Holy Cross Gravel Pit	9
AK	HOLY CROSS ARMORY	Holy Cross LTA	9
AK	HOONAH ARMORY	HOONAH RIFLE RANGE	9
IL	JFHQ IL ARNG	NDNODS Elgin Training Area	9
IL	JFHQ IL ARNG	NDNODS Lawrence County Target Range	9
IL	JFHQ IL ARNG	NDNODS Lynn Training Area	9
ME	JFHQ ME ARNG	NDNODS Lewiston Range	9
ME	JFHQ ME ARNG	NDNODS Great Sidney Bog	9
MN	JFHQ MN ARNG	NDNODS Camp Lakeview Small Arms Rng	9
MT	JFHQ MT ARNG	NDNODS Marshall Farms LTA	9
MT	JFHQ MT ARNG	NDNODS Rumsey Target Range	9
MT	JFHQ MT ARNG	NDNODS Stewart Local Training Area	9
MT	JFHQ MT ARNG	NDNODS Chinook South Firing Range	9
MT	JFHQ MT ARNG	NDNODS Choteau Rifle Range	9
MT	JFHQ MT ARNG	NDNODS Dawson County LTA	9
ND	JFHQ ND ARNG	NDNODS Amenia Rifle Range	9
ND	JFHQ ND ARNG	NDNODS Hillsboro State Rifle Range	9
NY	JFHQ NY ARNG	NDNODS Hornell Rifle Range	9
OH	JFHQ OH ARNG	NDNODS Shreve Range	9
PA	JFHQ PA ARNG	NDNODS Mount Gretna Training Camp	9
PA	JFHQ PA ARNG	NDNODS Mt Gretna Tng Camp State Rng	9
PR	JFHQ RQ ARNG	NDNODS Polytechnic Institute Traini	9
SC	JFHQ SC ARNG	NDNODS Camp Moore/Camp Styx PA MRS	9
SD	JFHQ SD ARNG	NDNODS Eighth Street Firing Range	9
TN	JFHQ TN ARNG	NDNODS Laurel Hill Training Area	9
VA	JFHQ VA ARNG	NDNODS Maneuver Areas 1 and 2	9
VT	JFHQ VT ARNG	Camp Governor Holbrook	9
WV	JFHQ WV ARNG	NDNODS Sweeneysburg Range	9
WY	JFHQ WY ARNG	NDNODS Powder River Training Area	9
WY	JFHQ WY ARNG	NDNODS Fairview Maneuver TA	9
WY	JFHQ WY ARNG	NDNODS Laramie Pistol Range	9
WY	JFHQ WY ARNG	NDNODS Upton Training Area	9

OK	MCLESTER ARMY AMMUNITION PLANT	MORTAR RANGE NORTH SHORE	9
CA	NATIONAL TRAINING CENTER AND FORT IR	MINIATURE ANTI-AIRCRAFT RANGE NO. 1	9
CA	NATIONAL TRAINING CENTER AND FORT IR	MINIATURE ANTI-AIRCRAFT RANGE NO. 2	9
AK	NG ALAKANUK ARMORY	ALAKANUK "OLD VILLAGE" RANGE	9
AK	NG EEK ARMORY	EAST VILLAGE QUALIFICATION RANGE	9
AK	NG EMMONAK ARMORY	KAWOKHAWIK RANGE	9
AK	NG GAMBELL ARMORY	GAMBELL SMALL ARMS RANGE 5	9
AK	NG GAMBELL ARMORY	GAMBELL TRAINING AREA 2	9
AK	NG GOODNEWS BAY ARMORY	GOODNEWS BAY SMALL ARMS RANGE 3	9
AK	NG GOODNEWS BAY ARMORY	GOODNEWS BAY SMALL ARMS RANGE 2	9
AK	NG NUNAPITCHUK ARMORY	NUNAPITCHUK NUNAVAKANUKAKSLAK RANGI	9
AK	NG NUNAPITCHUK ARMORY	NUNAPITCHUK SOUTH SMALL ARMS RANGE	9
AK	NG NUNAPITCHUK ARMORY	NUNAVAKPAK LAKE RANGE	9
AK	NG SCAMMON BAY ARMORY	PAIMIUT RANGE	9
AK	NG SCAMMON BAY ARMORY	SCAMMON BAY TARGETING RANGE	9
AK	NG TOKSOOK BAY ARMORY	NEALRUK MOUNTAIN TRAINING AREA	9
CA	PARKS RESERVE FORCES TRAINING AREA	Machine Gun Range	9
IL	PHILIP H SHERIDAN RESERVE CTR	AAA Complex - Transferred	9
NJ	PICATINNY ARSENAL	PICATINNY LAKE SITE	9
NJ	PICATINNY ARSENAL	Former-DRMO YARD	9
OH	RAVENNA ARMY AMMUNITION PLANT	FIRESTONE TEST FACILITY	9
OH	RAVENNA ARMY AMMUNITION PLANT	WATER WORKS #4 DUMP	9
AL	REDSTONE ARSENAL	RSA-73	9
HI	SCHOFIELD BARRACKS	Southern Pistol Ranges West	9
PA	TOBYHANNA ARMY DEPOT	Machine Gun Range	9
PA	TOBYHANNA ARMY DEPOT	FAR-A-2	9
VT	TS CAMP JOHNSON	EXCESSED PROPERTY	9
WV	VOLKSTONE	Stokes Mortar Range MRS	9
HI	WAIKAKALAUAA AMMO STORAGE TUNNELS	NFA portion of WAST 24A	9
HI	WAIKAKALAUAA AMMO STORAGE TUNNELS	STORAGE TUNNEL 24A	9
HI	WAIKAKALAUAA AMMO STORAGE TUNNELS	WAST 24A (TD) NFA West Plateau	9
NY	WEST POINT MIL RESERVATION	FORT CLINTON-WEST	9
NY	WEST POINT MIL RESERVATION	FORT CLINTON-EAST	9
NY	WEST POINT MIL RESERVATION	REDOUBT NO. 2	9

NY
HI
HI

WEST POINT MIL RESERVATION
AMERICAN SAMOA LTA
FORT SHAFTER

Rifle Range
FAGALII POINT TRAINING AREA
Rifle Range 1 (TD)

9
10
11

MRSPS Score	MRSPS Priority Description
01	Highest MRSPS priority.
02	Second MRSPS priority.
03	Third MRSPS priority.
04	Fourth MRSPS priority.
05	Fifth MRSPS priority.
06	Sixth MRSPS priority.
07	Seventh MRSPS priority.
08	Eighth MRSPS priority.
09	MRSPS evaluation pending.
10	MRSPS evaluation no longer required.
11	No known or suspected hazard.

Honorable Ken Calvert
House Appropriations Committee, Subcommittee for Defense
Hearing on Department of Defense Appropriations for 2022:

Witnesses: All

Question One: Provide an update on the Department's efforts to find a replacement for PFOS. The long-used firefighting foam, I know is very effective in putting out fires, but, obviously, it has other problems. The fiscal year 2020 NDAA requires the Department to phase it out in all military installations by October 2024. Can you accelerate this timetable?

Answer: DoD is aggressively pursuing PFAS-free firefighting alternatives and, while the Department is making significant progress, meeting the FY2020 National Defense Authorization Act (NDAA) deadlines will be a challenge due to some areas of scientific and engineering uncertainty. DoD has identified a number of commercially-available and developmental PFAS-free alternative formulations that have acceptable fire extinguishment performance against jet fuel fires ranging in size from 28 to 1200 square feet. Evaluation of the shelf life/aging, compatibility with other materials including other firefighting agents, and basic toxicity screening for these alternative formulations is underway. The Department is committed to finding an effective firefighting alternative that meets the life-saving performance standards of AFFF and does not have identified negative health or environmental effects.

Question Two: Last year the committee addressed its ongoing concern about the prevalence of PFOS contamination on current and former military installations, and we continue to support groundwater remediation activities undertaken by the Department. What are the DoD and the services doing to stop the continuing spread of PFOS from these military bases?

Answer: To minimize PFAS releases to the environment, DoD only uses AFFF to respond to emergency events and no longer uses it for land-based testing and training unless it can be completely contained and properly disposed. In addition, the Department treats each use or release of Aqueous Film Forming Foam (AFFF) – such as during an emergency response to an aircraft crash – as a spill response, to limit environmental effects.

DoD is also continuing to investigate and cleanup its existing PFAS releases on and around DoD installations. Under CERCLA, DoD is conducting or has conducted assessments for PFAS use or potential release at 698 Military Installations and National Guard locations. As of March 31, 2021, DoD has completed 129 of these assessments and of those, 63 were found to require no further action, while 66 require further investigation. These assessments evaluate potential releases that may impact drinking water, groundwater, soil and other environmental media. If DoD identifies PFOS and/or PFOA in drinking water off-base above EPA's lifetime health advisory (HA) levels, where DoD is the known source, it quickly takes action to provide alternative water. Where DoD is the known source of PFOS and/or PFOA in drinking water, DoD has taken steps to ensure that no one is drinking water above EPA's HA of 70 ppt.

The Honorable Tim Ryan
Appropriations Committee, Subcommittee for Defense
Questions for the Record

Witnesses: All

Question One: In December, the EPA issued its interim guidance on disposing of PFAS contaminated waste. As part of this guidance, it cautioned against incineration of PFAS waste due to the potential for migration to the environment – transferring the PFAS from on medium (water) to another (air). How does the department view EPA's recommendation which calls for keeping PFAS waste on-site rather than incineration? Has DOD changed procedures based on EPA's interim guidance?

Answer: EPA issued interim PFAS destruction and disposal guidance for public comment on December 22, 2020 (85 Federal Register 83554). The public comment period ended in February, and EPA will consider these comments in a revised version of this guidance based on the public comments. While DoD does not have the capacity to safely store all PFAS materials on-site, the interim EPA guidance identified a hierarchy of PFAS disposal options which based on currently available research and information may be effective in the destruction or disposal of PFAS and PFAS-containing materials, including landfill, thermal treatment, and underground injection technologies. DoD will issue a PFAS disposal implementation memo to the DoD Components once it receives and reviews the revised guidance from EPA.

Question Two: Innovative technologies from the private sector will be key in providing solutions to address the wide variety of PFAS needs. The DoD's SERDP/ESTCP programs have been investing in PFAS innovative technologies since 2017. Have innovative technologies been developed through those programs at a pace which has resulted in quicker and/or more cost-effective management/clean-up of PFAS sites?

Answer: The Strategic Environmental Research and Development Program (SERDP) and Environmental Security Technology Certification Program (ESTCP) have been investing in detection and treatment technologies for PFAS in the environment since 2011. SERDP and ESTCP are among the few programs that have provided a means to develop and test new technologies to improve PFAS management. This investment has contributed to more rapid and cost-effective management of PFAS sites. Over 150 projects have been funded since 2011 that are either providing the supporting scientific knowledge needed to better understand and manage PFAS in the environment, or are directly developing new detection or treatment technologies. Of the approximately 50 successful detection and treatment technologies to date, approximately 30% have or are in the process of proceeding to commercialization.

Honorable Marcy Kaptur
House Appropriations Committee, Subcommittee for Defense
Hearing on Department of Defense Appropriations for 2022:

Witnesses: All

Question One: Over two decades ago, DoD collected information and mapped the Toussaint River region. There's unexploded ordnance in the area related to the use of Camp Perry during World War II and thereafter a shooting range. What do we do with unexploded ordnance in the Great Lakes and is there a map that defines that? How do we analyze the information that was collected nearly two decades ago where nothing has happened? What information does DoD have, and can I get a plan for remediation?

Army Answer: A record of decision (ROD) was signed in January 2018 in coordination with Ohio EPA. The mapping performed by DoD's Strategic Environmental Research and Development Program (SERDP) and Environmental Security Technology Certification Program (ETSCP) in 2006 and 2007 informed the ROD and subsequent actions. Remedial actions to address the shoreline from Camp Perry past Davis-Besse Nuclear Power Station are in place and ongoing. The ROD, maps and associated reports can be provided upon request.

Question Two: Do you have national mapping you can make available to the committee indicating, from worst to best, different coasts, different parts of the country, in terms of the contaminants and environmental degradation that you deal with every day to make it more understandable to us, so that we can get a sense nationally of where the stress is the greatest and the different types of cleanup that you face. Does the Department have strategic mapping to give clarity to this issue for members of this subcommittee and other Members of Congress? What would one have to do in order to give clarity to this issue, in terms of mapping, so we could understand the whole of it, not just little parts here and there? The committee encourages the Department to provide a budget estimate of what it would cost or who would go to to get this done – and done well – for the sake of the country, and whether you would do it or other agencies of the government, the private sector. Provide a sense of the cost.

Answer: While we do not presently have this type of mapping data available, we are currently exploring data analytic tools. I am happy to meet with your staff to get a better idea of what you envision so we can add this concept to our evaluation.

The Honorable Congressman Henry Cuellar
Appropriations Committee, Subcommittee for Defense
Questions for the Record

Witnesses: All

Question 1: Rep Cuellar would like to know how many MMRP sites are in his district, the San Antonio area and in South Texas? Per reports we estimated 383 MMRP total for Texas, but couldn't find specifics.

Answer: The attached spreadsheet (MRS Inventory in TX_End of FY 2020.xlsx) provides the list of munitions response sites in the State of Texas. The highlighted MMRP sites are located in the general San Antonio area and include the sites in Texas' 28th Congressional District.

Honorable Steve Womack
House Appropriations Committee, Subcommittee for Defense
Hearing on Department of Defense Appropriations for 2022:

Witnesses: All

Question One: If you have more capacity than what you need – this is not necessary designed to broach the subject of BRAC—but if we have excess capacity, how much is that costing us to maintain as opposed to being able to use those resources to address environmental concerns and/or other very important DOD functions? My understanding is the Army has a third more capacity than it needs, Air Force about the same, maybe not as much on the Navy side. Would that be an accurate portrayal of capacity?

Answer: Due to the complexity of this issue, and because it encompasses topics broader than the Defense Environmental Restoration Program, we have referred this question to other offices within DoD and note that the November 2020 Report to Congress on DoD Infrastructure Capacity may be of assistance in addressing these questions.

Honorable John Carter
House Appropriations Committee, Subcommittee for Defense
Hearing on Department of Defense Appropriations for 2022:

Witnesses: All

Question One: Can you tell me what amount was executed for MMRP for fiscal year 2020? Was it equal or above the level in the budget request? And how much fiscal year 2020 projects were new starts and not modifications to existing awards? What is the current obligation rate for fiscal year 2021?

OSD Answer: I defer to the DoD Components to provide details regarding levels in the budget request, new starts and current obligation rates.

Army Answer: Army obligated \$76M in MMRP work in FY20; approximately \$62M represent new contract starts (81.6%). While we are still executing the FY21 appropriation, we are projecting \$61M for MR execution and \$48M would represent new contract starts (78%).

For FY20, Formerly Used Defense Sites (FUDS) obligated a total of \$115,860K for MMRP of which about \$91,820K was to contracts. This was significantly above the level in the FUDS budget request amount of \$70,646K for MMRP. Approximately \$65,532K of the FY20 FUDS MMRP obligations were attributed to new starts. USACE expects to obligate 100% of FUDS funding by the end of FY21.

Navy Answer: DON executed \$80.3M in the MMRP in FY2020. The budget request for FY2020 was \$60.3M. MMRP projects awarded in FY2020 were new projects awarded on new contracts or additional new requirements awarded to existing contracts. DON's FY2021 obligation rate in the Environmental Restoration, Navy (ER,N) program as of June 30, 2021 is \$170M of the \$421M appropriation (41%).

Air Force Answer: The Air National Guard (ANG) executed \$69,047 in FY 2020 ANG Operations and Maintenance (O&M) funds. This provided United States Army Corps of Engineers (USACE) funds to manage ANG Military Munitions Response Program (MMRP) contracts previously awarded. The Active Air Force executed \$28.9 million and BRAC executed \$54,256 in FY 2020 MMRP. The ANG executed an amount equal to the level in the budget request for FY 2020 MMRP. The Active Air Force and BRAC executed an amount above the level in the budget request for FY 2020 MMRP. The ANG executed all the FY 2020 MMRP funds to support existing awards. The Active Air Force executed \$26.4 million in FY 2020 MMRP as new starts and \$2.5 million as modifications to existing awards. None of FY 2020 BRAC MMRP funding was for new starts. As of Jul 30, 2021, the ANG's current obligation rate is 100% for MMRP FY 2021. The Active Air Force's current obligation rate 88.6% for MMRP FY 2021. Air Force BRAC's current obligation rate is 70.5% for MMRP FY 2021.

Question Two: Once the Department decides to accelerate cleanup of MMRP sites, the industrial base may no longer have the talent and capacity to perform this vital work. What does the availability of workforce skilled in munitions response have in the Department's ability to

speed up or to speed along cleanup? What are the main obstacles that exist to completing cleanup of military munitions? Are you concerned about the shrinking workforce? What is your plan to remedy the situation? What about the workforce challenges that may be on the horizon? Request the Army provide the committee with your priority list and where you are on that.

Army Answer: The Army does not have concerns for a shrinking workforce in the munitions cleanup sector. The successful implementation of new sensor technologies has significantly reduced the time unexploded ordnance technicians need to be on-site while providing new opportunities for other skill sets such as geophysicists.

The MMRP workforce within Army and industry is sufficiently skilled and remains available to address current annual workload. Obstacles that exist to complete cleanup of military munitions are primarily site specific and include the variety of munitions used and complexities caused by the transfer of property from DoD control.

The Army Cost to complete for MMRP is \$815 million. The Army addresses munitions sites in accordance with risk the Munitions Response Site Prioritization Protocol (MRSPP). Army has 1,378 MMRP sites in the inventory. Of these sites, 1,172 (85%) are at response complete. The 206 sites not yet at response complete are in the attached list (Army MRSPP Priority List - Active MR Sites.xlsx).

Army FY19 MMRP Obligations: \$33M

Army FY20 MMRP Obligations: \$76M

Question Three: When you start remediating a site, do the Department and the services commit to seeing the project through all at once? Or if another site were to emerge with a higher risk, could an ongoing project be put on the back burner? What is the process for evaluating the need to shift resources and how is it done? What kind of schedule would you have to get back to the projects that you stop working on? Is there a timetable that you are trying to stick to?

Answer: The Department has not halted or suspended on-going projects due to new priorities. Instead any newly identified priorities are addressed by shifting future projects and these shifts are coordinated with our regulatory partners and communicated to our community stakeholders. As cleanup sites progress through CERCLA phases, the actual timing and scope of response actions are tailored to site conditions.

DoD's cleanup program is premised on prioritizing sites for cleanup using a risk-based process--essentially worst first. Risk-based prioritization and cleanup occurs throughout the CERCLA process. DoD uses risk-based methodologies to determine the sequence for funding actions at Installation Restoration Program sites and Munitions Response sites (MRSs) based on the highest risk to address worse sites first. The Relative Risk Site Evaluation (RRSE) framework is used for evaluating relative risk and sequencing Remedial Investigations for hazardous substance, and pollutant or contaminant sites. For MRSs, DoD uses the Munitions Response Site Prioritization Protocol (MRSPP).

DoD is committed to seeing project remediation through the cleanup process once initiated. While it is unlikely that a site would suddenly emerge with a higher risk due to the comprehensive investigation process under CERCLA, if they do, the new site is prioritized to start before existing sites with lower risk where cleanup activities have not yet been initiated.

THURSDAY, MAY 27, 2021.

FISCAL YEAR 2022 DEPARTMENT OF DEFENSE BUDGET

WITNESSES

HON. LLOYD J. AUSTIN III, SECRETARY OF DEFENSE

GENERAL MARK A. MILLEY, CHAIRMAN, JOINT CHIEFS OF STAFF

OPENING STATEMENT OF CHAIR MCCOLLUM

Ms. MCCOLLUM. This hearing will come to order.

This hearing is fully virtual, and so I am going to address a few more housekeeping matters.

For today's meeting, the chair or staff designated by the chair may mute microphones from the participants when they are not under recognition, for the purpose of eliminating background noise.

Members, you are responsible for muting and unmuting yourself. If I notice you have not unmuted yourself, I will ask you if you would like to be unmuted, and if you indicate by nodding, the staff will unmute your microphone.

I remind all members and witnesses we do have a 5-minute clock that you will see displayed. If there is a technology issue, we will move to the next member until the issue is resolved, and you will retain the balance of your time. And we have gotten pretty good at that, so we will make sure everybody keeps their time if there is a problem.

You will notice a clock, especially if you are in grid mode, which is available for you to select on your screen, and it will show you how much time is remaining. At 1 minute, the clock will turn yellow. At 30 seconds remaining, I gently tap the gavel to remind members that your time has almost expired. When your time has expired, the clock will turn red, and I will begin to recognize the next member.

In terms of speaking order, we will follow the order set forward by House rules, meaning beginning with the chair and the ranking member. And the full chair of the committee, who is with us, Ms. DeLauro, will follow that. Then, members present at the time that the hearing is called to order, you will be recognized in seniority. Then members who are not present, they will also be recognized as they come into the hearing.

Finally, the rules of the House require me to remind you that we have set up an email address to which members can send anything they wish to submit in writing at any of our hearings or markups.

And, with that, as I said, the Subcommittee on Defense will come to order.

We do have two members who will not be present with us today, and that is Congressman Ryan and Congresswoman Kaptur. They are in the great State of Ohio with the President of the United States.

This afternoon, the committee will receive testimony from the Honorable Lloyd Austin, Secretary of Defense, and General Mark Milley, Chairman of the Joint Chiefs.

Gentlemen, I thank you for participating, and I welcome you to the subcommittee.

For our members, this is our 19th and final hearing before we start writing the 2022 spending bill, and we appreciate your time and your attention to the subcommittee's business. And I hope, Committee, this is the last hearing we will hold on Webex.

Let us begin.

President Biden's fiscal year 2022 budget request proposes \$715 billion, or \$11 billion more than the enacted level. To put that amount in perspective, in his last year in office, President Trump only requested an \$800 million increase. And, 6 years ago, the DOD received \$506 billion total, which means the Department's budget has increased \$144 billion in the last 6 years.

No matter how much we provide our Armed Forces, some will always argue it is not enough. There will always be new and increasingly expensive technologies to develop. Other countries will always be pursuing programs that they believe are strategically advantageous to them.

Unlike other committees, the job of appropriators is to see the full picture. As much attention to the top line as defense receives, we cannot consider the defense number in a vacuum. Investments in diplomacy, development, and our economy are vital to our national security interests.

There is no military mightier, no country with stronger allies, no government that has done more to help people across the world than the United States of America. The key to successful competition with Russia and China is through a combination—economic, diplomatic, and military strength. One by itself is not enough.

In many of our hearings, we have heard witnesses describe China's effort to modernize its military and expand its influence around the world. We cannot fall into the trap of thinking that China is 10 feet tall, to quote a person that I admire, but we will not allow for capability gaps in key weapons systems so that we can deter our adversaries and defend our Nation.

I look forward to reviewing the President's budget fully and through the lens that I described tomorrow. We have a responsibility to scrutinize every line in the budget request and to rest assured that our committee will fulfill its constitutional duty and make adjustments to the President's proposal.

I agree with the administration: We need to make difficult choices. And we will make them together. We must modernize. Doing so requires us not only to make investments in new technologies but to ramp down spending on systems that we know are not capable or survivable in a high-end fight. We simply cannot spend taxpayers' dollars on ineffective platforms.

Additionally, we must face the realities of the world in which we live. Climate change significantly impacts our security. The displacement of millions of people can have a destabilizing effect in regions prone to insecurity. We have too many installations that are susceptible to extreme weather events, which leads to many days

when our troops cannot train. For the Department of Defense, combating climate change isn't about engaging in social politics.

And as the largest user of energy in the Federal Government, we must work with the Department to make it more energy-efficient, which will make them even more effective and prevent our adversaries from targeting our energy supplies.

With 2.1 million uniformed personnel, the Department and the services face the same problems that plague our society: extremism and sexual assault. We know funding alone cannot solve our Nation's societal problems, and I look forward to hearing our witnesses discuss what they are doing on these important issues.

I want to close by thanking the Department of Defense for the incredible work they have done in battling the COVID-19 pandemic on behalf of our Nation. From our healthcare and medical research personnel, to those providing logistical support, to the National Guard soldiers delivering shots in their communities, I want to thank you for your service in this difficult year on behalf of the entire committee.

And, finally, we are holding this hearing just days before the release of the full budget, so we understand that this may limit your ability to answer certain questions. However, given the tight timeframe we will have to write this bill, I ask that you and your staff be prepared to respond to members and our staff on any specific budget question asked today immediately after the full request is submitted.

But now I would like to recognize our distinguished ranking member, Mr. Calvert, for his comments.

OPENING REMARKS OF MR. CALVERT

Mr. CALVERT. Thank you, Chair McCollum.

I want to thank Secretary Austin and General Milley for being here today.

Over the past several months, this subcommittee has heard testimony from military service leadership, outside think tanks, intelligence agencies, and our geographic combatant commanders. We have heard how our military continues to carry out a wide range of missions, from humanitarian assistance to contested combat operations, and they are tasked to do so in a rapidly evolving threat environment.

The 2018 National Defense Strategy clearly outlined how the Department of Defense needs to reform to keep pace with our adversaries. The National Defense Strategy Commission also recommended a 3- to 5-percent increase, adjusted for inflation.

In order to ensure our military has the tools it needs, we must invest in advanced technologies for all warfighting domains, especially space and cyber. We know that, to maintain our warfighting edge, the Department also needs to reform and improve business practices, workforce, and planning processes.

To accomplish many of these goals, it is vital that we provide steady and predictable funding for the DOD, along with regular and proper oversight. That is why I am greatly concerned by both the level of defense budget request for the fiscal year 2022 and the significant delay in delivering it to Congress.

I frequently talk about how damaging continuing resolutions are to our military, especially in acquisition efforts. I am afraid that, due to the requested funding level and the delay in the budget submission, we may be headed toward a continuing resolution.

In addition, we need to have serious discussions about the divestiture of many warfighting platforms, some of which are vaguely defined as “legacy.” I understand that, in the era of great-power competition, our military must be modernized, ready, and lethal to address these threats from adversaries like China. I have serious concerns regarding the DOD’s plans to divest or decommission platforms that are in high demand or have much service life left in them.

Two of these that come to mind are the MQ-9 Reaper and the littoral combat ship. Almost every combatant command has told this subcommittee that they need more, not less, MQ-9 access. However, the Air Force keeps proposing to divest.

Even more concerning is that there isn’t something that will immediately replace the mission. Often, DOD and the services propose to divest one system and replace it with a system that is just an unproven concept. Congress has made our position clear: that we do not accept hope as a viable replacement.

Regarding the LCS, we spent over \$2 billion on four ships—\$2 billion on four ships—with significant service life left that the Navy proposed to decommission in the fiscal year 2021 budget.

Congress reviewed the request and was very clear that we opposed the decommissioning of the LCS 3 and 4 and they should be used in the SOUTHCOM AOR. It is my understanding that the Navy is ignoring congressional intent and will again propose to decommission these very same ships in the fiscal year 2022 budget.

They have done little work to communicate with Congress to change our position. In my opinion, this is little more than a budget gimmick to allow the Navy to spend more money elsewhere.

I agree there are some systems that must be retired to make way for newer, more effective systems. However, DOD cannot make these decisions in a vacuum. There must be more transparency and communication with Congress. To send up the same proposal that Congress has previously opposed and expect a different outcome, I believe, is ill-advised.

DOD and the services should be up here making their case in advance of these proposals. I went through the war on a previous platform that didn’t work out too well, and we don’t want to do that again.

Today I would like to hear about the many issues facing the Department of Defense.

First, the subcommittee has discussed in great detail the current efforts to withdraw forces from Afghanistan. I am very concerned about the decision to remove forces and the timeline for doing so.

However, that decision has been made. So how do we ensure those individuals who risked their lives to help U.S. forces are being taken care of? Many colleagues of mine are concerned specifically about the Afghan interpreters. I share that concern, but I am also aware there are many other individuals at great risk also. I look forward to hearing the Department’s plan to ensure their safety.

I look forward to reviewing these and other decisions for the fiscal year 2022 budget request, which hopefully will be submitted to us tomorrow, and thank you again for taking time.

And I yield back the balance of my time, Chair. Appreciate it.

Ms. MCCOLLUM. Thank you very much, Mr. Calvert.

Well, today, I am very pleased to say we are joined by the full committee Appropriations chairwoman, Rosa DeLauro.

Ms. DeLauro, please go ahead with your opening statement.

OPENING REMARKS OF CHAIR DELAURO

The CHAIR. Thank you so much, Chair McCollum, and to you, Ranking Member Calvert, as well, for holding this hearing.

And I want to say a thank you to Secretary Austin and Chairman Milley for testifying. I also want to say thank you to both of you for your many years of dedicated service to our country.

As a Nation, we will always be indebted to our women and men in uniform and to the families and communities who support them. And as we approach Memorial Day, we hold in our prayers the families of servicemembers who have made the ultimate sacrifice.

And the best way for Congress to honor this service is by maintaining peace. Peace is a light in a world full of darkness. It is hard-won, hard-kept, and easily lost. And so, although it may seem paradoxical, investing in national security, even in the instruments of war, is fundamental to ensuring lasting peace.

No one on this panel needs to be reminded of the many threats that the United States faces. China is an increasingly fierce competitor, while Russia continues to be an aggressive revisionist power. Countries like Iran and North Korea pose unique challenges to our forces.

And while international terrorism remains a serious issue, at the same time we must manage the lingering effects of the COVID-19 pandemic, navigate a rapidly shifting technological landscape, and act on the existential threat of climate change.

President Biden's fiscal year 2022 discretionary request of \$715 billion represents an \$11 billion increase for the Department of Defense. Many of the funds in the request are essential to protecting our national security today and modernizing the DOD for tomorrow. I hope you will expand on your vision and give us the specifics on how this top-line number increases efficiency and lethality in the upcoming fiscal year.

Of particular importance, this includes countering China by investing in state-of-the-art technology to ensure there is no capability gap between American and Chinese weapons. Our servicemembers should never enter an unfair fight. This budget proposal has helped to support investments in cutting-edge weapons systems and forward-looking research that supports the American economy and strengthens our capabilities.

I am also pleased that the discretionary request includes significant investments to address climate change. Climate change is a national security threat, and the investments in this proposal will improve the resiliency of military installations and make DOD operations more sustainable.

And, finally, this request upholds the integrity of our Armed Forces and strengthens the military's quality of life by addressing

sexual assault, violent extremism, and the other issues that have plagued our military's ranks.

The Department of Defense is crucial to advancing our national security, and I look forward to hearing more about how you will meet the challenges facing our Nation and the resources you need to do so.

And, with that, I say thank you to Chair McCollum and to Ranking Member Calvert, and I yield back.

Ms. MCCOLLUM. Thank you, Madam Chair.

Gentlemen, your full written testimony will be placed in the record. And members have lots of questions for you, so feel free to give a summary of your statement.

And, Secretary Austin, the floor is yours.

Ms. MCCOLLUM. Secretary Austin, we cannot hear you.

I cannot hear you.

Ms. MCCOLLUM. If you can hear me, gentlemen, we have checked our comms, and our comms is fine. So they are saying it is something on your system at the Pentagon.

General MILLEY. Chair McCollum, can you hear me? This is Chairman Milley.

Ms. MCCOLLUM. I can hear you, if you gentlemen wish to share microphones. However, I am sure you know how to share, so you will figure it out.

Secretary AUSTIN. Can you hear me now, Chair McCollum?

Ms. MCCOLLUM. Yes, I can.

Secretary AUSTIN. Okay. So we will leave them both on. Sorry about that. And, again, as was stated, it did work during the test fire. So we apologize for that.

Ms. MCCOLLUM. We have had our share of technical difficulties. Our crew appreciates what you just went through.

The floor is yours, sir.

SUMMARY STATEMENT OF SECRETARY AUSTIN

Secretary AUSTIN. Chair McCollum, Ranking Member Calvert, Chair DeLauro, and members of the committee, thank you for the opportunity to testify today about the President's budget request for fiscal year 2022.

I am pleased to appear before you alongside General Milley, whose advice and counsel has been instrumental to us as we developed our budget and as we continue to defend this Nation, which is our chief responsibility and my top priority.

Members, as you know, the President's budget has not yet been released, but I will do my very best to provide you as much information as possible about what we are asking for and, more importantly, why we are asking for it.

Let me say at the outset that I believe our budget request will help us match our resources to strategy, strategy to policy, and policy to the will of the American people.

Informed by the President's interim national security guidance and my own message to the force, it funds the right mix of capabilities that we need most to defend this Nation now and in the future. It invests in hypersonic weapons, artificial intelligence, microelectronics, 5G technology, cyber capabilities, shipbuilding, climate change resilience, and nuclear modernization, to name a few.

And it gives us the flexibility to divest ourselves of systems and platforms that do not adequately meet our needs, to include older ships and aircraft and ISR platforms that demand more maintenance and upkeep and risk than we can afford.

As you know, we have commissioned a global posture review and a new National Defense Strategy which will further inform and guide our resource decisions. The Department must be ready to meet and keep pace with our competitors and, if necessary, to win the next fights and not the last ones.

And that is why this budget stays true to our focus on matching the pacing challenge we see from the People's Republic of China. However, we recognize that this is not our only challenge. The budget also invests in efforts to counter the damaging effects of climate change and to be prepared for potential future challenges like another pandemic.

This budget helps us to counter the belligerence that we see from Russia, especially in the cyber realm. With its emphasis on missile defense and more sophisticated sensors, our budget will also help us counter the increasing ballistic missile capabilities of nations like North Korea and Iran.

It funds our troop presence and counterterrorism capabilities in the Middle East and South Asia to meet the threats posed not only by Iran but also by terrorist networks like ISIS, al-Qaida, and, in Africa, like those posed by Al Shabaab.

I am also confident that this budget will help us maintain the integrated deterrent capability and global posture necessary to credibly back up the hard work of our diplomats and demonstrate our resolve all over the world alongside our allies and partners.

And speaking of our partners, I know Afghanistan is on the top of your minds. As you know, the President directed us to withdraw our forces by early September, and I can report to you today that the retrograde is proceeding on pace—indeed, slightly ahead of it.

We accomplished the mission for which our troops were sent to Afghanistan, and I am very proud of that. And I am also very proud of the brave men and women who made it possible and those who gave their lives for that mission. I am also deeply grateful to the families of our servicemembers, who have endured so much as they sent their sons, daughters, husbands, and wives to battle.

Our budget will help develop the over-the-horizon capability that we need to ensure that terrorist attacks on our homeland can never emanate from that country again. We will now transition to a new bilateral relationship with our Afghan partners, one that continues to help them meet their responsibilities to their citizens, but one that will not require a U.S. footprint larger than what is necessary to protect our diplomats.

And that is one reason why we are asking to move overseas contingency operations funding inside the budget. This will give us and you greater transparency, accountability, and predictability in the budgeting process. And because all necessary provisions currently established in OCO funding are retained, we expect no impact to other operations. This is the right thing to do, and, frankly, it is overdue.

Now, taking care of our people is also the right thing to do, and the budget request increases funding to support in-home care and

support, which has become increasingly important during the pandemic. We will also be seeking funds to improve military base pay, retention bonuses, and other incentives that will help us attract and retain the best help.

And we will be working hard to combat challenges that make service in the ranks more difficult for all the men and women of the Department, from getting a better handle on the extent to which we experience extremist behavior, to combating sexual assault and harassment.

As you know, my first directive as Secretary of Defense, issued on my first full day in the office, was to service leadership about sexual assault. I made it clear then and I still maintain that we must not be afraid to try new approaches, to change our minds, so that we can truly and fully address the scourge of sexual assault in our force.

But, clearly, what we have been doing hasn't been working, and the numbers of sexual assaults are still too high, and the confidence in our system is still too low. The Independent Review Commission that we established has provided me with an initial set of recommendations, first around the issue of accountability. This line of effort is focused on how these crimes are investigated and prosecuted.

I have shared these recommendations with Chairman Milley and with the civilian and military leaders of service branches. I have asked them to review the recommendations and to provide me their views in return. There will be additional recommendations coming to us from the IRC on prevention, culture, and victim support, and I look forward to receiving them.

But I will say this to you today: that these are attacks by our own people on our own people, and they tear at the fabric of who we are and what we represent to each other and to the American people. And so, as I review the recommendations on how to address this challenge, I continue to keep an open mind. You have my commitment to that and also my commitment to working with you to consider legislative proposals.

Madam Chair, members of the committee, we field the greatest military in human history, made up of the finest men and women that have ever donned the cloth of their Nation. We also enjoy a civilian workforce deeply committed to every mission that we take on. And, for all the things that we need to do better, no adversary can match the quality of our people.

I am immensely proud and actually humbled to be of service to them and to serve again with them and their families. I know the values that they espouse, the oath that they took, and I know what they are capable of. And I believe I have a very good sense of what they need to do their jobs, and I can assure you that the President's budget request for fiscal year 2022 fulfills that obligation.

And I look forward to answering your questions. And I thank you for your unwavering support that you continue to provide the Department and for all the efforts that you make every day to ensure that we remain ready to defend this Nation.

Thank you.

[The information follows:]

SECRETARY OF DEFENSE LLOYD J. AUSTIN III
PREPARED REMARKS BEFORE THE
HOUSE APPROPRIATIONS COMMITTEE – DEFENSE
MAY 27, 2021

Introduction

Chair McCollum, Ranking Member Calvert, distinguished members of the committee: thank you for the opportunity to testify in support of the President's budget request for Fiscal Year (FY) 2022.

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 your continued support and partnership as we work to address the threats facing the United States of America today, and build the force that can address the challenges of tomorrow. I also want to thank the Chairman of the Joint Chiefs of Staff, General Mark Milley, who is testifying alongside me and is a critical partner in realizing the Department's priorities.

The President's \$715 billion defense budget request for FY 2022 provides us with the capabilities we need most and drives investment in efforts that will help us advance our three key priorities: defending the nation, taking care of our people, and succeeding through teamwork.

Today, the Department of Defense stands ready to deter conflict in any domain and, if necessary, to fight and win against any challenger. Since becoming Secretary of Defense, I have met with many of our service members and commanders in the field and have seen first-hand the dedication of the men and women of our Department. I can assure you that we continue to have the best joint fighting force on Earth and a civilian workforce fully dedicated to the many critical missions we face.

We must maintain and improve this advantage on land, at sea, in the air, and in emerging domains, including space and cyberspace. I am confident that the President's budget request helps us do that. The request is driven by our recognition that our competitors—especially China—continue to advance their capabilities. We must outpace those advances to remain a credible deterrent to conflict around the world.

The President's budget request represents my commitment to matching resources to strategy, strategy to policies, and policies to the will of the American people. This budget also reflects difficult funding decisions necessary to ensure that we have the right mix of capabilities that we need most. We have proposed cuts to systems and capabilities that no longer meet the challenges and requirements of the Department, making room for more advanced programs that do. In making these decisions, we were guided by the President's Interim National Security Strategic Guidance and informed by a set of program reviews conducted by the Department early in this Administration.

We are also undertaking a series of strategic reviews in the Department to ensure that our global force posture, and our nuclear and missile defense capabilities, are matched with the challenges that we face and aligned with the priorities of the President. The Global Posture Review will help inform my advice to the Commander-in-Chief about how best to allocate our forces around the world to advance our

national interests, and our nuclear and missile defense reviews will consider how we maintain our deterrent and defensive capabilities, within and across domains.

I take very seriously the importance of being good stewards of taxpayer dollars and ensuring that we are transparent and honest with the American people about how their money is spent. This year, the President's budget consolidates the Overseas Contingency Operations funding and the base budget, raising transparency of direct war costs to a level not seen in several years.

We are also working to address our audit responsibilities as quickly and effectively as possible and move forward on reform to our business operations. This is not just about finding and reapplying savings to higher priorities, it is about improving organizational performance and efficiency. The best advocates for reform are those closest to the issues, so we will hold leaders appropriately accountable for a management improvement agenda within their respective components. Reform also requires a holistic approach—including concepts of operation, organizations, personnel, training, and modern systems—and must have a seat at the table in our deliberations over Department programs and priorities.

The FY 2022 budget also reflects the President's decision to retrograde in Afghanistan, following 20 years of war in that theater. We are profoundly grateful to our uniformed service members and their families, and to our civilian workforce, who have served and sacrificed so much through combat deployments in the defense of our nation since the attacks on the United States on September 11, 2001. We are now engaged in a deliberate, safe, and orderly withdrawal from Afghanistan following the President's decision.

Moving forward, we must continue to engage in a concerted effort to recruit, retain, and develop the finest talent available for the uniformed and civilian workforce, providing quality opportunities for personal and professional growth, advancement, and leadership to those in our charge.

We owe it to them to build an environment that is safe, welcoming, and free of fear, harassment, or violence. That is why I have focused some of my earliest efforts on addressing sexual assault and harassment in the Department, identifying and addressing extremist behavior in the ranks, and ensuring that everyone is given a fair and equitable opportunity to serve this country.

But we cannot do this work alone. Whether it is defending the nation, building a force of the future, growing our talent, or building an environment welcoming to all, we rely on teamwork that starts at the senior-most levels of the Department, filters down into our workforce, and extends across departments to our relationships with interagency colleagues, Congress, and our allies and partners.

When called upon to protect and defend our nation, the Department of Defense will always answer, but diplomacy must be our first national security tool of choice. That is why the President's FY 2022 budget helps fund a Department of Defense able to credibly back up the hard work of our diplomats through our deterrent capabilities and our force posture.

As we look outward to our global security interests, we are focused on strengthening our relationships with our allies and partners. The investments in this budget demonstrate that the United States will continue to be a key guarantor of the peace, security, and the rules-based world order that we have helped foster for the past seven decades.

The FY 2022 budget request ensures that we will remain the best-trained and best-equipped military in the world and will have the resources to defend the nation, with the confidence to advance our priorities and build and sustain the force we need now and in the years ahead.

Defending the Nation

As the President has noted, the country finds itself at an inflection point. The rapid pace of development of capabilities by our competitors, and the changing character of conflict that comes with it, mean that we can no longer do things the way we always have and sustain our military edge.

China has invested heavily in new technologies, with a stated intent to complete the modernization of its forces by 2035 and to field a “world-class military” by 2049. Russia has shown that it is not afraid to target the United States in contested domains like cyberspace and still shows a continued interest in regional hegemony. Iran continues to advance its nuclear and ballistic missile programs and to support destabilizing proxy groups in the Middle East in an effort to threaten its regional neighbors. We also face challenges from North Korea, a country with the ambition to be capable of striking the U.S. homeland.

We will continue to address violent extremist and transnational criminal organizations active in several theaters and to face unexpected but challenging tests of our resolve like the deadly spread of COVID-19. Climate change is a growing challenge, the effects of which are driving regional conflicts and instability, even as extreme weather caused by a changing planet threatens installations and readiness.

As the character of conflict and competition changes and accelerates, our strategic competitors have watched our efforts in warzones over the last two decades, seeking to understand not only our capabilities but also our will to defend our interests abroad. They are watching us and learning from us.

I have asked the Department to think through our capabilities and operational concepts and how we use cyber, space, and nuclear capabilities to create a more credible and resilient deterrent against our competitors, including China. What I have in mind are ways we can better use the capabilities we already have, including by integrating across domains, and determining the capabilities we need to address potential future conflict.

This means investing in cutting edge technologies like artificial intelligence and quantum computing. It also means ensuring that if an adversary attacks one system or domain—in cyberspace or Global Positioning System (GPS) satellites, for example—we are able and ready to respond through appropriate and separate means in other domains, as necessary.

This is going to take a culture shift in the Department because it requires working across Military Services, domains, and regions in a way that we have not done before. It also requires deeper integration with our allies and partners, ensuring that their capabilities add value in deterrence and in conflict.

The FY 2022 budget request will help us achieve this new vision of 21st-century deterrence, and we look forward to your support and partnership to help get it right.

Regional Challenges

In the Indo-Pacific region, we are facing an increasingly assertive People's Republic of China (PRC). Beijing's regional ambitions have grown, as has its footprint around the world, drawing on significant economic influence to encourage and, in some cases, coerce countries into a deepening relationship with the PRC.

But China's ambitions are not only economic. It seeks to use its influence to shift rules and norms in the region, erode democratic values and human rights, and challenge a free and open Indo-Pacific region. The President's Interim National Security Strategic Guidance identifies China as the only global competitor capable of combining its economic, diplomatic, military, and technological power to mount a sustained challenge to the international order.

As the Department of Defense, our responsibility is to protect and defend our interests in the Indo-Pacific region and to assure our allies and partners of our commitment to our shared goals. That requires keeping pace with the rapid military modernization of the People's Liberation Army (PLA) and remaining sighted on the PLA's advancements in the South and East China Seas, the Second Island Chain, and beyond.

That is why I established the China Task Force early in my tenure. The Task Force's mandate has been to conduct a baseline assessment of Department policies, programs, and processes on China-related matters so that we might better meet the challenge posed by the PRC. The Task Force will complete its work in the coming weeks and report back to me on its findings and recommendations. After reviewing these recommendations, I will follow with guidance to the Department related to our China efforts.

Even as we address China's growing military capability, we will remain focused on North Korea. Pyongyang continues to develop its nuclear and ballistic missile programs, posing an increasing threat to regional allies and partners and with ambitions to be able to strike the U.S. homeland. Leading with diplomacy, the United States will continue to work to mitigate North Korea's destabilizing and provocative behavior and maintain peace and stability on the Korean Peninsula.

In Europe, I am focused on strengthening our relationships with our allies and partners, bilaterally and in NATO. The Department will ensure that we are postured to deter aggression from Russia or any other power that seeks to challenge us in the region. Our alliance with NATO remains ironclad, and our allies remain a force multiplier for U.S. security around the world. We are encouraged that NATO defense spending has increased for the seventh straight year, demonstrating their commitment to the strength of the alliance. The FY 2022 budget supports efforts to grow the capability and capacity of our allies.

Over the past 20 years, much of our effort as a Department has been focused on the threat posed by violent extremist organizations operating out of parts of the Middle East and South Asia. We remain committed to ensuring that no one launches an attack on the U.S. homeland, and we will maintain the capability to protect the United States and our interests in the region. That includes countering the Islamic State of Iraq and Syria, al-Qa'ida, and associated terrorist networks that pose ongoing threats to the United States.

Meanwhile, Iran remains a destabilizing force as it seeks to advance its nuclear and ballistic missile programs, threaten freedom of navigation, and support proxy terrorist and militia groups. We will continue to maintain the capability to deter Iran in the Middle East. We will also continue to support our partners in the region, including by helping to ensure that Israel has the capability to defend itself effectively and maintain its qualitative military edge.

In Afghanistan, the Department is working to conduct a deliberate, orderly, and safe withdrawal, as directed by the President. This is an important step in responsibly ending this two-decade-long conflict, and it offers us an opportunity to redirect our resources toward strategic competition.

In Africa, the Department is focused on sustaining and improving the capabilities of our partners, particularly as we deter and disrupt terrorist attacks by al-Shabaab. The group remains an active threat to Somalis, their neighbors, our interests in Africa, and those of our allies and partners. Our partner-centric strategy has always been at the core of our counterterrorism mission, and we will continue to help regional partners strengthen their capabilities to counter shared threats. This is critical to stability and the opportunity for political and economic development in East Africa.

To the north, the Department remains committed to preserving a free and open Arctic region, which is why we undertake annual Arctic exercises and operations, including with allies and partners, such as ARCTIC EDGE, ICEX, and NORTHERN EDGE. These exercises provide valuable experience and offer important lessons learned for conducting multi-domain operations in the High North.

In the western hemisphere, our competitors seek to gain a foothold through economic and security investment and cooperation. We remain focused on building partner capacity and capability to ensure that the United States remains the partner of choice and to address transnational criminal and terrorist networks active in the region.

Additionally, the Department supports interagency efforts to address the migration crisis. Although other departments and agencies appropriately lead efforts to respond to this challenge, DoD supports partner nations in addressing the security-related aspects of the root causes of migration. This includes providing limited humanitarian and medical assistance and participating in engagements to strengthen the professionalism of Central American militaries and defense institutions.

Here in the United States, our men and women in uniform have supported our critical domestic missions. National Guard personnel provide support to our fellow Americans, including at Federal Emergency Management Agency (FEMA) mass vaccination sites. National Guard personnel have also helped secure our national Capitol at various times over the past year, and thousands more have helped secure State capitals across the United States at the direction of State officials. We also continue to support law enforcement operations on our southern border by providing limited enabling capabilities. At the request of the Department of Health and Human Services, we are supporting its mission to shelter unaccompanied migrant children arriving at the border.

COVID-19

Tackling COVID-19 has been one of my highest and most urgent priorities. Since I became Secretary of Defense, the Department has received almost 500 FEMA mission assignments and more than 50

requests for assistance from other Federal departments and agencies. As of May 24, more than 4,600 active-duty service members have deployed to 34 community vaccination centers in 28 States and territories. Additionally, more than 31,000 National Guard personnel have deployed; carrying out FEMA mission assignments issued to DoD to assist their local communities.

In total, the Department has administered more than 16 million vaccine doses to the American people, with some 4.9 million delivered by active-duty personnel and 11.1 million supported by the National Guard. Within the Department, we have executed one of the most complex vaccination programs in the world, vaccinating millions of service members, beneficiaries, and Department personnel in 42 countries, including multiple combat zones. Internally, the Department has protected its force and families by administering over 3.4 million vaccinations.

We are also making investments in the Defense Health Agency to ensure that we have the resources needed for public-health surveillance and force protection. We continue to review and update our force health protection policies, and even as vaccinations increase, we remain committed to testing, which will expand our genomic sequencing efforts so that we can track variants and declining immunity.

I am tremendously proud of our men and women in uniform who stepped up to join our whole-of-nation response. But this will not be the last time our nation and our world will face such a challenge. That is why our budget request also funds programs that support biological threat reduction, in cooperation with our global partners, emerging infectious-disease surveillance, biosafety and biosecurity, and medical countermeasure research and development.

Climate Change

We face a grave and growing climate crisis that is threatening our missions, plans, and capabilities. From increasing competition in the Arctic to mass migration in Africa and Central America, climate change is contributing to instability and driving us to new missions.

At the same time, increasingly frequent extreme weather events degrade force readiness and drain resources. Recent DoD budgets have been forced to absorb recovery costs at battered bases such as Naval Air Station Pensacola, among others. Our military installations, and the mission-critical capabilities they support, must be made resilient to climate-induced extreme weather.

Our mission objectives are aligned with our climate goals. The Department is investing in projects and capabilities that mitigate the impacts of climate change while improving the resilience of our facilities and operations to a range of threats. Our budget request also invests in initiatives to reduce operational energy demand to enhance capability, improve freedom of action in contested logistical environments, and reduce costs. Those investments are good for the climate, and they are critical for the mission.

Additionally, this budget invests in power and energy research and development to improve installation and platform energy performance and optimize military capability. The Department can help lead by leveraging its buying power to deploy technologies such as energy storage and microgrids that support the mission while protecting the climate.

The Climate Working Group is coordinating the Department's work implementing the President's Executive Order on this crisis and building up climate expertise within DoD. It will also track the implementation of climate- and energy-related actions and progress toward future goals.

Modernization and Innovation

One of our chief priorities is to drive innovation across the Department and modernize our culture, people, systems, and processes to meet our future needs. It is critical to nearly everything we do. Even as we develop new capabilities, we will always adhere to our international humanitarian law obligations in the use of new weapons of war, as well as ensure the protection of civilians in all missions.

This budget supports our efforts to:

- Modernize the nuclear Triad to maintain a strong and effective strategic deterrent;
- Make critical investments in advanced technologies such as microelectronics, fifth-generation network (5G), and artificial intelligence (AI);
- Ensure access to precursors and key inputs by shoring up our critical supply chains;
- Accelerate investments in cutting-edge capabilities that will define the future fight, such as hypersonics and long-range fires; and
- Advance our joint warfighting concepts and commit to rapid experimentation and the fielding of emergent capabilities across warfighting domains.

The nuclear Triad remains the bedrock of our national defense and strategic deterrence, ensuring that no adversary believes it can employ nuclear weapons against the United States or our allies without risking devastating consequences.

But we must modernize our aging capabilities to ensure a credible deterrent for the future. As we do, we will review ongoing programs to assess their performance, schedule, risks, and projected costs. The FY 2022 budget invests in nuclear modernization efforts, and the Department will always seek to balance the best capability with the most cost-effective solution. We are also launching a nuclear posture review to ensure that we have the right capabilities matched with the national nuclear strategy.

Microelectronics enable many of today's capabilities, such as GPS, radar, command and control, and communications. Advanced microelectronics are key to nearly all of the Department's modernization efforts, from AI and hypersonic weapons systems to 5G wireless networks. The Department will continue to invest in programs to secure U.S. microelectronics interests; reverse the erosion of domestic innovation and supply; and establish a strong foundation for the next generation of microelectronics technology for DoD applications, while also sustaining current systems.

The U.S. military must also utilize the connectivity provided by 5G to operate with the speed, precision, and efficiency required in the future. Countries that master advanced communications technologies and connectivity will have long-term military advantages; for example, tomorrow's warfighters will be able to use local and expeditionary 5G networks to move considerable amounts of data to connect distant sensors and weapons into a dense, resilient battlefield network.

Similarly, the power of AI will help us modernize not only our warfighting decisions but also our business processes. We must be able to ingest, make sense of, and act on the vast amounts of information available to our warfighters on the battlefield and our decision-makers leading our Department. As I have said, we must understand faster, decide faster, and act faster. And we must do it all responsibly and at scale.

To support many of these efforts, we recently launched the Innovation Steering Group. This entity, chaired by the Under Secretary of Defense for Research and Engineering, will advise me on science, technology, and technological transition. It will also empower efforts to make the changes to incentives, processes, and structures needed to truly innovate.

However, our efforts are not just focused on buying the capabilities of the future. We must fundamentally shift the way we think and the way we do business. We have not yet made full use of our most agile acquisition authorities, and we remain too risk-averse as a Department to move decisively beyond the capabilities of today and prepare for the future.

We also remain too reliant on critical minerals produced in or by China. To shore up our critical supply chains, we must focus on building our domestic production capabilities and growing our defense industrial base. That is why I am establishing the Supply Chain Risk Management Group, which will complement the work of the Industrial Base Council, both of which are chaired by the Under Secretary of Defense for Acquisition and Sustainment.

Tomorrow's conflicts will be contests of speed within and across domains of conflict. The President's budget request invests in the development and testing of hypersonic strike capabilities, while enhancing existing long-range strike weapons to bolster deterrence and improve survivability and response timelines. Long-range fires provide key offensive capabilities that are cost-effective and improve deterrence. By enabling power projection from standoff ranges, the risk to critical U.S. assets decreases while the defensive burden imposed on the enemy increases.

The Department is also focused on developing enhanced joint warfighting concepts; expanding experimentation and fielding; shifting our budget and investment priorities to incentivize innovation; and improving acquisition systems while making use of more flexible ones to identify and deliver new capabilities at scale. These efforts will help build a force that is more resilient and integrated and that ensures decision advantage across all domains.

Domain Challenges

On land, the Army continues to invest in its six modernization priorities: long-range precision fires, future vertical lift, next-generation combat vehicle, air and missile defense, the network, and soldier lethality. To sustain the required funding levels for the development and procurement of next-generation capabilities, the Army reduced resources for several platforms as well as missiles, munitions, and conventional ammunition.

At sea, delivering all-domain naval power that can defend the homeland, deter adversaries, control the seas, and project power ashore in a conflict requires the Navy to balance current operational demands with the need for modernization. Maintaining naval power is critical to reassuring allies and signaling

U.S. resolve to potential adversaries. The budget request proposes responsible investments in the Navy fleet. It also continues the recapitalization of our strategic ballistic-missile submarine fleet and invests in remotely-operated and autonomous systems and the next-generation attack submarine program.

We also seek to divest of some platforms that do not contribute effectively to power-projection needs. The FY 2022 request reflects a strong commitment to continued U.S. naval dominance, including a properly sized and well-positioned defense industrial base. The health of the defense industrial base continues to be fundamental to achieving and sustaining our future fleet. Our shipbuilding and supporting vendor base constitute a national security imperative that must be steadily supported and grown to maintain a skilled workforce.

In the air domain, the Air Force will shift away from certain platforms in favor of key weapons systems such as the F-35 Joint Strike Fighter, the F-15EX Eagle II, and the Next Generation Air Dominance aircraft to bolster the Air Force's ability to provide air superiority. Meanwhile, we will drive down sustainment costs, the fleet's average age, and inherent risk. At all times, we will work to ensure rigorous oversight of maintenance costs of the F-35.

Additionally, Air Force investments in hypersonics, the Long-Range Standoff Weapon, the B-21 Raider, and the Ground-Based Strategic Deterrent will allow the Department to conduct global strike operations with precise conventional and unconventional capabilities, delivered from both standoff capabilities and penetrating platforms. Meanwhile, the Navy is developing the "Air Wing of the Future" to deliver game-changing lethality and survivability. These efforts include transforming Carrier Air Wings with the addition of the F-35C, E-2D, and CMV-22B aircraft and rapidly developing the MQ-25 Stingray.

Unfettered access to space and the freedom to maneuver there enhances every aspect of American power and underwrites the design of the joint force. Competitors including China and Russia are seeking to challenge the United States' advantage in space by developing weapons to deny or destroy U.S. space capabilities in conflict. The FY 2022 budget request strengthens our ability to deliver flexible capabilities and strategic options swiftly to outpace emerging threats in space.

Priority areas in this budget include investment in a resilient architecture of capabilities for missile warning and missile tracking; modernization of all segments of GPS to ensure precision and availability; development of cyber-resilient space command-and-control capabilities that can integrate with Joint All-Domain Command and Control; and investment in a broader base of domestic launch providers to further ensure our access to space.

In cyberspace, the United States is facing increasingly aggressive activity, including strategic campaigns by competitors, other nation-states, and proxies seeking to undermine our national security and democracy. The FY 2022 budget invests in cyberspace activities that build on the goals in DoD's Cyber Strategy. The Cyber Operations portion of the budget supports U.S. Cyber Command's operational element, the Cyber Mission Force, which performs cyberspace operations to defend the nation, support the joint force, and secure DoD infrastructure and networks.

The budget also enhances our cybersecurity by mitigating key cyber deficiencies and strengthening our defensive capabilities to counter malicious attempts to exploit U.S. technology. Ultimately, we seek to improve joint force offensive capabilities to stay ahead of foreign threats.

Taking Care of Our People

The dedicated men and women who make up the Department of Defense are the greatest strength and asset we have. That is why I have prioritized growing our talent, building resilience and readiness in the force, and ensuring appropriately accountable leadership as we address tough workforce issues.

The FY 2022 budget request prioritizes improvements to recruiting, retention, training, and education, and support for military spouses, caregivers, survivors, and dependents. We are also intensely focused on ending sexual assault and harassment and identifying and addressing extremist behavior in the Department, two of my top priorities.

We have established the Deputy's Workforce Council, a senior-level governance forum co-chaired by the Deputy Secretary of Defense and the Vice Chairman of the Joint Chiefs of Staff, which is dedicated to addressing the most pressing people management, personnel policy, and total force requirements. This includes issues such as diversity, equity, and inclusion; military healthcare and childcare; sexual assault prevention and response; and more. This forum will ensure that workforce issues remain a critical priority for Department leadership, including the Secretaries of the Military Departments and our commanders, and will help bring the same vision and disciplined execution to workforce issues that the Department devotes to weapons systems and budgeting.

Growing Our Talent

We accomplish our mission far better when we look to the full range of talent that the United States has to offer. That means drawing on a diversity of experiences and backgrounds, which will help drive creative thinking and adaptation, innovation, and cultural understanding. These will be vital to meet the complex challenges of today and the future.

Longstanding, systemic barriers for historically marginalized and underrepresented communities persist today. We must do all we can to ensure that we recruit and retain talent from the broadest pool of qualified, eligible candidates.

This spring, we updated the Department's policy on the open service of transgender people in the military. We welcome the recruitment, retention, and care of all qualified transgender individuals, and we look forward to their continued service with honor and dignity. The new policy reinforces that principle and also allows for a short implementation period for the Military Departments and Services to update their policies.

We also must continually grow and develop our workforce and create new avenues for advancement to drive the promotion and retention of our outstanding next-generation leaders. That requires thinking about our critical skill sets with an eye to the future, in particular by recruiting and training individuals in Science, Technology, Engineering, Math, and advanced technologies.

Building Resilience and Readiness

In building a resilient and ready force, we must recognize the key role that our military families play in supporting our personnel. The health and well-being of our service members and their families are inextricably linked to the readiness of our force, and we must do all we can to take care of them.

The effects of COVID-19 have been especially tough for our military families, putting a particular strain on those who have lost childcare or civilian employment. The FY 2022 budget expands our efforts to provide high-quality childcare to our military families, and we continue to provide virtual career support through Military OneSource.

The budget also addresses efforts related to our military electronic health records, through which the Department is working to implement needed modernization most effectively. We must get military healthcare right for our service members and their families.

We will also remain focused on addressing suicide and mental health issues in our joint force by enhancing services and support while seeking to reduce the stigma around seeking help.

Ensuring Appropriately Accountable Leadership

We must provide our workforce with a safe, secure, and welcoming environment that empowers them to do their best work and grow personally and professionally. At the most basic level, that means creating a workplace free of discrimination, hate, and harassment. It also means guaranteeing swift and clear accountability to anyone who does not live up to the highest standards of the Department.

Sexual assault and harassment have no place in our country and no place in the Department of Defense. For too long, the Department's leadership has tried to get a handle on this challenge, but we have not made significant progress. One case of sexual assault or harassment is too many, and we are losing the confidence of our junior enlisted personnel and officers because we have yet to make significant progress against this challenge.

That is why, at the direction of the President, I established a 90-day Independent Review Commission (IRC) on sexual assault in the military. The IRC is responsible for reviewing DoD policies and processes related to sexual assault and harassment to determine where we can improve as a Department.

The IRC will soon complete its work on all four lines of effort—accountability, prevention, climate and culture, and victim care and support. I recently received an initial set of recommendations from the IRC Chair, and the Department is currently reviewing those recommendations. It is critically important that we get this right, and I am grateful for congressional partnership as we seek to do that.

The vast majority of those who serve in uniform and their civilian colleagues do so with great honor and integrity. But extremism in our ranks can have an outsized impact on the Department, which will not be tolerated. The Department is focused on rooting out extremist behavior, and this fight is about our values, the Constitution, and the obligations in the Oath of Office we swear to uphold.

Behavior that defies or degrades our core values erodes unit cohesion as well as good order and discipline. It can also damage the health, morale, and readiness of the workforce.

I have moved immediately to meet this problem head-on. On February 5, I directed that within 60 days, commanding officers and supervisors at all levels conduct a one-day extremism stand-down to emphasize the importance of the Oath of Office we take, and to give military members and civilian employees the opportunity to participate in and continue to have this important conversation.

On April 9, I further directed several immediate actions to combat extremism, including reviews of what constitutes extremist activity, training for transitioning service members who may be targeted by extremist groups, and establishing the Countering Extremism Working Group to develop long-term recommendations to ensure all those who serve do so with honor and fealty to our values and our democracy. This must be a sustained effort, embraced by Department leadership.

Succeeding Through Teamwork

To accomplish anything we set out to do, the Department must operate as a unified team. That requires that we build unity among our leadership and ensure the right balance of civilian and military inputs to our decision-making and Department processes. In the last four months, we have made significant progress in rebuilding normal order in the Department to safeguard civilian oversight of the military.

In particular, we have established several bodies aimed at supporting the efforts of our Deputy's Management Action Group, the Department's principal governance body for management actions, including resource management and planning, programming, budgeting, and execution.

We have also established the Deputy's Workforce Council to address the Department's people management, personnel policy, and total force requirements, and task forces and working groups on COVID-19, China, climate change, and extremism.

Protecting the United States requires teamwork at every level: state, local, tribal, territorial, and federal. It requires cooperation with all who have a stake in our national security, including Congress, private industry, civil society, and the American people.

Our work to combat COVID-19 is a prime example of our commitment to working with our fellow Americans. Across the Executive Branch, DoD has worked closely with the Department of Homeland Security, including FEMA, the Department of Health and Human Services, and the State Department in efforts to end the pandemic. We are also investing in the defense industrial base to produce more personal protective equipment and test kits. And across the nation, we continue to work closely with the Department of Health and Human Services and State, local, tribal and territorial authorities to bring life-saving vaccines to the American people. At all times, our support to the nation is reliant on our partnership with Congress, which plays an integral role in providing the authorities, appropriations, and leadership necessary to have the most effective Department of Defense.

As part of our efforts to build teamwork into all we do, and in line with the President's intent, we are also leading with diplomacy, our first national security tool of choice. I am committed to ensuring that the Department of Defense continues to field a credible force able to back up the hard work of our diplomats around the world. We are working in lock-step with the State Department and other departments and agencies, and I took my first trip as Secretary of Defense with Secretary Blinken to reassure our allies and partners in the Indo-Pacific region that this Administration is committed to our relationships there. Secretary Blinken and I also traveled to Europe to assure our allies and partners of our commitment to the region.

When I traveled to NATO Headquarters earlier this spring, I shared a key message: we must consult together, decide together, and act together. Global crises, such as the pandemic, climate change, and

economic downturns, present significant dangers that span our borders. In many countries, internal strife, brought on by corruption, inequality and polarization, and transnational threats, such as violent extremism and criminal organizations, threaten stability around the alliance's rim. In Afghanistan, we went in together and we will leave together, after a substantial consultative effort. Meanwhile, aggressive and coercive behaviors from emboldened strategic competitors such as China and Russia reinforce the importance of collective security.

Conclusion

The challenges we face are many, but the Department stands ready to defend the United States against any enemy, foreign or domestic, just as we always have. We remain resolute in our commitment to protect the nation and will not shy away from any challenge.

The FY 2022 budget will help us fulfill that responsibility, and we are grateful for your support in working with us as we build the Department of the future. We need your help.

We also remain grateful for the tremendous trust that the United States places in our soldiers, sailors, airmen, Marines, guardians, and DoD civilian employees, all of whom will continue to defend our democracy, our people, and our way of life. Thanks to them, we will always operate from a position of strength. Thank you.

SUMMARY STATEMENT OF GENERAL MILLEY

Ms. MCCOLLUM. Thank you, Mr. Secretary.

General Milley, you are now recognized.

General MILLEY. Thank you, Madam Chair. And just a quick comms check. Can you still hear me? Over.

Ms. MCCOLLUM. Yes.

General MILLEY. Great.

Chair McCollum and Ranking Member Calvert and Chair DeLauro, the distinguished members of the committee, thank you for the opportunity today.

It remains my distinct honor and privilege to represent the soldiers, the sailors, airmen, marines, space guardians of the United States Joint Force, which, as Secretary Austin noted, is the most capable military in the world, for our troops are the best-led, best-equipped, best-trained force anywhere. And I want to personally thank Secretary Austin for his steady leadership and wise guidance.

Your Joint Force is standing watch, protecting America's interests in all domains around the globe, as we sit here today. Alongside our allies and partners, American soldiers, sailors, airmen, marines, and guardians are currently standing watch in 165 countries and conducting operations that keep Americans safe. And we deeply appreciate all of your thoughts throughout this Memorial Day weekend for what they do every day, 24/7.

The United States military is a critical component of national power, which, in concert with our diplomatic efforts, our economic engine, and our overriding hope, an example of the American message, will deter our adversaries and preserve the peace.

We are prepared to fight and win if those seek to attack us. Our allies and partners are undeterred. But force must always be a last resort when other means of achieving our ends have been exhausted.

The Joint Force appreciates the work that our elected Representatives do to ensure that we have the resources needed to train, equip, and man the force in order to be ready. The days of the Budget Control Act of 2011 and repeated continuing resolutions which eroded readiness are hopefully behind us for good.

The Joint Force will deliver modernization of our Armed Forces and security to the people of the United States with this fiscal year 2022 Presidential budget request of \$715 billion. While it is a modest increase from the enacted 2021 budget, it is a significant commitment of the people of the United States, that they have entrusted to us that amount of treasure. And we will work diligently to ensure it is spent prudently in the best interests of the Nation.

The fiscal year 2022 PB is the result of hard choices in a year in which the Nation has suffered economic hardship due to the COVID-19 pandemic. In alignment with the interim national security guidance, this budget delivers a ready, agile, and capable Joint Force that will compete, deter, and win across all domains and which is postured for continuous dominance into the future.

Consistent, predictable budgets, informed by the will of the people, are critical to our Nation's defense. And the passage of timely

budgets, instead of CRs, enable planning and prioritization, especially in the acquisition and procurement area.

The PB 2022 budget request increases readiness of the force by developing the Joint Force of the future, ensuring that people are our number-one priority, and positioning us to achieve through teamwork.

America's network of allies and partners is a strategic source of strength, and many enemies have grossly underestimated the United States and its people and our allies in the past. They have underestimated our national resolve. They have underestimated our capability. They have underestimated our skill and our combat power. And each has made a fatal choice which ended with their enrollment in the dustbin of history. The same will be true of any enemy that makes that mistake today or tomorrow. We are ready now, and we remain so in the future.

And we are also facing tough strategic choices, and we are being increasingly challenged with very capable potential adversaries clearly acting in opposition to our interests. So this budget prioritizes nuclear modernization, long-range fires, hypersonic technology, artificial intelligence, shipbuilding, microelectronics, space, cyber, 5G, and many others.

It strikes an appropriate balance between preserving present readiness and future modernization. But it is biased towards the future operating environment and the readiness it is going to take in the future for this fundamental change in the character of war that we are currently undergoing. It is now that we must set ourselves on the path to a modernized Joint Force that will ensure overmatch in all domains in order to maintain the peace.

Our job as your Joint Force, our contract with the American people, is that we, the United States military, will never lose a war. We will support and defend the Constitution of the United States and will do so 24/7, all day long.

And I look forward to your questions.

[The information follows:]

HOUSE APPROPRIATIONS COMMITTEE

DEFENSE SUBCOMMITTEE

STATEMENT OF
GENERAL MARK A. MILLEY, USA
20TH CHAIRMAN OF THE JOINT CHIEFS OF STAFF
DEPARTMENT OF DEFENSE BUDGET HEARING
MAY 27, 2021

Introduction

It remains my distinct honor and privilege to represent the Soldiers, Sailors, Airmen, Marines and Guardians of the United States Joint Forces-The most capable military in the world. Our troops are the best led, best equipped, and best trained force anywhere. Alongside our allies and partners, American Soldiers, Sailors, Airmen, Marines and Guardians are currently standing watch in 165 countries and conducting operations that keep Americans safe.

The United States Military is a critical component of national power which in concert with our diplomatic efforts, economic engine and overriding hope of the American message deters our adversaries and preserves peace. We are prepared to fight and win if those who seek to attack the United States and 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 man the force in order to be ready. The days of the Budget Control Act of 2011 and repeated continuing resolutions which eroded readiness are hopefully behind us for good.

The Joint Force will deliver modernization of our armed forces and security to the people of the United States at the FY 2022 budget request of \$715 billion. While it is a modest increase from the enacted FY21 budget, it is a significant commitment of treasure that the people of the United States have entrusted to us and we will work diligently to ensure it is spent prudently in the best interest of the Nation. This FY 2022 budget is the result of hard choices in a year in which the nation has suffered economic hardship due to the COVID-19 pandemic. In alignment with the Interim National Security Strategic Guidance (INSSG) this budget delivers a ready, agile, and capable Joint Force that will compete, deter and win across all domains and which is postured for continued dominance in the future.

Consistent predictable budgets informed by the will of the American people are critical to our Nation's defense. The passage of timely budgets enables planning and prioritization.

Strategic Environment

The current strategic landscape is witnessing rapid change and potential for increased threat to the peace and stability of various regions and for the world.

China: is our #1 geostrategic security challenge. History is not deterministic, war with China is not inevitable. China is clearly an increasingly capable strategic competitor and we need to keep our relationship at competition, not conflict. This is best done through integrated deterrence where the United States remains militarily strong relative to China and we retain military overmatch in all the various domains of war. If we remain militarily superior to our adversary, then conflict is less likely.

China is challenging the peaceful status quo in the Pacific, and is intent on revising the global international order by midcentury. China is conducting large-scale exercises in the region with an emphasis on amphibious landing, joint fires, and maritime strike scenarios. These actions threaten our allies and partners' autonomy, jeopardize freedom of navigation, overflight and other lawful uses of the sea, and compromise regional peace and stability. In short, China has and continues to develop significant nuclear, space, cyber, land, air, and maritime military capabilities.

Russia: retains a large nuclear capability to deter and threaten the United States and our allies and partners. Russia has also demonstrated the capability and will to conduct complex malicious cyber activities targeting American protected digital infrastructure, both military and commercial. Increasingly **Russia** uses irregular warfare and mercenary contract support, along with regular troops, to conduct aggressive operations, the most notable being illegal seizure of Ukraine's Crimean Peninsula and the ongoing conflict in eastern Ukraine. Its actions in Libya as well as Syria and elsewhere demonstrate Moscow's relative flexibility, resourcefulness, and opportunism.

North Korea: continues to enhance its ballistic missile capability and possesses the technical capacity to present a real danger to the US homeland as well as our allies and partners across the Indo-Pacific. They show no signs of moderation in their focus on military capability at the expense of their most vulnerable citizens and peace of the Korean Peninsula.

Iran: The current irregular warfare conflict between Iran and its neighbors threatens to push the Middle East into broader regional instability. Through its funding of terrorist activities, and a proxy army inside the borders of its neighbors, and through its ballistic missile programs, Iran seeks to revise the regional order and balance of power in Iran's favor.

Violent extremist organizations such as Al-Qaeda, ISIS, Al Shabaab, and others continue to export their 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 including 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. Through coalition efforts and in concert with the local governments affected by these groups, we will continue to ensure they do not possess the capacity and capability to exert their will.

As we move into the middle of the twenty first century, it is imperative that we **maintain our technological advantage** over our competitors. As the diffusion of military technology permeates the globe, it will become increasingly difficult to maintain the advantage that we've enjoyed for last seven decades.

This year's budget will adequately fund our department priorities, with bias on the future while ensuring we continue to deter the adversaries of today. The character of warfare is changing in a fundamental way. How we fight, the weapons, doctrine, organizations and leader development

are all undergoing a transformation not seen in scale and scope since the decades between World War I and World War II. The current rapid and radical change in technology along with its diffusive nature will provide decisive advantage to those nation states that best master the convergence and capability in precision munitions, all domain sensors, all domain command and control, robotics, hypersonics and artificial intelligence. Our collective success or failure to adapt the United States military to this future as a Nation is an increasingly challenging security environment.

Climate change presents a growing threat to U.S. national security interests and defense objectives. The adverse impacts of climate change are already being felt across the Joint Force in terms of increased operational demands, adverse impacts on our installations and new requirements for equipment and formations able to operate in a world defined by climate change and as a contributing factor to regional instability.

As we enter the third quarter of this fiscal year, it is imperative that we **finish the fight against COVID-19**. The Joint Force has contributed planning and logistics expertise during all phases of the pandemic response and continues to assist with vaccination efforts. We will continue to be able to provide equipment, personnel, and vaccine deployment and development assistance when called upon to assist. We all should be very proud of the conduct of our Joint Force and our ability to continue to deploy and defend the interests of the United States during this unprecedented global event as the pandemic has only modestly impacted the Joint Force's readiness.

Our alliances and partnerships are key to maintaining the international rules-based order that offer 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 threats, and meet the varied security challenges state and non-state actors, terrorism, climate change, and pandemics or any other threat that may emerge. We are stronger when we operate closely with our allies and partners.

Readiness and Modernization

The Joint Force is in a position where modernization is an imperative. We must avoid the tyranny of the now at the expense of our future. The United States as a nation has always had the advantage and time to conduct a long build up prior to the beginning of hostilities. The operating environment of the future will likely not afford us the luxury of time to project force so having modernized forces in sufficient size and readiness will be the key to sustaining deterrence and maintaining the peace and if deterrence fails then fight and win.

The Interim National Security Strategic Guidance, National Defense Strategy, and National Military Strategy discuss the re-emergence of strategic competition and directs the Joint Force to develop the capabilities and capacity to counter near-peer threats. Strategic adversaries are accelerating military modernization; to maintain military advantage, the Joint Force must adapt to the future operating environment. It is imperative that we maintain US technological

advantage over our adversaries and improve the concepts and doctrine which organize our conduct of warfare. In the fall of 2019, the Secretary of Defense tasked the Joint Staff to develop a threat-informed **Joint Warfighting Concept (JWC)** to address strategic conflict. The Joint Warfighting Concept will guide and revitalize how we organize, train, and equip the Joint Force. It will constantly evolve to help us shape our strategic environment and future operations. The JWC is a multi-year effort to develop a comprehensive approach for joint operations against future threats and provide a guide for future force design and development. Supporting concepts to the JWC describe key warfighting functions. They are fires, logistics, C2, and information advantage. The **Joint All Domain Command and Control (JADC2)** framework enables the holistic development and realization of the JWC and Supporting Concepts. JADC2 today is beginning to deliver the capability to sense, and act at speeds greater than our adversaries. JADC2 uses data, artificial intelligence, machine learning and predictive analytics to create decisive information advantage at all echelons in the Joint Force.

Utilizing cloud-based networks and agile software development, our modular open sourced systems will deliver the necessary strategic operational advantage required within both competition and conflict. Our JADC2 architecture is increasingly providing the attributes and interfaces to transition to a data-centric force able to operate at scale within multiple security levels and across all-domains and the electro-magnetic spectrum.

We will also revise our leader development Joint Professional Military Education to support the JWC. Specifically, we are increasing the amount of JPME devoted to the study of the changing character of war and both China and Russia as potential adversaries.

In addition to adapting our concepts, doctrine, training, and military education, we must continue to invest in capabilities that close gaps or sustain our advantage. Key investments in this budget are **nuclear modernization, long range fires, hypersonic technology, shipbuilding, space and cyber.**

Nuclear modernization: The **nuclear triad** has been the bedrock of our strategic deterrent for decades. Together, the three legs of the Triad allow us to hedge against geopolitical, technological, operational and programmatic risks. Our Cold War era systems have been extended beyond their original service lives and we must recapitalize our nuclear enterprise. Modernization of our nuclear forces, weapons complex, and requisite nuclear command, control, and communications (NC3) capabilities are a high priority. The Department projects the cost of modernization will peak at 7% of the DoD budget in 2029 before decreasing again. If these projections bear out, compared to past modernization efforts, the cost would be significantly less as a proportion of the overall DoD budget – the nuclear recapitalization in the 1980s cost 10.6% at its peak and 17% in the early-1960s.

Long range fires: provide key offensive capabilities that are both cost-effective and cost-imposing means of improving deterrence. By enabling power projection from standoff ranges, the risk to critical U.S. assets decreases while the defensive burden imposed upon the enemy increases. China has thousands of ground-launched theater-range missiles in its arsenal that

would be difficult for the U.S. to counter given its current inventories. Investments in long range missiles are a cost-effective strategy that improves our ability to compete with China. Recent budget requests have enhanced the lethality and resilience of the Joint Force by developing and expanding the long-range fires portfolio. PB22 funding is essential to mitigate offensive fires capacity shortcomings, enhance operational flexibility in multiple domains, and accelerate the transition of hypersonic weapons from development to procurement and fielding. PB22 balances long-range fires investments between both proven solutions and higher risk/high-payoff systems, such as hypersonic fires.

Hypersonic technology: Hypersonics are a suite of capabilities that provide transformational warfighting capability to our Joint Force. Our competitors are investing in this capability and in order to provide our Joint Force with the best possible technology we will need to invest to defend the nation, our allies and partners.

Legacy platform divestment: Continuing to purchase and maintain legacy equipment takes needed defense dollars away from the acquisition of systems that are needed for modernization. We need to divest select legacy platform to ensure that every defense dollar spent on programs and equipment that will be relevant in the next fight.

Shipbuilding: The industrial base continues to be the fundamental enabler for achieving and sustaining the Navy's future fleet. Our **shipbuilding** and supporting vendor base are a national security capability that needs support to grow and maintain a skilled workforce. The FY 2022 President's Budget reflects the Administration's strong commitment to continued American naval dominance, including a properly sized and well-positioned industrial base to meet the demands of our current and future defense needs. Commitment to the steady acquisition profiles underlying our budget is key to ensure the industrial base achieves the capability and capacity required to build and maintain the Navy's future fleet. The conclusions from past force structure analyses have been fully considered and 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. 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.

Space: 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. Competitors are testing and fielding space weapons that threaten not just our National interests and advancements in space, but those of all nations that rely upon space. Russia has recently tested both a ground-based anti-satellite missile and an on-orbit anti-satellite weapon prototype which threatens our space capabilities. In 2007, China destroyed a satellite to demonstrate their anti-satellite capabilities and the resulting debris will remain in orbit, threatening commercial, civil, and national security satellites for more than a century. Left unsecured, our capabilities in space may become strategic vulnerabilities.

Cyber: Adversaries continue to use operations in the cyber domain as a means to compete with the U.S. and pursue a position of advantage in crisis and conflict. 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/barrier to entry and anonymity that cyberspace provides make this domain a priority focus for adversaries to asymmetrically compete without escalation. 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 DoD to invest 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.

Advanced Capabilities

The changing character of war necessitates that we continue to modernize and innovate. We must be able to have clear linkage from sensors to shooters in an advanced information environment with the technology present to protect our warfighters, critical assets, and homeland. Investment in ensuring reliable supplies of **microelectronics**, advanced network technology such as **5G**, and **artificial intelligence** will ensure that we maintain our technological edge over our adversaries. The current globally distributed supply chains present vulnerabilities to the Joint Forces' ability to acquire necessary parts and technology in the event of a crisis that either prevents the manufacture, or shipping of material to our units in the field.

Advanced **microelectronics** are the key element in all of the Department's modernization efforts, from **Artificial Intelligence** and **Hypersonic Weapon Systems** to **Fifth Generation Wireless Networks**. High-speed connectivity will transform the way militaries operate. Tomorrow's warfighters will use local and expeditionary **5G** networks to move massive amounts of data to connect distant sensors and weapons into a dense, resilient battlefield network. Communication networks are fundamental to how the United States trains, plans, and engages adversaries. The U.S. military must utilize the connectivity provided by 5G to operate with the speed, precision, and efficiency necessary to remain effective and survivable in the future.

U.S. Army: The Army faces an inflection point that requires innovation, creativity, and entrepreneurship in the application of combat power. The battlefield is increasingly faster, more lethal, and more distributed. Overmatch will belong to the side that can make better decisions faster. 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. The Army's materiel modernization transformation is based on the six modernization priorities announced in 2018: Long Range Precision Fires, Next Generation Combat Vehicle, Future Vertical Lift, the Army Network, Air and Missile Defense, and Soldier Lethality. By 2035, the Army will realize its vision of a multi-domain force. Decisive outcomes in war are ultimately achieved on land where people live and maintaining a capable land force in the United States Army is key to our overall deterrence capability and national security.

U.S. Navy: America is a maritime nation. Our security and prosperity are inextricably linked to the seas. To sustain America's advantage at sea, we must deliver combat-ready forces to deter aggression and keep the seas free and open. Deploying battle-ready ships, submarines, and squadrons around the world—from the South China Sea to the Arctic—deters aggression, reaffirms our commitment to allies and partners, and keeps the seas open and free. Readiness underpins our forward-engaged posture and touches all elements of the Navy, from our shipyards and aviation depots to the steaming and flying hours our Sailors use to hone their skills. This budget prioritizes a fleet that is ready for combat over a larger fleet that is not ready to fight.

U.S. Marine Corps: The Marine Corps is optimizing the force for competition in the vast littoral regions of the globe by modernizing the force for Strategic Competition. As codified in law, Marines serve in cooperation with the Navy in the conduct of naval campaigns. As international relations are defined more by periods of cooperation and competition, the Marine Corps will focus on the competition phase before conflict by generating a persistent reconnaissance force for the Joint Force that has organic long-range, precision fires with mobility. Thus far, they have fully invested in their modernization by divesting of capabilities and capacities that no longer offer the best value for a maritime force in the contact and blunt layer.

U.S. Air Force: Moving forward, the Air Force will prioritize its resources to transform our equipment, support our Airmen, and bolster our core missions. To deter and defeat today's competitors and tomorrow's adversaries, this budget continues to re-capitalize our Air Force. The Air Force is retiring legacy platforms with a bias toward the future, so that we can focus on aircraft that can penetrate high end defenses. A cutting edge Air Force that is without peer is fundamental to successful land or sea operations and is the key element to maintaining deterrence and sustaining the force.

U.S. Space Force: The Space Force investments accelerate modernization of the entire Joint Force. Space Force capabilities underwrite, enhance, and enable Joint Force operations. The Space Force protects U.S. capabilities and freedom of operation outpacing actions of our competitors.

Ongoing actions to fully resource the United States Space Force (USSF) including transfer of the Space Development Agency (SDA) and unit transfers from the Army and Navy, will enhance the USSF's ability to organize, train, equip and present forces who can compete, deter and if necessary prevail should war initiate in, or extend to space.

People First / People and Families

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. Taking care of people is a critical readiness issue, it decisively impacts unit cohesion, recruitment, retention, and confidence in leadership. The Joint Force has been working to rid our military from the scourge of **sexual assault and sexual harassment** for years. We must do more to finally implement real and lasting change. Sexual assault undermines our military values and undercuts our ability to field a cohesive fighting force. **Sexual assault and harassment** prevention, response and accountability are leadership issues. We will hold DoD leaders at every level **responsible** for building a safe environment for our people, guaranteeing anyone who does not act within the highest standards of the Joint Force is held accountable.

We will not tolerate actions that go against the fundamental principles of the oath we share, including actions associated with **extremist** ideologies. Extremism also destroys readiness because it destroys cohesion. Extremism presents a complex and unique challenge to DoD. We must meet this head-on, and place the highest importance on treating all personnel with dignity and respect, in an environment free from discrimination, harassment, and maltreatment. We must be ever vigilant in our efforts to identify and counter extremist behavior within our ranks.

We continuously earn the trust of our service members and their families by ensuring that they continue to receive excellent quality of life benefits. Our premier all-volunteer force will continue to be the greatest in history only if we continuously affirm how much we value the service that our military and civilian members provide their country.

The Joint Force is committed to **growing our 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. Service to Nation is a worthwhile cause and we welcome all who are eligible to serve. Despite our inclusive approach only 29% of today's youth are eligible for military Service without a waiver. 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.

The Nation's largest employer-sponsored child care program supports our Joint Force, with more than 27,000 staff members providing daily care for more than 160,000 children aged birth to 12 years in approximately 700 nationally-accredited child care centers. **Taking care of families** is a holistic approach that ensures that our troops are ready to fight because they know their families are well cared for.

Housing our forces is critical to ensure that our junior and most vulnerable families are able to live in a healthy environment wherever the Nation calls them to serve. Families don't raise their hand and join the service. We as a nation owe it to our troops to ensure they have what they need. The Military Housing Privatization Initiative (MHPI) reform efforts are actions that will improve the tenant experience, rebuilt tenant trust, and maintain MHPI housing project financial

viability. The MHPI Tenant Bill of Rights (BOR), issued in February 2020, is a visible and important commitment in DoD's larger effort to regain resident trust.

Achieving Through Teamwork

We in the Joint Force are a team of teams. Sworn to support and defend the constitution, teamwork is our watchword. There is no daylight between the services when it comes to ensuring the security of the American people. The Joint Force is a collective effort, and no services ever fights alone.

Joint exercises with all services, allies and partners participating are a key component to our warfighting readiness. Ensuring that exercises such as Defender Pacific and Defender Europe continue and that we fastidiously increase the number of participants and complexity in these exercises will guarantee the best preparation for war and a mechanism to demonstrate our commitment and resolve to those who wish to question our friends and our capabilities.

Conclusion

The United States Joint Force is a flexible and adaptable force ready to deter, fight, and win our Nation's wars. The PB22 budget request increases the readiness of the force by developing the Joint Force of the future, ensuring people are our number one priority, and positioning us to achieve through teamwork. America's network of allies and partners is a strategic source of strength. Many enemies have grossly underestimated the United States and the American people in the past. They've underestimated our national resolve. They've underestimated our capability, our skill and our combat power, and each made a fatal choice which ended with their enrollment in the dustbin of history. The same will be true of any enemy that makes that mistake today or tomorrow. We are ready now, and will remain so in the future, we are also facing tough strategic choices, and we are being increasingly challenged with very capable potential adversaries, clearly acting in opposition of our interests. Our job as your 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.

FUNDING THE DEPARTMENT'S MISSION

Ms. MCCOLLUM. Thank you for your testimony.

We will now turn to questions. The order of recognition will be placed in the Webex chat so members can know their order in line. And, as usual, I usually say who the next couple folks are, so it is going to start with me, then Mr. Calvert, and then it will turn to Ms. DeLauro.

I am going to ask two questions in general and see how I am doing for time.

And I think the first question, Secretary Austin, I will just direct towards you. And you touched on this briefly, but I am going to ask you again directly. Is the \$715 billion sufficient to carry out the Department's mission?

Secretary AUSTIN. This budget provides us the ability to create the right mix of capabilities to defend this Nation and to deter any aggressors. And you heard me walk through many of the things that we are investing in. It adequately allows us to begin to prepare for the next fight and not the last one.

The short answer to your question, Chair, is that it in fact does provide us the ability to go after the capabilities that we need.

U.S. CAPABILITIES

Ms. MCCOLLUM. General Milley, if you were to assess China or Russia's capabilities in a conflict, how would you compare our own, including their overseas presence, ability to project power, and relationship with allies?

General MILLEY. Thanks for the question. And I think that, if we look back, say, 40 years or so, China has come from a peasant-based infantry, a one-dimensional military, and has developed a very significant capability in the last 40 years. They are not our peer or near-peer just yet, but they are rapidly growing.

And their objective is, by probably the mid-2030s, for sure by mid-century, to be the equal to or greater than the United States militarily. They are advancing rapidly in space; cyber; in the maritime, both surface and subsurface; and in air and ground.

They are a very, very significant competitor to the United States, but they are not yet our equal. But their intent is to be our equal.

EFFECTS OF DIVERTING FUNDS

Ms. MCCOLLUM. Another question for you, General. As you mention in your statement, it is imperative that we maintain our technology advantage over our competitors.

Could you please, to the best of your ability without the budget being in front of us, tell us the effects of when funds are diverted away from advanced capabilities and towards less capable weapons systems? In other words, what happens when you can't, you know, put the purchase power where you think it needs to go?

General MILLEY. In my view, we are experiencing a change in the character of war, where we have a variety of very advanced technologies that are all converging in time and space over the next 10, 15 years. Those are hypersonics, precision munitions, robotics, artificial intelligence, and a wide variety of other technologies.

If we do not put a lot of money towards those and developing them to a level of capability to deploy in our Joint Force, then we will be at a significant disadvantage to those countries that do develop them. China is investing heavily in all of those capabilities.

We need to definitely do that. This budget does a lot of that. It will have to be a sustained level of effort over many years, but it is critical to the defense of the United States that we invest in advanced technologies.

Ms. MCCOLLUM. Thank you.

Secretary AUSTIN. Chair, if I may—

CLIMATE CHANGE AND THE IMPACT TO DOD

Ms. MCCOLLUM. And then my final question for you, Secretary Austin, is, how has climate change, extreme weather events, and lack of resiliency cost the Department? And how does it impact our installations, our readiness, and our operations?

Secretary AUSTIN. Well, as you have heard our President say, climate change is an essential element of our national security, and I absolutely agree with that.

It impacts our plans, missions and capabilities, and our readiness. It creates instability in places that are important to us. And, as you have mentioned, it also provides challenges for our installations, as we have seen a number of elements come together, erosion of our shores being one of them.

It will be factored into our planning and our operations going forward. I think there are opportunities to invest in technologies that help us better and more efficiently store water, energy, and power. And, also, you will see us investing in technologies that are relevant to our warfighting mission.

And, as you know, Chair McCollum, we have one of the largest civilian fleets, or non-military—non-tactical fleets, excuse me, in the inventory. And so converting some of those vehicles to electric vehicles, I think, could save a lot of energy.

And I will stop there.

Ms. MCCOLLUM. Thank you very much.

Members, I took under 5 minutes, so I will yield back and turn to Mr. Calvert for his questions and then Ms. DeLauro.

TOP-LINE FUNDING REQUEST

Mr. CALVERT. Thank you, Madam Chair.

Secretary Austin, many of my Republican colleagues and I are very disappointed by the top-line request for fiscal year 2022. You have heard from my allies or my compadres both in the House and the Senate. I am sure you will hear more.

I have heard some say that the budget is an increase of \$11 billion, but, when you factor in inflation—and, by the way, inflation is going up, not down—it is actually about a 0.4-percent cut.

When you consider the massive readiness and modernization challenges facing all our services and the pace by which China is developing its military capability, this request, in my opinion, is insufficient.

I strongly believe that, to maintain our warfighting edge, we must increase the defense top line by 3 to 5 percent above inflation, as Secretary Mattis set forth in his National Defense Strategy. And

I suspect we will probably have another Defense Strategy reflecting these new budget numbers.

It is becoming more clear, Mr. Secretary, every day that the COVID-19 virus came from a lab in Wuhan, China, and China was aware of that from the beginning. That is who we are dealing with.

SOUTH CHINA SEA

China's budget is going up by double digits. They have significantly more ships, bombers, fighters, missiles in the South Pacific than us, and including our allies. I would say you are right, China is not yet our peer in worldwide military capability, but do they exceed our capability in the South China Sea?

Secretary AUSTIN. Thank you, sir. My assessment is that they don't.

First of all, you have heard me say before that China is currently and will remain our pacing challenge going forward. You have seen me do a number of things to try to continue to focus the Department on the China challenge.

We established a China task force that is about to complete its work and will inform, you know, our efforts going forward here and help us to create synergies and eliminate duplication and more efficiently focus us on the China challenge.

Again, China has no allies. We have many allies around the world. And we certainly have some strong allies and partners in the Indo-Pacific region. And that gives us greater capacity and greater capability.

And you have seen us very recently begin to try to strengthen those alliances. You know, I made my first overseas trip, along with Secretary Blinken, out to the Indo-Pacific region, and I think it was a very well-received trip.

We are investing in the right mix of capabilities that I think will continue to give us the advantage over time. We have to have the ability to understand faster, to make decisions faster, and to act faster. And I think the kinds of things that we are investing in will certainly allow us to do that.

We will never seek to—numbers are important, but we will never seek to match our adversaries one-for-one. We will always seek to develop a much greater capability. And that is our approach, and I think we are on path to achieving that.

Mr. CALVERT. Well, thank you, Mr. Secretary, but I still think numbers matter. I added up the capability of Japan, Australia, most of our allies in the Indo-Pacific area, along with our capability in the South China Sea, and China's capability is still, in numbers, significantly larger than that of us and our allies.

And so I worry about Taiwan, as others do. I worry about continuing aggression in that region and, from that, potentially in other locations. And this is not just my concern; it is a concern of, as you know, many people around the world.

So I hope that we are right, but, you know, as my old man used to say, hope is not a planning strategy. And I don't want us to be in that position as a Nation, where we are put in a position of weakness, which is not where we want to be.

With that, I yield back my time, Madam Chair.

Ms. MCCOLLUM. Thank you.

I will recognize Ms. DeLauro when she next is able to join us. Mr. Cuellar, you are now recognized for 5 minutes.

Mr. CUELLAR. Yes. Thank you, Madam Chair and Ranking Member. And I want to thank both the Secretary—

Ms. MCCOLLUM. Mr. Cuellar, your volume is not doing good. The connectivity is not good.

CHINA AND RUSSIA INFLUENCE IN THE WESTERN HEMISPHERE

Mr. CUELLAR. Okay. Can you all hear me better?

Ms. MCCOLLUM. Speak up a little louder, please.

Mr. CUELLAR. Okay. Thank you. Thank you, Madam Chair.

Mr. Secretary, thank you for being here with us.

And, General Milley, it is also a pleasure seeing you again.

I want to thank you all for the service. And, certainly, I will see some of your parents, men and women, at Randolph Air Force Base. I am speaking at the high school there. So I appreciate your men and women that serve our country.

I have two questions, one on rare earth minerals, and the other one has to do with the Russian/China influence in the Western Hemisphere.

A couple years ago, I added to the National Defense Authorization language to do a Western Hemisphere resource assessment to see what China and Russia and Iran, to an extent, are doing there. And, as you know, SOUTHCOM has done a great job at getting us this information.

This report was due on December 31, but because of the pandemic and because it was combined with another independent review within Section 1262, we are waiting for this report to come out on July 31 of this year, in the next couple months.

As you know, it is not only China and Russia, but we also have the transnational organizations and smuggling that are bringing in—you know, I mean, they make, it is estimated, over \$90 million bringing people in.

People usually think of Mexicans and Central Americans, and we appreciate—I was looking at your testimony—the work that you all are doing with the Central America military and defense institutions. Thank you for doing that. But I also want to say that we are now getting a spike of people from other places, from about 150 countries. In particular, we have people from India, from Romania, that are now coming into the southern border because of their perspective, how easy it is to come into the United States.

So I want to see if you have any information on the Western Hemisphere resource assessment. Because we can't add money till this assessment is done. And I know Mario Diaz-Balart, who has this particular area, knows this very well. So I want to see where we are with this particular assessment, because we want to be helpful, but we have to get this assessment not only on Russia and China but the transnational organizations in the Western Hemisphere.

Secretary AUSTIN. Well, thank you, sir. I don't have any specific comments on the assessment that you are referring to. But, once I review the assessment, certainly, I will get back to you and provide you my assessment.

I would only say that, you know, the region is incredibly important to us. We maintain a focus on that region, as you know. SOUTHCOM continues to do a great job of making sure that we are working with our partners and allies to ensure that we maintain significant influence in that region.

Just this last year, for example, Admiral Faller and his team have either conducted or plan to conduct nine exercises, which are joint exercises, which help to build partner capacity and begin to help our partners focus on those kinds of issues that you raise.

I will certainly get back to you with my assessment on the assessment that you raise.

Mr. CUELLAR. All right. Well, thank you so much. I appreciate it.

General Milley, I don't know if you have anything to add. Otherwise, I will yield back the balance of my time and then ask the rare earth mineral question at the next round.

General MILLEY. I don't, Congressman. Thank you. And I will provide my assessment when I see the report. And I will be dutiful about that and give my advice to the Secretary of Defense and provide some feedback to you as well.

Mr. CUELLAR. Thank you so much.

Thank you, Madam Chair. I yield back the balance of my time.

Ms. MCCOLLUM. Yes. And anything you can do to help us with as we are planning the budget, gentlemen, would be greatly appreciated, with the report not coming out till July, and we are going to have to be moving before then.

Mr. Rogers, you are recognized now, please, sir.

Mr. Rogers, could you please—there you go. You are unmuted now.

MODERNIZATION INITIATIVES

Mr. ROGERS. Hear me okay?

Ms. MCCOLLUM. Yes, I do.

Mr. ROGERS. Secretary Austin, General Milley, thank you both for being here today, and thank you for your service to our country.

I want to discuss a topic that is on the forefront of many of us on the committee, and that is competition with China and Russia. Undoubtedly, we are at a crucial moment here. We are beginning to lose our critical competitive edge in multiple domains.

How does the fiscal 2022 DOD budget address the modernization initiatives that need to occur?

Secretary AUSTIN. Well, thank you, sir.

I think, when you do see the budget, you will see substantial investments in the modernization of our nuclear enterprise. You will see investments in missile defeat and defense. You will see a significant investment in our Naval forces; long-range fires, as the Chairman mentioned earlier; and probably the largest-ever request for RDT&E for development of technologies.

So, you know, our effort, again, is to make sure that we have the ability to leverage quantum computing, to begin to leverage AI, space-based platforms, and not only just leverage them but begin to network these capabilities in ways that they have never been networked. And that will provide us significant capability.

We recognize the fact that China is attempting to make strides in cyber and space. But we are confident that the mix of capabilities that we are investing in will put us in the right place in terms of maintaining a competitive edge and increasing that competitive edge going forward.

COOPERATION BETWEEN AGENCIES

Mr. ROGERS. The President's interim national security strategic guidance mentions the need to develop capabilities to better compete and deter gray-zone actions by our adversaries, including, quote, "irregular warfare," unquote.

How can the Department collaborate better with the State Department and the intelligence community to deter China and Russia where they threaten our interests through such means?

Secretary AUSTIN. Well, coming into the job, sir, one of my objectives, which we have been able to achieve and sustain and we will sustain going forward, is to make sure that, number one, we always lead with diplomacy, but, most important, to make sure that I have a great working relationship with the Secretary of State and also with the Director of National Intelligence, as well as the Director of the CIA.

And we have routine meetings on a weekly basis to share insights and collaborate on issues. That spirit of cooperation is permeating all the way down to the lowest level, and not just on its own; it is not something that we not only encourage but require.

But, to your point, I think that we have seen, in the past, some interesting techniques employed by the Russians and others. And, certainly, we want to make sure that our collaboration with our interagency partners provides us the ability to close down any gaps and seams that would put us at a disadvantage.

And I will stop there.

WHOLE-OF-GOVERNMENT APPROACH

Mr. ROGERS. Well, the bottom line is, we are in a worldwide competition, both with Russia and China, and we have to adapt and adopt a whole-of-government approach to the problems. Do you agree with that?

Secretary AUSTIN. I do agree with that. And, you know, it is an approach that I live by. It is something that I emphasize each and every day.

And, quite frankly, I think that the interagency processes that are facilitated by the National Security Advisor and the White House, I think, have been superb in terms of bringing all of our efforts together.

A good example of this collaboration you have seen with COVID-19. DOD wasn't the lead on this effort, but, you know, right away we volunteered to lean into this effort, because anything that takes away, you know, almost 600,000 American lives, DOD wants to be a part of that solution. So, you know, led by another agency, but, certainly, we did everything that we could to support the effort.

But I think this interagency approach, this whole-of-government approach that you mention, is absolutely the right approach. I think you will see that in our efforts to compete with China and everything else that we do.

And I will stop there.

Mr. ROGERS. Thanks for your service.

Ms. MCCOLLUM. Thank you very much for the questions, Mr. Rogers.

We now have Mr. Kilmer, who will be followed by Mr. Womack. Mr. Kilmer, please.

SHIPYARD IMPROVEMENTS AND IMPORTANCE

Mr. KILMER. Thank you, Madam Chair.

And thank you both for appearing before the committee today and for your service to our country.

As you both know, our public shipyards are key to maintaining the readiness of our carriers and our subs, as well as supporting our national defense posture.

As you mentioned in your written testimony, Chairman Milley, if our warfighting ships aren't ready, our forward-engaged posture is at risk.

Despite their critical role, though, our public shipyards have been chronically underfunded. Oftentimes they are relying on infrastructure dating back to the early 20th century. That lack of funding has led to several potential points of failure at our yards. I know at Puget Sound Naval Shipyard, in my neck of the woods, one of the six drydocks will be functionally obsolete by the early 2030s. The shipyard will not have a drydock capable of maintaining Ford-class carriers. There are real concerns about the infrastructure in the event of an earthquake. And that leaves the Navy at a disadvantage at a time when our adversaries are on the rise and when America's Naval dominance is indispensable.

So, in order to address the crumbling facilities at our public shipyards, the Navy released its Shipyard Infrastructure Optimization Program, or SIOP, in 2018, which provides \$21 billion over 20 years.

I very much support this, and I am worried that an absence of strong leadership will lead to costly delays in these investments. So two questions.

One for Secretary Austin: How are you helping to prioritize the Navy SIOP and ensure that it is not displaced by other budgetary priorities?

And, General Milley, I would love for you to chime in on how the SIOP fits into our defense strategy overall to counter our adversaries, including China.

Secretary AUSTIN. Well, thanks for the question. And I think it is a very important question.

You know, we have the most powerful and dominant Navy in the world, and it will remain so on our watch. I think you will see when we release the budget that the fiscal year 2022 budget does ensure a ready, capable, and sustainable fleet. I think you will also see that we are going after the right mix of capabilities to maintain the dominance that we currently enjoy.

And I will just say that the SIOP initiative is a great initiative to ensure that our public shipyards remain relevant and capable. And when you see the budget, you will see that we continue to invest in this initiative, and we will continue to do so throughout.

Mr. KILMER. Thank you. I am glad to hear that.

General MILLEY. And, Congressman, on the piece about how it is integrated into the strategy, the strategy is an ends-ways-means construct, as you know. And the industrial base and the shipyards are critical components of that.

We always think of the pointy end of the spear. That is important as to where the ships are, the soldiers are, the sailors, and so on, and what is dropping bombs, et cetera. And oftentimes we overlook those things that are not at the pointy end of the spear, which are things like the industrial base.

The SIOP is critical. It is part of the integrated strategy. Secretary of Defense Austin has coined a term, "integrated deterrence." And the industrial base is critical to that. That infrastructure is so very important to our ability to develop our military and to project power. So it is very integrated and very, very important to our overall success.

ADDRESSING INFRASTRUCTURE DEFICIENCIES

Mr. KILMER. Thank you for that.

I want to stick on the infrastructure theme, mindful of the infrastructure surrounding our installations as well. We see, at times, congested roads leading into our bases, issues around the resiliency of those roads in light of seismic events or rising sea levels in my neck of the woods. There is a stretch of road leading into Kitsap's Naval installations which is vulnerable to climate-related threats such as storms and flooding.

A program that gets to the root of that is the Defense Community Infrastructure Program, or DCIP, which was created in 2019 to preserve and enhance military readiness by providing grants, facilitating cooperative agreements with local communities. I think Congress should keep vital programs like DCIP on track.

Secretary Austin, can you just expand on the DOD's collaboration with local communities to identify and address infrastructure deficiencies and whether there is anything Congress ought to do to step up and help with that?

Secretary AUSTIN. Yeah. Thank you, Congressman. We continue to assess, you know, our efforts and what we are doing to invest in our defense industrial base and invest smartly. We are very much focused on creating opportunities for our people here at home and making sure that our supply chains are in the right place. And all of this kind of meshes together and feeds into that.

We will remain sighted on this issue, and we will do everything we can to make sure that, you know, we are protecting our ability to build things and create things here at home. And this is all a part of that.

Mr. KILMER. Thank you.

Thanks, Madam Chair. I yield back.

Ms. MCCOLLUM. Thank you, Mr. Kilmer.

Mr. Womack, followed by Mr. Aguilar.

SERVICE ACADEMY BOARD OF VISITORS REVIEW

Mr. WOMACK. Thank you, Madam Chair.

To the Secretary and to the Chairman, I appreciate your service in uniform.

Secretary Austin, thank you for coming to West Point. Really enjoyed your speech to the cadets. I thought it was well-written, well-delivered, and well-received. And I am sure the nearly 1,000 lieutenants that were commissioned under your supervision that day are going to serve their country in a very exemplary manner. But thank you again for coming to West Point.

And on the subject of West Point, since I chair the Board of Visitors, I would like to get a commitment from you to release the service academy board of visitors review as soon as possible. You know, it has been 4 months since you began that review. And I will note, the appointment authority really is outside the DOD. We would really like to get our boards of visitors back functioning again, and I hope that very soon you will allow us to do so.

Secretary AUSTIN. We are working this issue very diligently, Congressman, and you have my commitment to move out expeditiously on this. But we want to make sure we get this and other pieces of this right.

And I acknowledge that appointment to that board is not the responsibility of the Secretary of Defense. But that board, along with all the other boards that we have, are part of a larger review, as you know, and I think the larger review is the right thing to do. But I certainly recognize and appreciate the importance of having that board in place as soon as possible.

And let me end by saying I really thank you for your continued support of the United States Military Academy at West Point, and what I saw up there was evidence of your sustained focus. And so thank you very much for that.

Mr. WOMACK. Honored to do it.

DEFENSE BUDGET AND RISK

Sign me up as one of the people a little bit concerned, in fact, a lot concerned, about the defense budget. Even though it is a point ahead of the 2021 budget, it is not keeping up with inflation. And that, to me, is of great concern.

And there will be attempts, I am sure, during this hearing, to have you talk more about the budget and its impact, but where are we accepting risk from a requirements perspective with regard to the top-line numbers that we are looking at?

Secretary AUSTIN. As you know, what we have done is really taken a hard look at the President's interim national security strategy guidance that was published early on. And, also, our efforts were informed by my message to the force, in terms of what we want the force to focus on. By making sure that we are focused on acquiring the right kinds of capabilities that we need to be relevant in the future fight—and we talked about some of those capabilities already—I think this puts us in a good place.

And what it requires us to do is to make sure that we work with the services and take a hard look at those capabilities that will not be relevant in the future fight and really begin to no longer invest in those kinds of capabilities, but yet focus on the things that we know we will need, and also those things that have reached a point in their lifecycle where they are so expensive to retain and maintain that they don't continue to provide an advantage for us.

So, you know, what we are doing is optimizing our efforts by making sure that we are focusing on the right things and not continuing to invest in things that are not as relevant going forward.

Mr. WOMACK. Yes.

LONG-RANGE FIRES

Last question in this round is about long-range fires. I will direct it to General Milley.

We have seen some interservice squabbles regarding long-range fires. I see it as a clear manifestation of how threatened, maybe, the services feel in a constrained budget. But long-range fires are crucial to any conflict and particularly what we are looking at now with near-peer adversaries.

Mr. Chairman, how are we deconflicting the arguments about long-range fires and specifically the importance they are to the ground forces?

General MILLEY. Yes, thanks, Congressman.

As you know, we are developing the Joint Warfighting Concept, which is the vision of how we want the future force, the future Joint Force, to fight. It is a concept, not yet doctrine, so we are experimenting with a variety of concepts within that. One of those concepts is joint long-range fires.

And, within that, each of the services play a key role respective to their service. So the Navy provides joint long-range fires, the Air Force provides joint long-range fires, the Marines are developing joint long-range fires, and the Army is developing joint long-range fires. Each of them bring a unique and distinct capability to integrate into the Joint Warfighting Concept of the future.

This budget—you said we are taking a risk. This budget is biasing the future over the present slightly. When I first became Chief of Staff of the Army 6 years ago, when I looked at that budget, we were mortgaging our future to pay for the present. Today, it is the opposite. We are trying right now to put downpayments on investments that are going to pay huge dividends 5, 10, 15 years from now for a future force that will be able to compete successfully with any adversary out there, to include China.

Long-range precision fires are one of many of those capabilities. And it is important that all of the services have that capability to present the enemy with multiple problems to solve simultaneously so that we are inside their decision loop and they won't be successful.

Mr. WOMACK. Thanks to the gentlemen.

Madam Chair, I yield back.

Ms. MCCOLLUM. Thank you.

Mr. Aguilar and then Mr. Carter.

DOMESTIC EXTREMISM IN THE DOD

Mr. AGUILAR. Thank you, Madam Chair.

Thank you, Mr. Secretary and Chairman, for being with us today.

Following news reports about the prevalence of White supremacists and White nationalists joining our military with the intent of bringing credibility to their own hateful causes, in the fiscal year 2020 NDAA I worked with my colleagues to secure language that

required DOD to conduct a review to prevent domestic extremism in our Armed Forces.

In February of this year, the report was released to Congress and confirmed that White supremacist organizations have actively worked to infiltrate the—and to gain combat and tactical training and identify new recruits and the use of Active Duty servicemembers to bring recognition to their organizations.

The report recommended that DOD utilize FBI's existing infrastructure to identify questionable or concerning tattoos, create a consistent definition of domestic extremist ideologies, and conduct an interagency review of SF-86 and consider adding a designator to discharge papers related to domestic extremism.

As a result, I introduced legislation, the Shielding Our Military from Extremists Act, which would require DOD to act upon the recommendations within 6 months.

Mr. Secretary, do you agree that this is a crucial issue? This is something, obviously, you highlighted in your written testimony, but can you talk about what DOD is going to do to enact each of these recommendations in a quick manner?

Secretary AUSTIN. Well, first of all, thank you and thank you for your work in years past to focus on this issue.

And, again, let me say up front—and I suspect you believe the same thing—that 99.9 percent of our troops who are serving do so with dignity and honor. They embrace the values that we espouse in the Department, and I feel very confident of that. But, you know, a small number of people can have an outsized impact on a great organization, and that is really the concern.

And so, we have increased our efforts to, number one, as people apply to come into the military, screen people, do a better job of screening people and making sure that we are bringing in the right kinds of people that don't bring additional baggage with them.

Our stand-down that you saw us conduct earlier this year, that effort was just to make sure that our leadership is focused on making sure that we are creating the right climates for our troops to live and operate in and make sure that people are aware of what some of the signs of extremist behavior or radicalization can be.

So, as a part of that, you know, a follow-on to that, we stood up an extremism working group that remains sighted on this issue at my level and will continue to help define key terms and outline policies.

We are doing a lot. But, again, you know, our major focus is warfighting and will remain warfighting, but we have a clear responsibility to create a proper and healthy environment for our troops to live and work in.

General MILLEY. If—

Mr. AGUILAR. I couldn't agree more.

I am sorry, General?

General MILLEY. If I could just make a comment, this is a function—it is not just extremism and rooting that out for its own sake. It has to do with combat power and cohesion of our organizations and the divisiveness that can infect our organization and rip them apart.

Cohesion is the fundamental—it is much more important than hypersonics. Cohesion in leadership and a cohesive organization is

a much greater combat multiplier than any machine or mechanical thing out there. And when you have extremists in the ranks or sexual assault, for that matter, or any of these other things, they are divisive, in and of themselves, to an organization that prides itself on teamwork.

And the numbers are small, we are confident of that. We don't actually know, because we don't have good data. But let's just say it is one-tenth of 1 percent. That is 2,000 people. What if we had 2,000 terrorists, ISIS terrorists or al-Qaida terrorists, or Nazis or fascists or Ku Klux Klan in our ranks? That could be extremely divisive.

It is very important that we take on what the Secretary has asked us to do, and we intend to do it. There is no room for that in the United States military.

Mr. AGUILAR. Mr. Secretary, just briefly, would you agree with me, though, that enacting these recommendations into law, we would safeguard against future administrations potentially reversing policies unilaterally?

Secretary AUSTIN. I think it requires a sustained effort, and I think it requires the right policies and oversight.

And so, without being able to specifically focus on each element of the proposed legislation, I couldn't answer that question specifically, but I can certainly take that question for the record.

Mr. AGUILAR. I appreciate it, Mr. Secretary. We know policies can be changed, and so I think those of us want to make sure that we protect our troops and make sure that it has a lasting impact as well.

I yield back, Madam Chair. Thank you so much.

Ms. MCCOLLUM. Thank you for your work on this, Mr. Aguilar.

And, gentlemen, thank you for your answers.

We will now go to Mr. Carter and then Mrs. Bustos.

MODERNIZATION AND THE IMPACT TO ARMY FUNDING

Mr. CARTER. Thank you, Madam Chairman.

And welcome, gentlemen.

General Austin, we first met at the 10th Mountain Command in Afghanistan. And welcome. We are proud to have you take on this tough job.

Chairman Milley, we have been friends for quite a while, and thank you for the good job you are doing. We are proud of you.

Modernization of legacy systems. Proof of concept of these, of Modernization, Displacement, and Repair Sites, was launched at Fort Hood in November 2020 with the intent of getting rid of excess equipment, increasing readiness through lateral transfers, and turning in unserviceable equipment for repair. Modernization is supported by getting rid of what is not needed, aligning equipment where it best supports the mission, and getting non-mission-capable equipment repaired and transferred.

The Army appears to me to be the bill payer for the Air Force and Navy budgets in fiscal year 2022 while simultaneously focusing on its six modernization priorities. How crucial are the programs such as MDRS in allowing the Army to be physically responsible while continuing to push our modernization efforts?

Could you understand me?

Secretary AUSTIN. I didn't get the very tail end of the question, but I think I got the gist of the question, Congressman. I think your concern is whether or not the Army is going to be the bill payer for modernization in the Navy and the Air Force and the Marine Corps.

Let me start this answer by saying, let me applaud the tremendous work that the Army has done in terms of being forward-looking and really working hard to develop new or increased capability to do some of the things that the Chairman mentioned earlier, you know, do their part in providing long-range fires, to do their part in linking systems together to be more effective.

And so, the Army has really done a lot of great work over the last 20 years in places like Iraq and Afghanistan. And, as we see Iraq begin to wind down a bit—not wind down, but close out—again, that will create some opportunities for them going forward as they no longer have to invest in certain kinds of things to sustain that effort.

But let me assure you that, you know, from my perspective, our effort is not to make the Army be the bill payer for the Air Force and the Navy. The Air Force and Navy are also taking a hard look at themselves, and the Marine Corps as well, to see what they should no longer invest in so that they can create opportunities for themselves and invest in, you know, increased capability going forward.

You have seen a great example with the Marine Corps lately as they have decided to divest tanks and get out of the armor business and develop other capabilities, and I applaud the Commandant for his forward thinking.

General MILLEY. Chairman Milley, just real quick.

The Army is not going to get shortchanged, in my view. I have looked at this budget very closely, along with General McConville and others. I think it is very balanced amongst all the services and develops their future capabilities.

The big six that the Army is developing for their modernization program—the long-range precision fires, the Next-Generation Combat Vehicle, Future Vertical Lift, et cetera—all of those systems in their big six priorities are all being very well-funded in this budget.

ARMY FUTURES COMMAND

Mr. CARTER. Thank you. Thank you very much, General Milley. I appreciate that, because it is a concern.

The Futures Command is in my neighborhood, and we are very proud of it. How do you feel it is doing as it advances the modernization of our military and what we are going to do in the future?

General MILLEY. I think what you said, Congressman, is how is the Army doing? Is that what you said?

Mr. CARTER. Futures Command.

Ms. MCCOLLUM. The Army's Futures Command.

General MILLEY. Oh. I was just down there a few weeks ago in Austin, Texas. It was a brilliant idea by—actually, as you well know, Senator McCain was instrumental in coming up with the concept and the idea. It was developed for a couple of years, and then we finally fielded it down there a few years ago.

I went down there and looked at General Murray and all the team. They have come a long way, and they are really on the cutting edge, and they are doing some great stuff for the Army, but, broadly, for the Joint Force. They are really moving out and moving out quickly.

And, as you know, that is a hub of innovation, really, and becoming a national hub of innovation in the commercial world as well. So we are very proud of Futures Command, and it is doing very, very well.

Secretary AUSTIN. And I would just pile on with that, Congressman, and echo what the Chairman has said. You know, I know the people involved, and I have kind of seen what they are doing. It has been very, very impressive. I am very encouraged thus far.

Mr. CARTER. Well, central Texas is very proud of Fort Hood and the Futures Command, and we want to make sure they are taken good care of.

Thank you both. Thank you for your service.

I yield back.

Ms. MCCOLLUM. Thank you. I am sure central Texas is very proud of you, Mr. Carter. Thank you for struggling with your voice with your question.

Mrs. Bustos and Mr. Diaz-Balart.

MANUFACTURING AND THE FUTURE OF DEFENSE SPENDING

Mrs. BUSTOS. All right. Thank you, Chairwoman McCollum, and I also want to thank Ranking Member Calvert for holding the hearing today.

And, General Milley and Secretary Austin, thanks for your service. Thanks for your leadership.

I appreciate what Congressman Carter just asked, because that was among my questions. Really grateful for you saying that the Army will not be left behind. With the Rock Island Arsenal in the congressional district that I serve, that is very, very important to me.

Let me then go to, the National Defense Strategy places tremendous emphasis on the use of disruptive technologies in a way to counter threats from our near-peer competitors. Additive and advanced manufacturing is one of those disruptive technologies that has the potential to significantly change how we address supply-chain issues, completely rethinking how we can develop certain weapons systems with significant savings. And I know we see some of these real opportunities to have advanced manufacturing revolutionize how we do infrastructure work as well.

I ask this because the Rock Island Arsenal, again, in the congressional district that I serve is designated as the Army's Advanced Manufacturing Center of Excellence and has been doing a lot to support the Army's broad goals for this capability. I would like to get your thoughts on the importance of advanced and additive manufacturing to the future of defense spending.

And, Mr. Secretary, why don't we start with you, and then, General Milley, if you could add to what the Secretary has to say.

Secretary AUSTIN. Thank you very much for the question.

And I think this capability is—you used the term “disruptive.” I absolutely agree that it is these kinds of things that will increase

that competitive edge that we want to maintain and increase. And so being able to do things differently but also do them in forward-position areas, I think, is critical.

The work that is ongoing, I cannot say enough about. And my goal will be to leverage the work that is ongoing but to also increase our efforts and speed things up, if at all possible.

General MILLEY. And I would add to that, Congresswoman, as we look at the future operating environment, the change in the character of war, and the Joint Warfighting Concept, some of the attributes that jump out at you are: units are going to have to be smaller, more widely distributed; they are going to have to be able to sustain themselves, because long lines of communication that are quite vulnerable to enemy activity may or may not work in some future conflict.

So units are going to have to be very self-sufficient, and additive manufacturing is a key component to that in the logistics chain, so the supply chain. You are going to have to produce your own things. Your own spare parts are going to have to be produced locally for you to function as a unit.

That is going to be true on ground, probably true at sea. And perhaps air might be a little different, but, for sure, for ground forces, that will be a critical component to success.

Mrs. BUSTOS. Very good.

Secretary AUSTIN. Yes, so we are looking forward—

Mrs. BUSTOS. General Milley, I know that you have been to the Rock Island Arsenal, and we would love to have you back. And, Secretary Austin, we would love to have you there as well. There is really a lot to show off there, so I will extend that invitation. I know you probably get a lot of these.

NATIONAL GUARD'S C-130 DIVESTMENT

I do have a little bit more time, so I am going to switch gears to the Air Force for a second.

We have an Air National Guard base, the 182nd Airlift Wing, in the congressional district I serve, as well, in Peoria, Illinois. And really some deep concerns with Senator Duckworth, with Senator Durbin and I about the Air Force's plans to decrease the effectiveness and flexibility of the National Guard's C-130 divestment.

I know the National Guard insists that the C-130 is valuable to the homeland, for our defense mission here at home, as well as to meet overseas tactical requirements. The flexibility and readiness of the National Guard will be negatively impacted by any reduction in the C-130s.

And if the Air Force doesn't believe the current fleet of C-130s are needed in a high-end fight and near-peer adversary and the National Guard insists that the C-130s are instrumental to their protection of the homeland, does it make more sense to recapitalize the Air National Guard C-130Hs with the Active Component C-130J fleet?

And if you could maybe weigh in on that. It is something that we are very concerned about in my neck of the woods.

Secretary AUSTIN. I can't comment on specific decisions on the C-130 that the Air Force is making.

I would tell you that, as you pointed out, the C-130 has been and will continue to be, in my view, a very important piece of the inventory. You know the old saying amongst pilots is that, when the most advanced fighter goes to the boneyard, the pilot will get a ride back on a C-130.

Now, in terms of, you know, the specific capabilities of an H model versus a J model and what the Air Force wishes to gain by investing in more of one or the other, you know, again, I would have to have the Air Force lay that out for you in detail.

Mrs. BUSTOS. Okay. Well, we will follow up. I am out of time right now, and I will yield back, but we will follow up, Mr. Secretary.

I yield back, Madam Chair.

Ms. MCCOLLUM. I know you were hoping for a big reveal, Mrs. Bustos.

Mr. Diaz-Balart and then Mrs. Kirkpatrick.

NATIONAL DEFENSE STRATEGY

Mr. DIAZ-BALART. Thank you very much, Madam Chairwoman.

And, first, let me again add my thanks to both of you gentlemen for your years and years of service to our Nation.

You know, include me in one of those lists of those skeptics, as far as when we are looking at the proposed budget, which I think is inadequate and clearly does not provide the Defense Department the funds necessary to execute all of our National Defense Strategy pillars. And so it is obvious that—it is pretty clear that, obviously, every service is going to have to look to making some serious changes.

But here is my question. And so, you know, we spent a lot of time and got a lot of bipartisan support, the National Defense Strategy. And we have had, obviously, multiple hearings and classified briefings, which kind of, I think, added and continues to add to the support of that strategy. So where was that wrong?

In other words, you know, the increased funding that was requested and we always expected that we were going to need, where did that go wrong? Was that assessment wrong? Or did the world situation change so dramatically after the Defense Strategy?

Like, if you all could just make me feel better that we are just not dealing with, kind of, forcing our military to deal with an inadequate budget, but that we have a strategy that is different than what we thought was needed under the National Defense Strategy which is just as good.

Where was the National Defense Strategy and those who planned it, you know, where did they go wrong, or what has happened in the interim, where those funds are no longer necessary?

Secretary AUSTIN. Well, thank you, sir.

I think if you look at—and I know you have looked at—the President's interim national security strategy guidance, you will see that, you know, the fundamental elements in that guidance reflect the areas or the issues that the current strategy focused on, the former strategy focused on. And it was China, Russia, Iran, North Korea, and transnational terrorists, terrorism. So I think that the major muscle movements, major pieces of the strategy are the same.

Of course, as is the case in every change of administration, the new administration comes in and does its own assessment, and we are in the possess of doing that now. But, again, we feel that, based upon what we are looking at now and going forward, we can develop, and we will develop, the right mix of capabilities to support the operational concepts that allow us to be not only relevant but dominant in the future fight.

General MILLEY. And, Congressman, as one of the people who was involved in the development of that strategy, I wouldn't say that it was wrong, and I wouldn't say that the current administration is assessing that it was wrong. But it does need to be updated.

That was written 4 or 5 years ago, and I was one of the guys who helped write it, you know, with a team of folks here. And it was written under the pen of then-Secretary of Defense Mattis, who spent a lot of time with it. And it is written in history, and it is written with a lot of logic behind it.

And the key components of it—increased lethality and readiness, allies and partners—all of that is still true. The emphasis on irregular warfare, along with conventional deterrence, et cetera. The rise of China is noted in it. And all that stuff is still there, but it needs to be modified and updated. And that is what I think the assessment is.

For example, the interim national security strategy coming out of the administration tells us, for example, to look at right-sizing the force. What the Secretary of Defense has directed us to do is do a global posture review. That is entirely appropriate, in my view, long overdue. We need to do a rigorous, thorough global posture review to make sure that we have the right forces in the right places to achieve the right strategic effects. And that is what we are doing.

I wouldn't—personally, I wouldn't assess that it is wrong, necessarily. It needs to be updated.

Mr. DIAZ-BALART. And, Madam Chairwoman, I can't see the clock, so I have no idea if I have any time left.

Ms. MCCOLLUM. Thirty seconds, sir.

Mr. DIAZ-BALART. How much?

Ms. MCCOLLUM. Thirty.

Mr. DIAZ-BALART. Okay. Well, then I guess I will just wait for if we have another round. So I yield back. Thank you, Madam Chairwoman.

Ms. MCCOLLUM. Because of that, we probably will. Thank you very much.

Mrs. Kirkpatrick and then Mr. Aderholt, followed by, last but not least, Mr. Crist.

IMPACT OF DOD ON SOUTHWEST BORDER

Mrs. KIRKPATRICK. Thank you, Chairwoman McCollum. Thanks for having this hearing. It is really an important issue for my district. And I appreciate the time that our witnesses are taking to be here and answer questions.

My question is for Secretary Austin.

I represent a border district, and keeping our border communities safe is a top priority. It was recently reported that the De-

partment of Homeland Security has requested Department of Defense support be extended into fiscal year 2022.

A recent GAO report published in February of this year stated that DHS anticipates needing DOD support for the next 3 to 5 years. This same report also found that DOD's internal tracking of obligations excludes potentially significant costs of support activities, and considerations of previous requests for assistance did not fully evaluate the impact to military readiness.

Are you seeing a negative impact to long-term military readiness of continued support along the southwest border? What budget shortfalls are you facing due to this continued support? Are you asking for reimbursement from DHS when able? And do you anticipate approving this next request for assistance? Is the Department working with DHS to define ways to return to a more traditional military posture along the border?

Secretary AUSTIN. I thank you for the question, Congresswoman.

First of all, the defense of our border is important, and DOD will do what is asked of us in support of a, you know, whole-of-government effort to address issues along the border, but also some of the root-cause issues that happen, you know, in the countries that migrants or refugees come from. That is the first piece.

The second piece, you asked if DHS is requesting additional support. The answer is, yes, they have requested additional support. And so, we are evaluating that request as we speak.

And I should flag for you that the new Secretary of DHS and I had a really good conversation early on. And I emphasized, and he agreed, that DHS should really work to develop its inherent capability to address its mission requirements. And I think the Secretary of DHS is beginning that work, and so I anticipate that there will be fewer, if any, requests going forward.

Again, what we have provided, as you know, is enabling capability to DHS, and we have not been focused on enforcement of border activities—or law enforcement activities.

In terms of readiness, there are many things that we have done in terms of providing enabling capabilities that actually helped increase readiness. Some of the flying hours that we conducted along the border there actually increased our proficiency in terms of our pilots. And where we can do things like that and get significant training value out of it, I think it is value-added.

And I will stop there.

Mrs. KIRKPATRICK. Thank you so much for your answer. I really appreciate the work that you are doing at the border. Good people down there. So thank you for that.

And I yield back.

Ms. MCCOLLUM. Thank you.

Mr. Aderholt, followed by Mr. Crist.

Mr. ADERHOLT. All right. Now, hopefully, you can hear me.

Ms. MCCOLLUM. I can hear you.

LAND-BASED NUCLEAR TRIAD SYSTEMS

Mr. ADERHOLT. Yes. Thank you, Madam Chairman, and thanks for having this hearing, and Ranking Member Calvert.

And to our guests before the subcommittee today, thank you both for being with us. I apologize for getting on this Webex call a little

bit delayed. I am actually traveling out of the country. I am actually in Bosnia, as I speak to you now. So I am glad I got to get on this call for a few minutes and hear from you.

Secretary Austin, congratulations on your new appointment and confirmation. And glad to see Alabama represented well in the Department of Defense, so glad to have you in that role.

What I would like to ask Secretary Austin is about the nuclear triad. Of course, as you know, it has protected the United States from attack for more than five decades now.

And the previous administration had made it a priority to modernize our nuclear arsenal in response to a growing threat worldwide. The Ground-Based Strategic Deterrent Program would upgrade our aging intercontinental ballistic missiles to meet the changing dynamics we face from Iran, of course North Korea, and even China.

And I believe you, yourself, have said that the power to deter rests on the guaranteed and clearly understood ability to respond to aggression in a time and manner of our choosing.

My question is, do you believe that the United States is capable, at this moment, to respond to a nuclear threat using the ground-based systems of the nuclear triad? And do you believe that the land-based deterrent methods will continue to be a critical component in the future to deter the growing capabilities of those who would try to attack us?

Secretary AUSTIN. Let me answer your question by saying, yes, I believe that we maintain the capability to deter and to be effective if deterrence fails.

I would also say that the nuclear triad underpins strategic deterrence. It has been the bedrock of our national defense over the years. And I would say further that I fully support and am committed to modernizing the triad.

As you, I think, are well aware, we are going to conduct a nuclear posture review to make sure that we have the right balance in terms of our capabilities. And, of course, you also know that where we stand on a day-to-day deterrence is not something that me and the Chairman and the President guess at. You know, Chas Richard, our commander out in Strategic Command, is on this 24 hours a day, 7 days a week, and is absolutely on his game, as you would expect him to be. And so I feel very confident in where we are.

But I think, you know, we are going to continue to move forward and support the modernization and recapitalization of the triad.

MILITARY AND POLITICIZATION

Mr. ADERHOLT. Very good. Well, thank you for that. And I do think it is very important that the triad stays as modernized, and I thank you for your response on that.

Let me just return to the state of our military personnel. And I have some concerns with a recent article that was published in Brookings that was titled "A Case for Rethinking the Politicization of Our Military," in which the article tried to make the case that the military is not apolitical.

Do you believe the military is apolitical, and, if so, should it remain apolitical?

Secretary AUSTIN. I absolutely believe that the military is apolitical. It is a reputation that we have enjoyed over the years. It is a reputation that I will fight to maintain. And when I talk to leaders in the Department, I emphasize frequently how important this is, and, you know, I will continue to do so.

You know, we swear an oath to the Constitution of the United States. I take that seriously, and I encourage every member of this organization—military, civilian—to do the same. You have a certain expectation from the people that are in this Department, and we will live up to that expectation.

I believe the Chairman probably has a desire to make a statement on this as well.

General MILLEY. Well, I would just echo what the Secretary said. I mean, it all comes down to the oath. And we didn't swear an oath to a person, a tribe, a king, queen, tyrant, dictator, or anything; we swore an oath to a Constitution.

And, by definition, we must be apolitical, meaning we are not going to be playing the partisan politics. We must remain an apolitical institution. It is important for the health of the Republic that the guys with the guns remain apolitical, so to speak.

We have fought this hard, and we will continue to maintain our apolitical stance now and forever. The United States military is and will always be an apolitical institution of the U.S. Government.

Mr. ADERHOLT. Well, thank you both for that answer. And I think you are exactly right, that, in any forum, we need to make sure that we are not going down a political road.

So, with that, I see my time has ended. So thank you, Madam Chair, and I yield back.

Ms. MCCOLLUM. Thank you. Safe travels back home, Mr. Aderholt.

Mr. Crist.

SOUTHCOT THEATER

Mr. CRIST. Thank you, Madam Chair, and thank you, Ranking Member, for holding this hearing. I appreciate it very much.

And to the Secretary and the General, I appreciate you being with us as witnesses today.

Secretary Austin, in this same hearing with your predecessor about 2 years ago, I asked about the situation in Venezuela. Since then, the humanitarian crisis in Venezuela has further deteriorated, and we have increasing instability in other countries in SOUTHCOM. The situation has been made significantly worse by the coronavirus epidemic, with the countries in SOUTHCOM having the highest per-capita death rate in the world.

Can you speak to the biggest problem areas in this part of the world? What investments are we making to increase stability and counter Russia and China in the region? And how does stability in the Caribbean and Latin America fit into the National Defense Strategy?

Secretary AUSTIN. Thanks for the question.

Obviously, stability in our neighborhood is very, very important to us. And I would say that, while there are challenges, we work hard to make sure that we are pulling the right levers to ensure that, you know, we are, as best as we can, moving things back in

a direction of increased security and stability. And so that is what Admiral Faller in the Southern Command is focused on each and every day.

We work as a part of a whole-of-government effort to use every instrument of national power to do what I just described. And, in some cases, you know, economic power is far more relevant than military power. Of course, in this region, that is, you know, in most cases the case.

You have seen our Vice President, Vice President Harris, begin to focus on helping the countries in the region address the root causes of the migration that we have seen here recently. And so the Department looks forward to working as a key part of that whole-of-government effort. And I say "key" because we have some knowledge of the area, a lot of detailed knowledge of the area, and we can inform her efforts.

But, again, many of the levers that we will pull to do what I described, you know, moving things towards greater stability and security, will be things other than military.

We remain engaged. We have conducted some nine joint operations, joint training events, here in the recent past or in the near future. And so this is creating greater partner capacity.

And, again, an important region. We are engaged. We are strengthening our partnerships and alliances, and we are helping to address key issues in places where there are problems.

DOD AND THE COAST GUARD

Mr. CRIST. Thank you, Mr. Secretary. I appreciate that.

My home State of Florida is home to dozens of Coast Guard commands, and my district has among the highest number of Active and Reserve Coasties in the country.

While we all know that the Coast Guard is under Homeland Security, many of their missions are in support of and in collaboration with the Pentagon. Could you tell us how the Coast Guard fits into our military community?

And, from a Joint Chiefs perspective, how closely does the Coast Guard leadership work with you in support of your role advising the President and informing the security decisions for America?

Secretary AUSTIN. I will turn it over to the Chairman in a second, Congressman, but I will just say that the Coast Guard is a part of just about everything we do in the Department of Defense.

It has been a long time since I had a uniform on, but I would tell you that, when I wore a uniform, I went a lot of places; there was no place that I went where I didn't find Coast Guard participation and adding value to our overall efforts. That has been especially true in the Middle East. And we see it to be the case also in the Indo-Pacific, which is, as you know, our main effort right now.

General MILLEY. So, Congressman, with respect to work on the Joint Chiefs, Admiral Schultz—first of all, a great individual, great admiral, and great leader of the Coast Guard—fully integrated into the Joint Chiefs, not necessarily by law, but attends all of our meetings, has valuable input, and provides tremendous advice not only to me and the other Joint Chiefs but also to the Secretary and the President. So he is fully integrated.

And we have Coast Guard capabilities and assets in Central Command, SOUTHCOM. We have them in INDOPACOM, et cetera. They provide a wide variety of tremendously important capabilities. So fully integrated into the Joint Force. And thanks for the question.

Mr. CRIST. Well, thank you, gentlemen, very much. I appreciate that. And I notice my time is up, but I think a Coast Guard question is important to our chair. She has a lot of coastline on Lake Superior.

So thank you, Madam Chair.

Ms. MCCOLLUM. I am always looking for a safe harbor on Lake Superior.

Gentlemen, we have enough time for the committee members that are remaining to ask a 2-minute question.

And, Mr. Calvert, I have a question for you. Would you like to go early in the order, or would you like to close with me?

Mr. CALVERT. I will close with you, Madam Chair.

Ms. MCCOLLUM. Thank you. Thank you.

Mr. Cuellar, 2 minutes.

RARE EARTH MINERALS

Mr. CUELLAR. Yes, ma'am. Thank you so much.

Gentlemen, I want to ask you questions about rare earth minerals.

As you know, the United States needs to do more to secure the supply of critical minerals. One of the things that we are looking at, that, even as domestic rare earth mineral has climbed by 40 percent in 2020, that, you know, the Department is still working with some foreign investments. I know and my Texans know also that we are doing some work here in Texas.

And, Mr. Secretary, in support of the President's recent executive order on America's supply chain, you all are doing a 100-day review of critical materials. So I just want to see, what are you all doing to address this issue so we stop depending—or stop the domination of China?

And I know that here in Texas—Mr. Carter and Ms. Granger know this—that there are some mineral interests in Hudspeth County in Texas that will be the largest heavy rare earth project outside of China once it is done, I think, in 2023.

Secretary AUSTIN. I will just say, Congressman, that this is a very, very important issue to us, and it is all about supply chains. And we are constantly assessing our supply chain and the supply-chain vulnerability. We know that this is something that we are going to have to remain focused on.

And this will cause us, is causing us, rightfully, to really push to invest in our defense industrial base here at home and create capabilities. Again, some of the things that were being produced or created offshore, we want to reshore those efforts. And we want to do everything we can to thwart foreign influence on our supply chains.

The Deputy Secretary, you know, is absolutely focused on this. And she will work together with our incoming head of A&S and R&E to make sure that we acquire the right kinds of capabilities, that we invest in the right things in the country here.

And I would just say that that is awfully important to us, and, you know, we are getting started. We have a long way to go, but we are going to move as fast as we can because of the vulnerability that this creates.

Mr. CUELLAR. Thank you.

Ms. MCCOLLUM. Thank you.

Mr. Carter.

HEALTHCARE AND DOD APPROACH

Mr. CARTER. Thank you, Madam Chairman.

General Milley, are you concerned about the difficulties the Department has in recruiting and retaining combat casualty care specialists? What are the assumptions the Joint Staff is making about the ability to recruit military doctors in specialties that have historically been difficult to fill?

Mental health and psychological healthcare will continue to be imperative, especially if our servicemembers are faced with mass casualties on the battlefield. Yet the Department suffers the same shortages the whole country suffers in this area.

General Milley, how is the Joint Staff working with the services to ensure the integration of behavioral and nonbehavioral healthcare in our treatment facilities and in theater?

And, Secretary Austin, what resources are being invested in this critical area?

General MILLEY. Well, let me start off, Judge Carter—or Congressman Carter. And I think I got most of that, to be candid with you. And I appreciate you asking the question, and I know you are hurting there a little bit.

But, first of all, the Joint Staff works hand-in-glove with the services. I have a great Joint Staff surgeon, Dr. Friedrichs, General Friedrichs, and he works hand-in-glove with them and the Department's health agency, the Defense Health Agency.

So, collectively, what we are doing is ensuring that we have adequate healthcare for not only the soldiers but the—or not only the troops but also family members, dependents, veterans, civilian workforce, and so on. It is a very big enterprise. The military healthcare enterprise is probably—and I am not 100 percent sure, but I think it is the biggest single healthcare enterprise in the United States. It is huge.

And with respect to recruiting to make sure that we have the appropriate healthcare professionals, the doctors, nurses, the medics, and all the specialists and technicians, that is a very active area of recruitment that we do. We have special benefits and programs to bring them in. We train them, we give them scholarships, and then we develop them accordingly within the military.

So, it is a critical area. We recognize it is a critical area. And we are not just doing it for general purposes; it all has to do with combat power and readiness. And we recognize the importance of that for our operational contingency operations throughout the world.

Secretary AUSTIN. And I would just add on by saying, Congressman, that, you know, the health and welfare of our force, their family members, is extremely important to me, and we remain focused on this issue.

It is something that we review constantly. We want to make sure that we are investing in the right things, to include making sure that, you know, we have the right amount of mental healthcare professionals in the inventory and access to those professionals, which will help with a number of issues. Foremost among those issues is suicide prevention.

But, again, the ability to deliver effective and efficient healthcare to our troops and our families is absolutely important to us. And it is a force multiplier, as the Chairman has said, and so we will remain sighted on it.

Mr. CARTER. Well, thank you.

Madam Chairman, I yield back.

Ms. MCCOLLUM. Thank you.

We just had our hearing on defense healthcare this week, so it is on everybody's mind.

Mr. Aguilar.

NUCLEAR MODERNIZATION PLAN

Mr. AGUILAR. Thank you, Madam Chair.

One of the questions, Mr. Secretary, surrounding the fiscal year 2022 budget request is the extent to which—and this is building off of Mr. Aderholt's question—you know, the extent to which the DOD may change nuclear modernization programs, such as the Ground-Based Strategic Deterrent or the Long-Range Standoff Weapon.

The GBSD program, in particular, has become the subject of speculation as to whether the administration will continue it as planned or make changes.

Mr. Secretary, what is the plan for fiscal year 2022? What do we propose for nuclear modernization, specifically the GBSD and the Long-Range Standoff Weapon?

Secretary AUSTIN. Well, as you know and as we mentioned earlier—thanks, Congressman, for the question—you know, we are going through a nuclear posture review, and we will continue to assess, you know, where we are with GBSD. And, again, we will make what we believe is the right decision going forward.

But that continues to be a work in progress as I speak. You should know, though, that I am committed to modernizing the triad.

Mr. AGUILAR. What can we expect to see within the fiscal year 2022 budget with respect to these while the review continues?

Secretary AUSTIN. Well, without getting ahead of the release of the President's budget, I will just say that you can expect to see continued investment in the modernization of the triad.

Mr. AGUILAR. Okay. I appreciate it.

Thanks for the answers, gentlemen.

I yield back, Madam Chair.

Ms. MCCOLLUM. Mr. Diaz-Balart.

DOD DEFINITION AND PLAN FOR EXTREMISM

Mr. DIAZ-BALART. Madam Chairwoman, I am actually very impressed that my technology is working.

Gentlemen, we spoke a little bit before about, you know, the efforts that the Department has been making, I think rightfully so, to address extremism. And, General, you talked about, you know,

if it is only a small percentage, that is thousands, right? And so that is something that is crucial.

In another hearing, the ranking member asked for the definition of "extremism." Because, you know, I think one could argue that, for example, supporting a group created by a vocal anti-Semite is extremism, or created by a White supremacist is extremism, or created by a trained Marxist is extremism, or a fascist or, you know, a Nazi or a communist.

And so, I don't expect the answer today, General and Mr. Secretary, but I think it would be good to kind of get us what you are all looking at when you are dealing with extremism and extremist groups. What is the definition of that? That is really, again, for—if you can get that to us.

But, specifically, also, and then how do you deal with someone, an individual who may hold those beliefs but potentially are not advocating for violence?

We had this conversation in another hearing, and I don't think we got an adequate answer. So, again, I don't expect an answer from you all today, but if you could kind of get back to us, I think that would be helpful.

SOUTHCOR RESOURCES

I do want to, however, emphasize another issue that was brought up. For example, the littoral ships, that, you know, Congress has expressed that, you know, we spent all this money on them and that we should not potentially be decommissioning them yet.

Gentlemen, you all know better than me the impact of narcotics coming into the United States from the Western Hemisphere, the thousands and tens of thousands of Americans who died because of those narcotics, not to mention human trafficking. I, unfortunately, fear that those numbers of narcotics, because of what is happening in this hemisphere, might increase, not decrease. So I would just hope that you all continue to look at this hemisphere.

Both of you mentioned Southern Command. I think they do a phenomenal job, but they could use a little bit more resources. And that, frankly, directly saves American lives.

So, again, you know, less of a question to be answered now, gentlemen, but if—and maybe you have some thoughts in particular about the issue of narcotics and human trafficking coming from this hemisphere and what assets should and could be available to Southern Command to deal with that challenge.

EXTREMISM

General MILLEY. Well, let me—Congressman, two things.

One is, on extremism, you are exactly right, the definition is going to matter. The Secretary has established a working group. That is one of the things that they are tackling, is precisely how do you define it. Because our Uniform Code of Military Justice, our methods and systems of maintaining good order and discipline within the force are dependent on clear, unambiguous definitions. Because we are enforcing policy, enforcing laws, enforcing regulations, et cetera, and for sergeants and captains and colonels, et cetera, to do that, we at the senior-leader level need to clearly define what it is we expect.

But the second thing that I would say on that is, we have to be careful to distinguish between behavior and belief. And it is really behavior that we are talking about here—action, activity. And that is going to be critical.

The third thing I would mention on the same topic: Always keep in mind that we are unique within our society. I do not have the same rights and privileges of every other citizen. I give those up. The 1 percent gives itself up for the 99 percent to enjoy all your liberties, because the business we are in is dependent strictly upon teamwork, the collective activity. It is strictly dependent upon cohesion of a unit, and that is important, as opposed to civil society, which is dependent on individual rights and civil rights. So that is different, to a point, and that always has to be kept in mind.

But we are working through this with a working group, and we are doing that at the charge of the Secretary of Defense. We take it very, very seriously.

SOUTHCOM RESOURCES

On the part about SOUTHCOM, they do great work. And you are right, they are always short on resources. And we think we have distributed the resources appropriately around the world. We are always dealing in limited resources. The Secretary every week has got to make decisions on how to manage shortages. That is just the way of life in the Department of Defense. We always do that every single day.

And SOUTHCOM, we think, has got the appropriate amount right now for the threats that are presented. Could they use more? Yes, they could. But I think Craig Faller and the team down there at SOUTHCOM are doing a great job with what they have.

Mr. DIAZ-BALART. Thank you.

I yield back, Madam Chairwoman.

Ms. MCCOLLUM. Mr. Calvert, that leaves you and me to close. Mr. Calvert.

CLOSING REMARKS OF MR. CALVERT

Mr. CALVERT. Thank you, Madam Chair. And this has been a very good hearing. Thank you for putting this together.

I have a number of questions I am going to submit for the record, both to Secretary Austin and General Milley.

Mr. CALVERT. One of those is going to be about small-business innovation. You have heard me talk about that, and I have talked to both General Milley and Secretary Austin about that, about becoming a trusted partner and getting through the valley of death for these small innovators so they can become a good partner for the U.S. military.

ISR: How are we going to transition from what we have to what we need? That is a big question. As you know, the combatant commanders are always asking for more ISR.

The Afghan withdrawal, how that is going to have to go and how we are going to deal with our friends as we move out of there.

The fighter fleet—the F-15E, the F-18 fighters, F-35s, the future of the F-22. These are very costly, and, obviously, we need to look at that.

And, finally, China. Again, as I look at the number of ships in the Chinese Navy, it now exceeds that of the United States. And I know our capability is better, but they have good capability in their ships, obviously, because they stole our R&D. And they are on track to build, as I look at these numbers, 18 to 20 ships per year, doubling our output.

A concern that we should have—I remember Churchill’s two words, that he gave the worst two words in the English language: “too late.” So we all should remember what the Chinese are doing at the present time.

With that, Madam Chairman, I want to thank both of our guests for their service to the United States for so many years. We all appreciate that.

And we want to make sure that the men and women that you lead have a wonderful Memorial Day and we remember those who came before us.

With that, I yield back.

MODERNIZATION AND LEGACY SYSTEMS

Ms. MCCOLLUM. Thank you. Well-said, Mr. Calvert.

My question is—well, it has been bothering me for quite a while, and it is modernization and legacy systems. And you gentlemen have heard me talk about it before, and I mentioned it the other morning again.

The skinny budget, with its release, of \$715 billion in the fiscal year 2022 request, the Department of Defense indicated that it will propose to redirect resources to top-priority programs, platforms, and systems by divesting legacy systems with less utility in current and future threat environments.

Definitions are important. And maybe it is from being a teacher, and that would be one of the things that we would have on the test, right? “What does this mean?”

Absent a common definition of legacy platforms, some of the services have produced their own response in committee inquiries. For example, the Navy defines “legacy” as, and I quote, “platforms and systems that are no longer in production or capable of being upgraded at a reasonable cost to deliver and maintain a competitive advantage globally or win a conflict with China and Russia in the coming decades.” The Air Force defines “legacy” as “platforms and weapons systems that are not credible in peer competition in 2030 and beyond.” The Army declined to answer.

So, Secretary Austin, does the Department of Defense have a common definition of what constitutes a legacy platform? And, if not, are you working towards one?

Could you give us an example, maybe, of legacy platforms that you are seeking to divest in your budget request? Probably not going to do that, but we need to understand so, when we read about something in the newspaper, when we are talking with a reporter, when we are talking to each other on the House floor, and when we are having conversations with the branches of service, we all know what this definition means so we can move forward and not have miscommunications.

Anything you gentlemen would like to add to that?

Secretary AUSTIN. Well, thank you, Chair.

You know, we have not published a common definition of legacy platforms. What we have said on a number of occasions, as you know, is that we are looking for capability that is relevant to the competition that we are facing, the one that is in front of us.

And, while some of the platforms have some relevancy, they may not be as relevant as we would like to see them be. And, of course, you know, we have to take advantage of—we have to create the opportunities to go after better, more capable capability and technology.

And so, as you know and I think as you said at the very beginning of this, you know, it requires decisions, tough decisions. And so, you know, what we are doing is working with the services to identify what those platforms are that are not relevant or as relevant to the next fight.

But, to answer your question, we haven't published a DOD definition of "legacy." Our focus has been on, you know, the relevancy in the next fight.

General MILLEY. And I would echo all of that, Congresswoman. And I appreciate your feedback. I wasn't tracking their answers. I will actually—I have a tank tomorrow, and I will discuss this politely in a closed room with my fellow chiefs and try to get us all on the same sheet of music so that we can render proper advice to the Secretary as he works on a Department-of-Defense-wide definition.

I think it is really important that we do have a common definition. And I do think it hinges not so much on the word "legacy" but on the word "relevance." Is it relevant to some future operating environment that we envision against our number-one pacing threat, as the Secretary calls it, China? And is it useful, is it going to be successful against that threat? And is it survivable in that sort of environment?

And if the answer is yes, then we should invest in it. If the answer is no, then we should at least question it. It may have utility in the present, as opposed to the future, and we may determine that that is a significant enough priority that we would still invest in it.

But each of those needs to be a conscious, thoughtful investment opportunity to either invest or divest of that particular capability, and I think the definition will be critically important. So we are going to work on that, and thank you for that comment.

CLOSING REMARKS OF CHAIR MCCOLLUM

Ms. MCCOLLUM. Well, I think it is with the best of intentions, when people were describing their reasons for discontinuing or, you know, not continuing something into the future, that this happened. But I think when Mr. Calvert and I, especially on the floor—we haven't seen the whole budget yet, and people are talking about this—I think it would be very helpful for the two of us and members of this committee and Members in general to have that.

Well, with that, I want to thank you both for your time today. And I want to thank you for your years of service and your great attention to the subcommittee's concerns. And I know, as the budget comes out, your staff, our committee, and you know, members to members and talking to folks under your command, we will get

our answers in as timely a fashion as possible as we put the budget together.

I would like to close with remembering some words of President John F. Kennedy, who in speaking to our servicemembers about making the ultimate sacrifice said, and I quote, "A Nation reveals itself not only to the people it produces but to those it remembers." On behalf of our Defense Subcommittee, we remember our fallen and we also remember those missing in action, and we thank those who serve our Nation today.

And, with that, thank you again, gentlemen.

And this concludes today's hearing. This subcommittee stands adjourned.

[Answers to submitted questions for the record follow:]

The Honorable Betty McCollum
Appropriations Committee, Subcommittee for Defense
Questions for the Record

Question One: Does the Department have a common definition of what constitutes a legacy platform? And if not, are you working towards one?

Answer: The Department views “legacy” systems as those systems or platforms that may no longer meet the requirements of the Department, or that perform similar missions or share technical characteristics with a potential new platform or system. In building our FY22 budget request, we considered which systems or platforms no longer met our needs so that we could make room for capabilities that address the challenges of today and the future.

The Honorable Ken Calvert
Appropriations Committee, Subcommittee for Defense
Questions for the Record

Question One: Afghanistan Drawdown: How will the Afghanistan withdrawal go, and how will the Department deal with our Afghan friends?

Answer: The Department is committed to executing a safe and orderly retrograde of U.S. forces from Afghanistan by September, 11, 2021, in accordance with the President's decision. We are committed to maintaining an embassy in Kabul and providing funding to the Afghan government. The Department is also working closely with our colleagues at the Departments of State and Homeland Security to assist those Afghans, and their families, who have helped us over the last two decades.

We remain focused on responding to any potential terrorist threat to the U.S. homeland emanating from Afghanistan. DoD will maintain substantial assets in the region and will continue to work closely with regional partners in this regard. Our continued support to the Afghan National Defense and Security Forces (ANDSF) is a stabilizing factor in Afghanistan and supports the overall goal of a durable peace, DoD is evaluating the means to maintain support to the ANDSF without a U.S. military presence, including providing appropriate oversight and stewardship of the Afghan Security Forces Fund (ASFF). We will continue to consult with the defense committees on these plans.

Question Two: Small Business Innovation: How does a business become a trusted partner and get past the valley of death?

Answer: Small businesses become trusted partners to the Department through programs like the Small Business Innovation Research (SBIR) program. The SBIR program connects the Department of Defense (DoD) to some of the Nation's most innovative businesses that are making valuable contributions to our modernization goals.

To continue to strengthen our relationships with small businesses, it is important for the Department to increase outreach, education and training, and technical assistance, with the aim to understand and remove barriers to doing business with the Department. It is also important that the Department, through our acquisition process, continues to work with small companies to transition their technologies into programs of record and ensure that they have the opportunities to compete for contracts as they mature.

Question Three: ISR: How will we transition our ISR approach and platforms from what we have to what we need?

Answer: To accomplish the Interim National Security Strategic Guidance, the Department must prioritize China as the pacing challenge, while simultaneously ensuring that we remain fully ready to respond to and effectively deter nation-state threats emanating from Russia, Iran, and North Korea; and non-state actor threats from violent extremist organizations (VEO)

across the globe. The future ISR force will be a mix of exquisite and lower-cost ISR systems optimized to meet both contested environment and day-to-day operations across all Combatant Commands. To operate in a contested environment, the Department will weight investments toward ISR programs that are optimized for peer and near-peer competitors. In the meantime, with the help of Congress, the Department must accept short-term risk by reducing reliance on ISR assets optimized for permissive operations—assets that offer limited capability against peer and near-peer competitors.

To empower next-generation ISR platforms, the Department is also funding: sensors aligned to advanced adversary threat systems, automation and artificial intelligence capabilities, improved connectivity and data timeliness, and better integration of ISR across all domains—space, air, surface, subsurface—to deliver an information advantage in a contested environment. As we make these improvements, integrating allies and partners at the earliest opportunity into our strategy will be essential to ensure seamless ISR system interoperability at the tactical level.

I am confident that the Department's funding for ISR modernization will transition the Department from its current ISR enterprise—one focused on Counter-VEO—to the ISR enterprise needed to enable operations against the full spectrum of advanced emerging and enduring threats.

Question Four: Fighter Fleet: How will the Department deal with the costs and the need to look at the future of our fleet?

Answer: The Navy's 30-year shipbuilding plan addresses the anticipated needs of the Navy and supports the missions and capabilities identified in the Interim National Security Strategic Guidance. This plan highlights the future vectors the Navy will address in coordination with the Office of the Secretary of Defense (OSD) to build a modernized naval force with sufficient size and capability to compete effectively, deter aggression, and, if required, win decisively in combat.

The Navy's operating concept of Distributed Maritime Operations (DMO) along with the Marine Corps concept of Expeditionary Advanced Base Operations are specifically designed to support Naval Operations in the Indo-Pacific region with the right capabilities and capacities.

Under this DMO framework, the Department continues to study a range of solutions to provide lethal warfighting capability to maintain sea control and power projection. Ongoing analysis and experimentation will define required combat effectiveness and emphasize the focus on warfighting capability and readiness rather than ship count alone. This analysis and experimentation will be informed by operationally relevant metrics including lethality, survivability, operational reach, vertical launch system cells, torpedo tubes, sortie generation rates, lift capacity, affordability, and industrial base viability and capacity.

Question Five: PRC Navy Capabilities: How is the Department dealing with the fact that the PRC is building ships at a rate that exceeds the U.S.? How will the Department ensure the U.S. continues to have better capabilities when China steals our R&D?

Answer: The Department is addressing future warfighting challenges from a Joint Force- and fleet-wide perspective, enabled by new operating concepts and investment in other advanced capabilities and modernized forces. The Department is focused on fleet capability, not just numbers of ships, and how the Navy operates jointly with other Service capabilities in the future threat environment. As you've pointed out, the security of our valuable intellectual property is an especially acute challenge, and the USG is focused on this issue across the interagency.

The Honorable Tim Ryan
Appropriations Committee, Subcommittee for Defense
Questions for the Record

Question One: Mr. Secretary, you may recall that I recently sent you a letter requesting that you establish a Food Transformation Cell to coordinate transformation of our installation feeding system to be support the availability and consumption of more nutritious foods. I'm sure you will agree that if the military is truly interested in optimizing human performance, then ensuring that our service members and their families are fueled with the healthiest food possible.

In speaking with the service Surgeons General earlier this week, I understand that the health affairs community is doing their part to define the kinds of nutritious ingredients and recipes we should be using to prepare food on base. What they cannot control, however, is how, where, when and what foods are actually prepared. That is the job of the installation food system.

After researching this for several years, I have come to understand that the installation food system is a complex and stove piped system of appropriated fund and non-appropriated fund entities who all seem to want to make the best hamburger on base. We have enough hamburger offerings on base. What we don't have is a cohesive system that manages food offerings across the entire installation like colleges and universities and many large corporate campuses do.

Without effective and immediate food system transformation, we will continue to support a growing obesity problem in the military that drive the cost of active duty, family member and veteran health care through the roof, not to mention decreased readiness. On Tuesday, the Surgeon General of the Army stated that he, "Agreed 190%" with me on food system transformation.

Answer: The Department is committed to the health, welfare, and safety of our Service members and their families and has undertaken a broad-based effort to modernize the on-installation food service system. The Department continues to examine all sectors of the food and nutrition system to identify and address barriers to, and opportunities for, modernizing this system. The sectors examined include food acquisition, food preparation, food delivery and access, nutrition education, and research and assessment. The Department is currently working to establish an Office of the Secretary of Defense-level nutrition cell. The nutrition cell will be comprised of senior leaders representing all DoD Components and stakeholders within the Department's food and nutrition environment. The senior leaders assigned to the nutrition cell will advise me on policy and programs necessary to improve the food and nutrition environment across the installations.

Question Two: In recent budget requests the Army has funded a brigade of upgraded Abrams tanks, which are made in Lima, Ohio. This is a clear demonstration of the Army's commitment to its Armored Brigades.

Considering the Army's continued focus on our near-peer adversaries, it seems to me that there would be no reason to decrease production of upgraded Abrams tanks in the coming years.

Answer: The Army remains wholly committed to the Abrams as the cornerstone of our Armored Brigade Combat Team (ABCT) lethality on the modern battlefield. The Abrams M1A2 SEPv3 tank is in production and remains the best tank in the world.

The Abrams production program received significant plus ups in past years, resulting in the Abrams modernization advancing faster than other platforms in the ABCT (e.g. Bradley, AMPV, HERCULES, PIM).

The Abrams FY22 President's Budget Request will fund 70 M1A2 SEPv3 tanks. Due to the prior year's additional funding and very high potential for Foreign Military Sales (FMS), the Abrams program can absorb some budgetary topline reductions without inducing substantial operational or Industrial Base risks, to include risk to 2nd and 3rd tier suppliers.

Question Three: From recent INDOPACOM briefings to the Committee and public statements from Navy Flag officers, we understand the requirement for a realistic training environment to properly prepare our warfighters to win decisively on night one of a peer/near-peer fight.

Fielding a Live-Virtual-Constructive (LVC) training solution that enables our aviation, surface, and sub-surface teams to conduct Fleet Training that is secure and interoperable with DoD and Coalition partners seems to be a priority.

I am very encouraged to see the significant strides the Navy is making at Pax River through the continued technology maturation of SLATE -- the Secure LVC Advanced Training Environment -- that started in 2015 as a Joint effort and was successfully demonstrated in September 2018. But we can't drag our heels on this technology yet another year -- clearly, we need this capability now to train our operators across the Joint Force in the most realistic threat representative environment. I hope to see the flight demonstration myself this Fall at Pax River. My question is simply this: What is the Joint Force's plan to accelerate the fielding of this game changing Live-Virtual-Constructive air combat training capability?

Answer: The Department remains committed to Tactical Combat Training System (TCTS) II/P6 and plans to incorporate additional LVC training and LVC testing capabilities, such as those demonstrated by SLATE Advanced Technology Demonstration and others, into the Program of Record as the most adaptable and executable path forward. The complex LVC environment must ultimately provide high-end training across multiple platforms, domains, and services. It must also have ties to the flight test environment to enable affordable development of future capabilities needed to outpace our adversaries. The Navy and Air Force will continue to collaborate on the necessary requirements, infrastructures, investments, and acquisition strategies to implement such capabilities in the most cost-effective manner.

Question Four: On May 12th, General Timothy Ray, commander of U.S. Air Force Global Strike Command confirmed that extending the Minuteman III through 2075 would actually cost \$38 billion more than developing the Ground Based Strategic Deterrent.

When I met with Admiral Richard last week, he was crystal clear-we've run out of time to maintain a credible strategic deterrent. I mean, he's formally calculating the risk of failure daily.

Do you agree with both General Ray and Admiral Richard that we can literally no longer afford to not modernize the land leg of the nuclear triad?

Answer: The Department agrees that we must modernize the land leg of the Nuclear Triad and it can no longer be delayed. That is why the FY22 budget requests invests \$27.7 billion toward nuclear modernization, including for the Ground Based Strategic Deterrent (GBSD) weapon system.

Question Five: Congress has previously requested that the Department of Defense provide better transparency over contract services expenditures in its budget submission. The Government Accountability Office (GAO) identified this problem in a February 18, 2016 audit, "DOD Service Acquisition: Improved Use of Available Data Needed to Better Manage and Forecast Service Contract Requirements" (GAO-16-119), and most recently continued to retain the management of services contracts on its high risk list in a February 22, 2021 assessment of the Department's report to Congress. See, GAO-21-267R, "Service Acquisitions: DOD's Report to Congress Identifies Steps Taken to Improve Management, But Does Not Address Some Key Planning Issues." Most notably, one of the key planning issues not addressed is the subject of the original 2016 audit, the failure to establish better transparency over services contracts spending means the Department's "budget exhibits on contract services provide limited visibility to Congress on planned spending, and the primary exhibit for contracted services does not meet statutory reporting requirements. . .without a road map of future service contract spending needs, Congress has limited visibility into an area that constitutes more than half of DOD's annual contract spending."

The audit is focused, in particular on actions needed by CAPE and Comptroller, and does not talk about near-term year of execution acquisition planning for services done by the Services Requirements Review Boards overseen by the Under Secretary of Defense for Acquisition and Sustainment, which is a very different process than the programming and budgeting of requirements, that may be performed by military, civilian employees and contractors. Indeed, the GAO has criticized the Services Requirements Review Boards for their transactional, non-strategic approach. (See, GA) 17-482) Do you recognize this as a problem that needs to be addressed?

Answer: I share the desire to better understand and plan for the Department's spending in this area and fully intend to comply with the requirements of 10 USC § 4506(b), which becomes effective October 1, 2021. Capturing and reporting the data required by 10 USC § 4506(b) will enable Congress and the Department to use the reported data to better assess long term Services Requirements Review Boards (SRRBs).

Question Six: The Deputy Secretary of Defense in her private capacity last year wrote in a March 2020 “Foreign Affairs” article entitled, “Getting to Less: The Truth About Defense Spending,” the following: “Predictably, for example, even though Congress directed the Defense Department to cut \$10 billion through administrative efficiencies between 2015 and 2019, the Pentagon failed to substantiate that it had achieved those savings. The reason those efforts rarely succeed is that they merely shift the work being done by civilian employees to others, such as military personnel or defense contractors.” How can we avoid encouraging such shell games in the future? Please note, there are several Government Accountability and a Department of Defense Inspector General audit during these time frames that provide detailed documentation for her statement. The most recent audit found that the Under Secretary of Defense for Intelligence and Security had a civilian workforce of 22 percent, with 27 percent temporary military detailees and 51 percent contractors, a sign of weakened civilian control of the military when 78 percent of your oversight in a major function is temporary in nature and mostly contractors. See, e.g., GAO-21-295, *Defense Intelligence and Security: DOD Needs to Establish Oversight Expectations and to Develop Tools That Enhance Accountability* (May 2021); GAO-16-172, “*Civilian and Contractor Workforces: Complete Information Needed to Assess DoD’s Progress for Reductions and Associated Savings*,” (Dec. 2015); GAO 17-128, *DoD Civilian and Contractor Workforces: Additional Cost Savings Data and Efficiencies Plan Are Needed* (Oct. 2016); GAO “*Analysis of Department of Defense Fiscal year 2021 Civilian Personnel Budget Request* (Brenda Farrell; Jun 17, 2020 letter to HASC, SASC, HAC-D and SAC-D); See, DoD Inspector General Semi-Annual Report to Congress (Oct. 1, 2017- Mar. 31, 2018) (Reported in GovExec, “*Army Misused Civilian Pay Funds for Other Purposes*,” IG Says, Erich Wagner, March 13, 2018).

Answer: In planning for and executing its assigned missions, every Component within the Department must balance its workforce to ensure the appropriate mix of DoD civilian and military manpower and contractor support as each brings unique skills and experience. The Department relies on its outstanding civilian personnel to provide indispensable government oversight and foundational, institutional knowledge, its military service members for operational and hands-on experience, and its contractor support for technical expertise and specialized skills. Department of Defense Instruction 1100.22, *Policy and Procedures for Determining Workforce Mix*, establishes policy, assigns responsibilities, and prescribes procedures for determining the appropriate mix of DoD civilian and military manpower and contractor support.

As you have observed, the Government Accountability Office (GAO) has repeatedly identified challenges facing the Department in optimizing its civilian, military, and contractor workforce. The Deputy Secretary of Defense currently chairs a bi-weekly meeting (Defense Workforce Council) to address the Department’s people management, personnel policy, and total force requirements and will consider the GAO’s recommendations in addressing these challenges.

Question Seven: The National Security Commission on Artificial Intelligence identified significant skills gaps in the Department's recruitment and retention of critical digital skills needed for your stated priorities in meeting Cybersecurity threats. In the case of the DoD civilian workforce, the Department's human resources personnel, according to the Commission were not able to provide competitive levels of compensation commensurate with private sector competitors for this talent because of their not taking into account experience as a substitute for educational credentials. The American Federation of Government Employees recently criticized the Department's longstanding hiring skills gaps problems which it says are impeded by redundant civilian career program silos and credentialing requirements, some developed in response to Congressional direction that they say create impediments to hiring qualified candidates or promoting and developing internal candidates. Both the Commission and this public sector union seem to be arguing that the Department's human capital recruiting and retention problem in the DoD civilian workforce has been as much a cultural and leadership issue than from any lack of hiring authorities. The union argues, in particular, that these problems have been abetted by the lax oversight of the delegated examining authority provided by the Office of Personnel Management (OPM) to the Department over the past couple of decades, also weakening civilian control of the military. Additionally, civilian personnel offices in the Department of Defense were downsized and regionalized starting in the late 1990s and may have lost their connection to the local installation customers they serve. Civilian human capital planning, with the majority of federal workers near retirement age, has been on the Government Accountability Office's high-risk list for some time, particularly in the Department of Defense. How does your budget address these strategic human capital issues?

Answer: Building the capability and capacity of our workforce is one of my top priorities. That means investing in education and mentorship programs, and ensuring we have the right authorities and resources to hire, train, and retain our workforce. When it comes to digital capability, the Department is investing its resources in strategic planning for the digital workforce by utilizing advanced data analytics to better recruit and retain the critical skillsets required to meet current and emerging mission requirements. To do this, the Department is focused on reviewing the way we attain, process, and utilize information to transform the DoD into a data-centric enterprise. In FY21, DoD adopted the USD(Comptroller) Advancing Analytics (ADVANA) platform to serve as the single enterprise authoritative data analytics and visualization platform for use by DoD senior leaders. ADVANA gives leaders real-time access to key data trends and visualizations to better match potential candidates and current employees against talent and competency gaps in various locations across the globe. It also provides immediate answers to address critical priorities across numerous portfolios, to include human capital management.

Question Eight: The National Security Commission on Military Aviation Safety in their December 2020 final report to Congress, entitled "224 Lives, \$11.6 Billion, 186 Aircraft," found that "[d]iverting aviation professionals from their primary aviation duties with additional duties adds to an unsustainable workload. Due to personnel cuts, military aviation units have experienced cuts in administrative support over the past two decades, forcing aviators and maintainers to undertake additional administrative duties that interrupt their primary aviation tasks and contribute to fatigue and burnout. The Services are not adequately tracking

PERSTMPO for units and individuals and the resulting impact on the health of the force.” This is not a new problem. We can go back to the June 1984 Defense Science Board study on readiness which “concluded that in order to achieve and sustain readiness it was essential to consider, not just the amount of hardware but key manpower issues such as the active-reserve mix, retention, training, and the sufficiency of supporting government civilians.” Does the Department’s current measurement of readiness, given the impact of command influence on reporting and the often-subjective measurement metrics, adequately address the measurement of PERSTEMPO, which apparently took a separate National Commission on Aviation Safety to identify? This is not an issue of how much is spent but how what you are provided is spent. These problems occurred during rapid growth in the Defense Budget. How does your budget ensure these issues are addressed and that we start getting earlier and more accurate reporting of PERSTEMPO problems in the Defense Readiness Reporting System which reduced the reporting in these areas starting in 2007, and which we relaxed by legislation in 2014? See GAO 21-27R, “Military Personnel: Perspectives on DoD’s and the Military Service’s Use of Borrowed Military Personnel (Nov.18, 2020).

Answer: Ensuring our aviation units have sufficient administrative personnel to enable aviators and aircraft maintainers to focus on their primary duties is key to mitigating risk within our aviation community. In response to the National Commission on Military Aviation Safety (NCMAS), the Military Departments are working to maximize mission focus and minimize administrative duties for aviation personnel, including increasing manning of administrative offices in aviation units and eliminating unnecessary duties and non-mission related training requirements within each Military Service’s unique organizational constructs.

For example, the Air Force conducted a Service-wide assessment of additional duties. This assessment led to the elimination of 46 additional duties and realignment of 15 additional administrative duties to the Commander Support Staff (CSS). Between 2016 and 2020, 1,828 funded positions were added to CSS functions to accomplish this workload. Additionally, squadrons too small to warrant a CSS were authorized to have non-mission-specific additional duties realigned to higher-level wing and group staffs. In the Army, all authorized administrative positions are assigned to either branch-specific commissioned officers or Aviation-commissioned officers and not Flight Activity Code 1 Army Aviation Warrant Officers, which comprise the principal aviation force for the Service. The Navy formed the Culture of Excellence Oversight Committee (COE QC) to evaluate policies, programs, practices, and processes related to resilience, toughness, and destructive behaviors, and gain efficiencies in these programs, resulting in an administrative burden reduction.

While the Military Services continue to balance manpower and operational requirements, they must effectively manage overall personnel manning levels relative to tasked operational responsibilities. To that end, ensuring unit readiness is critical to counter threats from competitors. To ensure service members avoid burnout based on high operational tempo, the Department created reporting requirements to supplement traditional readiness reporting via the Defense Readiness Reporting System – Strategic (DRRS-S). In December 2020, the Department updated the instruction defining terms associated with the spectrum of activities, to include deployments, and identified leading indicators to help senior leaders recognize pressure points. The guidance also addressed systemic issues preventing the Military Departments from

adequately addressing the measurement of Personnel Tempo (PERSTEMPO). Based on Department of Defense Instruction 1336.07, "Management of PERSTEMPO," the Military Departments report, track, and maintain deployment and non-deployment event data for each Service member, and minimize the time spent in PERSTEMPO deployment events that exceed the DoD-wide threshold, to the extent it does not adversely affect mission accomplishment or weaken individual or unit readiness. The updated guidance provides a framework for the production of consistent data that I can use to more fully understand the stress on the force and mitigate those stressors.

The Honorable Henry Cuellar
Appropriations Committee, Subcommittee for Defense
Questions for the Record

Question One: Provide the Western Hemisphere Resource Assessment as required in the FY21 NDAA, Sec 1262 as soon as possible. It was due December 31, 2020, but is needed sooner than July 31, 2021, which is the current ETA. Can this assessment be provided now?

Answer: The Office of the Under Secretary of Defense for Policy entered into an agreement with the RAND Corporation in August 2020 to compete the reports required by Sections 1262 (“Independent Review of Sufficiency of Resources Available to United States Southern Command and United States Africa Command”) and 1265 (“Western Hemisphere Resource Assessment”) of the National Defense Authorization Act for Fiscal Year 2020. The reports will not be ready prior to July 31, 2021.

The Honorable Pete Aguilar
Appropriations Committee, Subcommittee for Defense
Questions for the Record

Question One:

Background: I introduced legislation, the Shielding Our Military from Extremists Act, which would require DoD to act upon the recommendations included in the Report on Preventing Domestic Extremism in Our Armed Forces that was released in February.

Question: Do you agree that by enacting these recommendations into law, we would safeguard against future administrations potentially reversing policies unilaterally?

Answer: The recommendations for changes to programs and policies contemplated by the legislation and the report, as well as those being considered under the Countering Extremist Activity Working Group, are apolitical in nature and likely to be sustained under any administration. I look forward to working with Congress to provide DoD views on the legislation.

The Honorable Cheri Bustos
Appropriations Committee, Subcommittee for Defense
Questions for the Record

Question One: Provide USAF assessment of capabilities of both the C-130 H and J models. (OPR – SAF)

Answer: A 255 aircraft tactical airlift fleet provides sufficient capacity for the Joint Force while maintaining a manageable level of operational risk. Air Force analysis shows that 163 C-130Js (8 Pallet positions) and 92 C-130Hs (6 pallet positions), supported by 222 C-17s when available, are capable of executing Joint Force tactical airlift.

The Air Force is divesting a limited number of C-130Hs, modernizing the remainder, and balancing operational risk and funding as it transitions to the future force. Retaining additional C-130H aircraft and/or further recapitalization of C-130H aircraft with C-130J aircraft diverts limited resources from higher priority recapitalization and modernization efforts. The battlefield of the future requires investment in new tactical airlift capabilities like self-protection, runway independence, battlespace awareness, minimized ground-times, and signature management, all of which enable the generation of combat power into highly-contested environments.

Question Two: Does it make more sense to recapitalize the Air National Guard C-130Hs with the Active Component C-130J fleet?

Answer: The Air National Guard (ANG) supports the Air Force's (AF) effort to transform the current force to the future force required to meet the objectives outlined in the National Defense Strategy (NDS). To meet future force requirements, the AF has elected to divest some force structure and accept risk in missions that do not directly contribute to defeating a peer adversary in order to fund modernization.

The ANG is ready to support the AF and the NDS, whether that be with a new mission to support the future force or through recapitalization with active component (AC) C-130Js. Recapitalizing ANG units with C-130Js from the AC in-lieu of a new mission does allow for continued dual-use (federal & domestic) operations.

The Honorable Steve Womack
Appropriations Committee, Subcommittee for Defense
Questions for the Record

Question One:

Background: As the Chair of the West Point Board of Visitors, I would like to get a commitment from you to release the service academy board of visitors review as soon as possible. It has been four months since you began that review, and I note, the appointment authority is really outside the DoD. We would really like to get our boards of visitors back functioning again, and I hope that very soon you will allow us to do so.

Question: When will the Department advisory committees review be completed?

Answer: The Deputy Secretary and I are reviewing recommendations made by the Zero-Based Review (ZBR) Board on 38 different DoD advisory committees. I have asked the Deputy Secretary and the Director of Administration and Management to accelerate the final review process. You have my personal commitment to review the recommendations on the Boards of Visitors for the Military Service Academies and make a decision at the earliest opportunity.

The Honorable Robert B. Aderholt
Appropriations Committee, Subcommittee for Defense
Questions for the Record

Question One:

Background: I have concerns about two aspects of how to handle the approaches to the extremism issue. First of all, I believe it is actual behavior in violation of the military's code of conduct which must be maintained, as it always has been. We should not be, in effect, trying to guess what recruits and officers are thinking or *may* think one day. Nor should one Supreme Court case be used to justify setting aside a recruit's Constitutional rights (Parker v. Levy, 417 U.S. 733 (1974)). To do so inevitably politicizes the military.

Question: I would appreciate the Committee receiving a side by side comparison of what was asked of a recruit five years ago, what has changed since then, and what your advisors are proposing, and what educational approaches you are considering as an alternative to new oaths. Can you provide that?

Answer: Each Service has its own series of questions which are asked of potential new recruits during the enlistment screening process. Each Service has stated that very little has changed over the last five years regarding what is asked of new recruits. The only recent addition is a question that relates to potential involvement with extremist groups. The question is stated differently by each Service, but generally asks "Have you ever had, or currently have, any association with an extremist organization, hate group or gang?" The Department continues to develop more thorough and in-depth questions (see response to Question # 2 below) to ensure only those that meet security and suitability requirements are accessed. Part two of your question asked about "new oaths" the Department may be considering instituting. The Department has no plans to alter the current oaths, which are specified by law.

Question Two: Secondly, to what extent are you tracking the attempts by criminal gangs and left-wing anarchy groups like Antifa to recruit our service members during their service or shortly after their discharge?

Answer: We are aware of some reporting and anecdotal evidence that members of extremist organizations may target for recruitment Service members or former military personnel for their unique skill sets and to lend credibility to their cause. The best way for DoD to address such efforts is to focus on our people through training, assistance, and mitigation efforts and in partnership with the Department of Veterans Affairs (VA).

Across DoD, insider threat programs take a multi-disciplinary approach to detecting and mitigating behaviors or actions of concern by insiders that present an elevated risk to the Department. These programs aim to identify risk behaviors as early as possible so individuals can be provided resources and other support in a timely manner so that they remain a contributing member of the DoD workforce.

DoD is deploying Trusted Workforce Continuous Vetting capabilities, which allow the government to identify areas of concern in near real-time. This capability greatly improves our ability to mitigate risk and will help us identify earlier when personnel demonstrate behaviors of concern, including those related to extremist behavior.

DoD has also focused on training separating Service members and has partnered with the VA to determine the best ways to assist newly separated veterans who may be the target of such recruitment efforts.

Question Three:

Background: Mr. Secretary, it saddens me that 1.4 billion Chinese citizens live under the control of a ruthless, communist party government. Racial minority Muslims are in concentration camps, facial recognition is used to monitor individuals in public, forced abortion is routine, and Christians are imprisoned unless they submit to state surveillance. The space program is part of the Chinese government's military and is methodical, aggressive, and dismissive of international safety in earth orbit. I agree with Ranking Member Calvert that the numbers of Chinese military resources have to impact not only the lethality but also the quantities of our own weapons. My two questions are these:

Question: As contrasted with parity, do you believe the United States should seek and maintain military superiority over the Communist Chinese party, and if so, what, most particularly, in the Fiscal Year 2022 budget proposal will make sure that the US maintains military superiority over the Communist Chinese party, in terms of strategic resources and in terms of technological superiority?

Answer: Yes; in order to strengthen deterrence of military aggression, the United States must maintain military superiority over China in key domains and capability areas. To meet the challenges of an increasingly assertive China, the Interim National Security Strategy Guidance directs DoD to shift resources away from legacy platforms and weapons that are ill-suited to advanced threats, and toward investments in cutting-edge technologies and capabilities that will determine our military advantage in the future. To this end, the FY2022 budget prioritizes China as the pacing challenge for DoD, and the Department will continue to modernize its forces, global posture, and operational concepts to ensure our military is capable of deterring and defending against aggression in the Indo-Pacific region. The President's FY22 budget submission most particularly prioritizes investments in long-range fires, shipbuilding activities and capability, and other warfighting capabilities relevant to operational challenges in the Indo-Pacific region.

Question Four: Given the strategic importance of space, can you be working closely with Administrator Nelson to ensure that we not share sensitive NASA information with the Chinese space programs?

Answer: I am aware that NASA operates under provisions in law that prevent bilateral cooperation with China unless NASA certifies to Congress that a bilateral activity will not jeopardize national or economic security. Likewise, DoD has authorities that help us protect against the sharing of sensitive defense space-related information with China. DoD, NASA, and the Department of State coordinate on our respective space-related international cooperation activities. This is an area where we can and do work closely together.

Question Six: President Xi Jinping's global investment and lending program, the Belt and Road Initiative, uses loans and aid to persuade countries, especially smaller countries struggling with poverty, to agree to long-term leases and other commitments which are unlikely to be able to be fulfilled, at which point the investment, for example, becomes fully Chinese-owned. What areas of the globe concern you the most in terms of this and what investments or agreements of our own should be making to counter the Chinese offers?

Answer: One Belt One Road (OBOR) seeks to build a network of countries aligned with the People's Republic of China's (PRC) foreign policy objectives and ideology over the long-term while at the same time serving near-term PRC economic and political interests. OBOR runs through Asia, Europe, Africa, and the Western Hemisphere, connecting the East Asia economic circle with signatories and regions across the globe. The United States does not oppose high-quality development based on fair, transparent international standards. Our concern is about investments that do not meet those standards or that compromise the decision-making of hosting nations. Given the PRC's demonstrated history of using economic leverage to exact political leverage over other countries, OBOR projects increase countries' exposure to coercive pressure and affect the security of critical infrastructure. PRC leaders also increasingly frame OBOR as a mechanism for expanding its overseas military presence and bilateral defense ties, which could provide another lever for the PRC to exert undue influence over hosting nations. U.S. companies should continue to promote high-quality, transparent investments that are based on fair international standards.

Question Six: The world is an uncertain place and the need to grow our military capabilities through technological breakthroughs and through efficient production practices is crucial. However, it seems that every four years Congress is presented with new plans or new visions for the future of the different military services. Regarding the Army, in particular, there are many current programs of excellence already in place in terms of government facilities as well as contractor labs and production facilities located near those sites. Although local government and University matching fund offers might be attractive to some U.S. military programs, duplicating what already exists can actually cost the taxpayer more than what is gained. Can you put in place a review process to detect and prevent such duplication, and possibly one which survives the next change of Administration?

Answer: I certainly agree that our military advantage depends, in part, on transitioning technology breakthroughs into useful warfighter capabilities, and this requires efficient production practices and contracting mechanisms. We must strategically leverage our partnerships with laboratories, academia, and with international allies and entities, and we must optimize our investments through strategic planning and through preventing duplication of efforts. The Department has a number of existing mechanisms to facilitate this coordination and to prevent duplication of efforts. For example, there are currently 16 Science and Technology (S&T) Communities of Interest (COIs) across the Department, which are our mechanism to encourage multi-agency coordination and collaboration in cross-cutting technology areas with multiple sources of component investment. These COIs provide a venue to coordinate S&T strategies and to share new ideas, technical directions, and technology opportunities. The Department also leverages the S&T Deputies Council, the Joint Defense Manufacturing Council and the Joint Defense Manufacturing Technology Panel (JDMTP), and the Science, Technology, Engineering, and Mathematics (STEM) Executive Board as coordination and collaboration forums. The Under Secretary of Defense for Research and Engineering has also instituted a five-year formal review of each of the nine DoD Manufacturing Innovation Institutes (MIIs) with senior representatives across the Military Services and DoD Components, which considers input from industry, academia, and laboratory members. These multiple mechanisms and bodies for coordination ensure the Military Services' equities, including the Army's, are fully considered and deconflicted from other similar efforts.

In Section 211 of the National Defense Authorization Act for Fiscal Year 2021, Congress established a Senior Defense official for each priority modernization area, who is responsible for road-mapping the technology from basic research through capability delivery. These Senior Defense officials provide another review mechanism to prevent duplication that will endure through subsequent administrations.

I welcome the opportunity to collaborate with you and with the committee to ensure that these mechanisms serve the purpose of avoiding duplication and helping the Department transition technology efficiently. I also welcome the opportunity to comment on legislation to remove duplicative or burdensome Congressional directives in order to produce efficiencies and to optimize taxpayers' investment in our national security.

The Honorable Mario Diaz-Balart
Appropriations Committee, Subcommittee for Defense
Questions for the Record

Question One: Non-US companies are not mandated to sell into the US supply chain and are taking top-dollar offers from the Chinese, who are very active in seeking out any offtakes/supply agreements that can get anywhere in the world. If we don't mine these materials domestically, how can we expect to have the materials come into the US supply chain?

Answer: The U.S. has always relied on our allies and partners for imports of strategic and critical materials, even in war-time, if those materials cannot be produced domestically. In our response to Executive Order 14017 and other efforts in this space, we emphasize working with allies and partners to ensure reliable and secure supply chains, transparency and sustainability in production, and fair competition so that we have access to everything from essential medical supplies to rare earth elements.

The U.S. has sufficient mining capability, but lacks the cost effective capability to process mined materials, including their use in value-added finished goods. While mining is one source of possible domestic economic growth, downstream processing provides more growth opportunities. For example, annual domestic mining activities, valued at less than \$100 billion, enable more than \$3 trillion in domestic value-added industry sectors, out of a \$20 trillion economy. Demand for these goods drives supply, so the focus should be on providing incentives that will make U.S. suppliers cost competitive with other countries to help sustain the U.S. supply chain.

Question Two: Japan has an offtake with the one non-Chinese producer of some of the magnet materials, Lynas, and Shenghe Resources, owned and controlled by CCP members, have the other offtake with MP materials. So currently, there are no producers who can realistically provide materials for the US supply chain. And those 2 companies have some materials, yet not all the materials required for permanent magnets that are required for EV's, defense applications, etc. So where does the US expect to get its materials from?

Answer: DoD is focused on a holistic risk reduction effort for rare earth elements (REEs), which includes all parts of the value chain – not just mining. Our focus has been on processing and magnet making to counteract Chinese dominance in these areas. DoD has made Defense Production Act Title III investments in U.S. companies that are doing exactly this – including Lynas in Texas, MP Materials in California, and Urban Mining Company (magnets) in Texas.

Question Three: If mining and processing is “bad” and “dirty” and we will block companies in the US from producing, is it then ok for countries like Australia and Canada to be engaged in this so-called dirty business and then use these materials for clean/green applications here in the US? It’s obvious that Australia and Canada don’t allow dirty mining that does not adhere to the strictest environmental standards, and this would be the same for US miners.

Answer: The U.S. plans to lead a global push for sustainable production. Establishing human rights and environmental standards for global mining is the right thing to do, and will make the U.S. and our allies and partners who already adhere to those standards more competitive. It is critical that our civilian industries consider sustainability, rather than just price, in sourcing decisions. This will drive resilience and supply diversity. The promotion of sustainability standards will lift the entire market. Civilian industry, the largest consumer of these materials, currently sources significant quantities of strategic and critical materials from produced using non-sustainable methods. Adopting sustainability standards will create demand for U.S. produced materials in the long term.

Question Four: Chinese State media have been pushing this message that the US should let others do the mining and processing. What does this indicate of their intentions?

Answer: It is clear China would like to maintain its dominance in this market. The U.S. needs to be prepared to take actions that will make domestic and/or allied sourcing competitive with the Chinese in order to drive demand for non-Chinese sources of strategic and critical materials. The Department supports the President’s Critical Supply Chains and Made in America Executive Orders, which will help significantly in this effort.

Question Five: Provide the Department’s definition of extremism and extremist groups.

Answer: Per the Secretary of Defense’s April 9, 2021, Memorandum, “Immediate Actions to Counter Extremism in the Department and the Establishment of the Countering Extremism Working Group,” the Department is reviewing policies regarding extremist activity, including definitions, to ensure they are appropriate and aligned to achieve our objectives.

The current policy on prohibited extremist activities is contained within Department of Defense Instruction (DoDI) 1325.06, “Handling Dissident and Protest Activities Among Members of the Armed Forces.” DoDI 1325.06 strikes a balance between the protection of civil liberties and the needs of military readiness by prohibiting extremist acts. It specifically prohibits military personnel from active advocacy of “supremacist, extremist, or criminal gang doctrine, ideology, or causes, including those that advance, encourage, or advocate illegal discrimination based on race, creed, color, sex, religion, ethnicity, or national origin or those that advance, encourage, or advocate the use of force, violence, or criminal activity or otherwise advance efforts to deprive individuals of their civil rights.”

It also prohibits active participation in organizations that “advocate supremacist, extremist, or criminal gang doctrine, ideology, or causes; including those that attempt to create illegal discrimination based on race, creed, color, sex, religion, ethnicity, or national origin;

advocate the use of force, violence, or criminal activity; or otherwise engage in efforts to deprive individuals of their civil rights.” “Active participation” includes, but is not limited to, “fundraising; demonstrating or rallying; recruiting, training, organizing, or leading members; distributing material (including posting on-line); knowingly wearing gang colors or clothing; having tattoos or body markings associated with such gangs or organizations; or otherwise engaging in activities in furtherance of the objective of such gangs or organizations that are detrimental to good order, discipline, or mission accomplishment or are incompatible with military service.”

Question Six: Also provide a response as to how the Department would deal with an individual who may hold those beliefs but are not advocating for violence.

Answer: The prohibition of extremist activities in DoDI 1325.06 regulates activities, not the holding of certain beliefs. Accordingly, the holding of certain extremist beliefs is not itself prohibited under the policy. However, a Service member’s active participation in extremist organizations or active advocacy of extremist doctrines or ideology, even if the Service member does not advocate violence, may still violate DoDI 1325.06.

Per DoDI 1325.06, active participation includes, but is not limited, to conduct such as “fundraising; demonstrating or rallying; recruiting, training, organizing, or leading members; distributing material (including posting on-line); knowingly wearing gang colors or clothing; having tattoos or body markings associated with such gangs or organizations; or otherwise engaging in activities in furtherance of the objective of such gangs or organizations that are detrimental to good order, discipline, or mission accomplishment or are incompatible with military service.” Thus, a Service member who actively participates (as described above) in an extremist organization or actively advocates extremist doctrines ideologies, or causes would violate DoDI 1325.06, even if the prohibited activities did not involve advocating violence.

Once a commander determines that a Service member violated DoD policy, the commander may utilize a spectrum of corrective and disciplinary tools. These include, as appropriate, counseling, reprimands, and separation from the Service. If the commander further determines that a Service member has violated the Uniform Code of Military Justice by, for example, violating a Military Department’s punitive general order implementing specific portions of DoDI 1325.06, the commander’s options additionally include non-judicial punishment or referral of charges for trial by summary, special, or general court-martial.

TUESDAY, OCTOBER 26, 2021.

**WORKFORCE DEVELOPMENT AND THE DEPARTMENT
OF DEFENSE**

WITNESSES

**XAVIER BEALE, VICE PRESIDENT OF TRADES, NEWPORT NEWS SHIP-
BUILDING, HUNTINGTON INGALLS INDUSTRIES**
**MEREDITH A. BERGER, SENIOR OFFICIAL PERFORMING THE DUTIES
OF UNDER SECRETARY OF THE NAVY**
WILLIAM BONVILLIAN, LECTURER, MIT
**GENERAL HAWK CARLISLE, PRESIDENT/CEO, NATIONAL DEFENSE IN-
DUSTRIAL ASSOCIATION**
**HON. GILBERT R. CISNEROS, JR., UNDER SECRETARY OF DEFENSE
FOR PERSONNEL AND READINESS**
**JOSE-MARIE GRIFFITHS, PRESIDENT, DAKOTA STATE UNIVERSITY,
AND FORMER COMMISSIONER, NATIONAL SECURITY COMMISSION
FOR ARTIFICIAL INTELLIGENCE**
HON. GINA ORTIZ JONES, UNDER SECRETARY OF THE AIR FORCE
**CHRISTOPHER LOWMAN, SENIOR OFFICIAL PERFORMING THE DU-
TIES OF UNDER SECRETARY OF THE ARMY**

OPENING STATEMENT OF CHAIR MCCOLLUM

Ms. MCCOLLUM. This hearing will come to order.

This hearing is virtual, and we are going to address a few house-keeping matters.

For today's meeting, the chair or the staff designated by the chair—for me, it will be Mr. Ryan—may mute participants' microphones when not under recognition or for purpose of eliminating background noise.

Members are responsible for muting and unmuting themselves. If I notice that you have not unmuted yourself, I will ask you if you would like staff to unmute you. If you indicate approval by nodding, staff will unmute your microphone.

I remind all members and witnesses that the 5-minute clock still applies, and you will see the 5-minute clock in the screen.

If there is a technology issue, we will move to the next member until the issue is resolved, and you will retain the balance of your time.

At 1 minute remaining, the clock will turn yellow; 30 seconds remaining, I will gently tap the gavel to remind members that their time has almost expired. When your time has expired, the clock will turn red, and I will begin—and I will begin—to recognize the next member.

In terms of the speaking order, we are going to follow the order set forth in House rules, beginning with the chair and the ranking member; then members present at the time the hearing is called to order will be recognized in their order of seniority; and finally, members not present at the time the hearing is called to order.

Finally, House rules require me to remind you that we have set up an email address to which members can send anything they wish to submit in writing for any of our hearings or markups. The email address has been provided to your staff.

With that, before I introduce the guests, we are going to have votes at 2:30. Our speakers are aware of that. Mr. Ryan and I will be exchanging virtually the gavel. When I am not present, Mr. Ryan will have the gavel and will recognize people. And Ken will have his—excuse me—the ranking member, Mr. Calvert, will have his designee.

This afternoon, this committee will receive testimony on current and future needs for the Department of Defense workforce, for both military and civilian, and the defense industrial base.

This will be a two-panel hearing. We will hear from Mr. Bonvillian, a lecturer from MIT and co-author of “Workforce Education: A New Roadmap”; from Dr. Griffiths, the current president of North—of Dakota State—I always want to say North Dakota because my mother was from North Dakota, so forgive me—from Dakota State University and former commissioner from the National Security Commission on Artificial Intelligence; Mr. Beale, vice president of trades at Newport News Shipbuilding, a division of Huntington Ingalls Industries; and General Carlisle, president and CEO of the National Defense Industrial Association, will provide us with the small business perspective.

The second panel we will recognize government experts from the Department of Defense. We will hear from Under Secretary Cisneros, head of Personnel and Readiness in the Office of the Secretary of Defense; Under Secretary Ortiz Jones from the Department of the Air Force; Mr. Lowman, senior official performing the duties of Under Secretary of the Department of the Army; and Ms. Berger, the senior official performing the duties of Under Secretary of the Department of the Navy.

I really strongly encourage members to stay on for both panels. And when going over to voting, coming back and forth, you can put your ear bud in and log on through your phone so you don’t miss a thing.

Here we go.

Over the past few years, several studies and reports have expressed significant concern about the ability for our workforce to meet the current and future workforce gaps in skilled trades, engineering, and emerging technologies throughout the defense sector. This challenge has been a particular interest of mine as chair, and the committee report for fiscal 2022 includes several reporting requirements from the Department on this issue. This hearing serves as a follow-on to our report, and I hope it will be a genuine opportunity to start a dialogue on the issues we face in the defense workforce.

This hearing will explore such questions as:

What type of DOD civilian and military education and workforce development programs are in place to address the current and future workforce gaps?

How does the Department coordinate academic and workforce development programs across the service?

And what programs are in place to fill the demand careers in the Department, the services, and the industry, particularly to meet the challenge of emerging technology, things like artificial intelligence, hypersonics, and cyber.

We are addressing current workforce gaps in the skilled trades right now, engineering and emerging technologies, to ensure that we have enough people trained for those jobs.

What will the Department of Defense need to do not only to recruit individuals for these jobs, but also incentive packages that are required to retain them?

How do workforce gaps impact the defense industry, both large and small businesses, and the supply chain in the defense sector?

How do these gaps impact the industry's ability to create, maintain, and sustain new technologies?

We could go on with more, but these are just a few of the questions I hope and I know will be addressed in part today.

Our first panel of outside witnesses will provide us with their perspective on a broad scope of current and future defense force gaps and how the Department is acting to address this challenge and what they think the Department could do better.

As a former teacher, I am keenly interested to hear how the public and private education sectors are doing, ranging from kindergarten through postsecondary. Are they poised to meet our future workforce demands?

And I want to hear how the Department and industry can collaborate to support underrepresented minority, veterans, non-profits, and small business communities on workforce issues.

And then finally, our second panel of government witnesses. They will share their perspective on the same topics and how they view the challenges of the current and future defense force work gaps, what actions DOD is taking to address these needs.

The committee is also interested in how the Department conveys these challenges in priorities, such as modernization priorities, to the services while also ensuring that those new priorities are incorporated into civilian and military education and workforce development programs, and in turn, how the services incorporate those modernization practices into their structures and effectively execute them.

Now, I know there is a lot to cover, and this is an issue that is vitally important to all of us. It not only affects the military, but it affects many small businesses in each and every one of our States.

So with that, I want to recognize my ranking member, Mr. Calvert, for his opening remarks, and a person who has been very concerned about the health of small business and the Department of Defense reaching out to make sure that they are included.

Mr. Calvert.

OPENING REMARKS OF MR. CALVERT

Mr. CALVERT. Thank you, Chair McCollum.

First, I would like to thank the witnesses on both panels for appearing before us today. You all represent government, academia, and industry leaders, a partnership that we will need to be

strengthened to ensure our workforce is ready to take on the challenges of both today and tomorrow.

Since the Second World War, the ingenuity of our industrial partners and its highly trained, capable workforce has been the driving force in America's quantitative military edge.

Today, our Nation relies heavily on a workforce, both in the government and in the private sector, that can execute the requirements set by policymakers.

However, we are living in an era of rapid technological change, emerging threats in new domains, and the growth of near-peer adversaries, which require a complete and coordinated response. We cannot win the wars of the future with the workforce of the past.

Furthermore, the realities of the past year and a half have shown both how fragile and resilient this workforce can be. COVID-19 has confronted both the government and industry with challenges previously unthinkable.

I would like to thank all of you for your flexibility, persistence, and commitment to our national security during this difficult time in our Nation's history.

Today I am interested in hearing from our witnesses about a range of topics, including how we integrate new technologies, like artificial intelligence, into our processes, how can we properly train the next generation of our workforce, what Congress can do better to assist the DOD's industrial partners, and how we can ensure bureaucracy does not needlessly hinder rapid development.

I also am interested in hearing from our service civilian leadership about how we can manage and rightsize our growing civilian workforce without losing capability.

As I have said to the subcommittee many, many times before, I am greatly concerned about the cost of maintaining a needlessly large civilian workforce, particularly as budget uncertainty will remain a reality in years to come.

If we are going to truly prioritize the DOD's resources to focus on great power competition, proper management of the civilian workforce must be part of that conversation.

Again, I thank the chair for her focus on all these important issues and for the witnesses appearing before us today.

And, with that, I yield back.

Ms. McCOLLUM. Thank you.

So let's get right to it. Our first witness for the panel is Mr. William Bonvillian.

Welcome. Please proceed with your testimony for 5 minutes.

SUMMARY STATEMENT OF MR. BONVILLIAN

Mr. BONVILLIAN. Chair McCollum, Ranking Member Calvert, members of the subcommittee, I want to thank you for the opportunity to meet with you today.

I have been asked to address three of the list of issues that you all went through, kind of overall problems facing the American workforce education, some of the possible solutions, and to focus on the defense workforce education within that kind of overall context.

So, broadly speaking, our economy has low productivity, which affects our economic growth and, therefore, our financial well-

being. There are two inputs for improving productivity: technological advance and a more skilled workforce.

Now, historically, U.S. firms and policies have favored the first and tended to neglect the second. So U.S. education and training are lagging behind the available technology, which hinders our ability to adopt the new technology that we need. So now is a time to improve that workforce input.

This is a message that applies to DOD as well. As you all have pointed out, if DOD wants its modernization agenda, it needs a stronger industrial base, and that means workforce development has got to be a key input on DOD's agenda.

What are the big challenges that we face in this workforce education area?

We don't really have a system for workforce development, and we need one.

We have got a disconnect between work and learning, school on one side, work on the other, with few pathways between the two.

We have got disinvestment historically by government and employers.

We have got few Federal programs that reach the higher technical skills and incumbent workers.

And our workforce programs are not well-linked or complementary.

We dismantled much of vocational education starting in the 1970s. Our community colleges are underfunded, and their student completion rates are too low. Colleges and universities are disconnected from workforce education, so lifelong learning is missing.

We have got underfunded advanced technical education programs. We have got a broken labor market information system. And all of this takes place within what we could call legacy sectors, which means change is hard to undertake.

Against this backdrop of issues, the U.S. has got a quality job problem. Technological advances, especially in information technologies, are putting too many quality jobs out of reach for workers who didn't get the proper skills and training.

Upskilling is ongoing, with jobs increasingly going to those who got the right skills and training, but we have got millions of stranded jobs that we just aren't filling.

We need a new system, frankly. If you ask Americans what high school and college are, they know. But if you ask them what is the American workforce education system, you are going to get a blank stare.

And we need to build this system. And by building it up, we will open new opportunities. But we can't just do more of the same and expect change.

We are starting to see new changes coming about in workforce education that we could take advantage of: new education technologies, including online applications and VR, virtual reality and augmented reality, gaming, digital tutors. Those are starting to come on.

Short courses that take weeks and months, not years, that better fit student schedules. Community college programs that reach not just community college students but also incumbent workers and high school students.

We need apprenticeships. We need to raise community college completion rates. We need technical and comprehensive high school programs with workforce elements built into them. We need an expanded employer role, new curricula in advanced fields, and a new labor market information system.

Turning to the defense workforce, how do these overall recommendations tie into the Defense Department and its needs?

So DOD, as you all know well, has massive workforce education needs. It has to train service personnel, departing servicemembers and veterans, so that they have opportunities when they leave the military, its own industrial base workforce of 88,000 at depots, arsenals, shipyards, and there are tens of thousands of defense contracting firms where workers need upgraded skills.

I want to focus on the last three, and jobs in manufacturing are of particular focus for these three groups.

Advanced manufacturing, a big challenge for DOD. The U.S. has been ceding major parts of its manufacturing base to foreign competitors. It has been falling behind in new manufacturing technologies.

This is a major problem for DOD, given its need for secure and reliable supply chains. But we won't get to these new manufacturing technologies unless we have got a workforce ready to implement them.

DOD has got a series of assets on these workforce education issues. And I won't try to [inaudible] mention the more critical ones.

Its advanced manufacturing institutes through ManTech, its Industrial Base Analysis and Sustainment, IBAS, programs, the Service Training and Development Centers in Orlando, and the Office of Local Defense Community Cooperation are all key assets that we can deploy in these workforce issues.

In conclusion, we have got a workforce education system that isn't working well as a system, and it really needs reform, and DOD has got a big stake in strengthening our industrial base and, therefore, in strengthening our workforce.

Thank you.

[The information follows:]

Testimony of William B. Bonvillian to the House Defense Appropriations Subcommittee, Hearing on Workforce Development and the Department of Defense, October 26, 2021

Chair McCollum, Ranking Member Calvert and Members of the Subcommittee:

I want to thank you for the opportunity to meet with your Subcommittee today. I have been asked to speak about the problems facing American workforce education overall, to discuss some of the possible solutions, and to focus on Defense workforce education in that context.

Our economy has low productivity which affects our economic growth and therefore our financial well-being. There are two inputs to improving productivity: technological advances and a more skilled workforce. U.S. firms and policies have historically tended to favor the first not the second. So, education and training are lagging behind available technology, which affects our ability to adopt the technology. Now is a critical time to improve the workforce input. This is a message that applies to DOD as well: If it wants its modernization agenda, it needs a stronger industrial base, and this means workforce development must be a key input on its agenda.

Key Workforce Education Problems

What are the challenges we face in workforce education? We don't have a working system for workforce education and we need one. Let me briefly summarize what I believe are the key problem areas in this system that isn't a system:¹

- We have a **disconnect between work and learning**. We have school on one side and work on the other, but few clear routes from school to job. They are disconnected.
- Workforce education has faced **disinvestment by government and employers**. Despite the growing workforce needs, workforce spending by both has been in decline.²
- **Few federal programs reach higher technical skills and incumbent workers**. This is important because we need to teach advanced skills and “upskill” the current workforce. And our **workforce programs are not well-linked or complementary**.
- **Vocational education** in secondary schools was **largely dismantled** starting in the 1970s. We said we were going to instead send everyone to college, but then we didn't. Only 36% of those over age 25 have college degrees.³ Those who didn't get through college missed out on technical education in high school as well.

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- **Community colleges are underfunded.** They lack resources to provide **advanced training in new fields** and their **student completion rates are too low** -- only 40% complete Associate Degrees within six years.⁴
- **Colleges and universities are disconnected from workforce education.** Although the college degree is now the critical differentiator for workforce success and economic wellbeing, many colleges think career education is someone else's problem.
- **Lifelong learning is missing.** Although new skills are being required at a rapid pace, particularly in the information technology area, we have no system for lifelong learning.
- We have **underfunded advanced technical education programs, including at the DOD's Advanced Manufacturing Institutes.** DOD's nine Manufacturing USA institutes can take on advanced technical training curricula and training but it's a big task and they lack needed resources.
- We have a **broken labor market information system.** Strong markets require strong information systems. But employers lack information on the skills job applicants have, employees don't know what skills employers need, and educators don't know what skills they should offer training for.
- The existing actors in workforce education are in **"legacy" sectors and these are hard to change.**

The Quality Job Challenge

Against this backdrop, the U.S. has quality job problems. Technological advances, especially in information technologies (IT), are putting many quality jobs out of reach for workers who didn't get the proper skills and training. So upskilling is ongoing, with jobs increasingly tending to go to college educated. Having at least some college has replaced high school as a core job credential. But we don't really know what most college degrees stand for. Too often it's a default credential that employers require without looking at the competencies behind it. Meanwhile the growing IT sector demands new skills. The result is that new high or middle skills jobs will require education beyond high school. But again, only a little above 1/3 of Americans over 25 have a 4-year college degree and this college degree does not necessarily prepare one with the skills needed in the workforce.

The Need for a New System

We have what economist David Autor has called a barbell problem. On the barbell we have a bell that represents a thriving and growing upper middle class. The bar of the barbell – the middle class – is thinning out. And the bell on the other end, with lower-end, lower-paid services sector jobs, has been growing, with too many in the middle class shunted down the bar to the services sector bell. But Covid-19 has made the problem worse. It hit lower end services sectors particularly hard – in-person retail, hospitality, food service, travel and tourism, etc.⁵ – with 7.7 million now unemployed.⁶ Many of those

service jobs are taking a long time to come back, while job openings tend to be in jobs requiring more skills. We have a jobs mismatch, with stranded jobs. We have jobs that require more skills but the potential workers are missing the skills to fill them. Facing these odds, many potential workers have simply taken themselves out of the workforce - we have our lowest labor participation rate, 61%, ever.⁷ A key part of the answer to this mismatch is that we need a new workforce education system. And we need it soon to deal with this dilemma.

If you ask Americans what high school or college are, they know. If you ask them what is the workforce education system, you get a blank stare. We need to build this system, and by building it we will open up new opportunities for the too many Americans who are being left behind.

The Scale-Up Role of New Education Technologies

We can't just do more of the same and expect change. We can't keep turning out the same numbers we have in the past, we need to scale up our efforts. One promising development is that there are new education online technologies evolving that could help with scale. While coronavirus taught us that much education for over-18s could go online, video business conferencing tools, like Zoom, Webex or Teams, didn't take advantage of what we now know about learning science. Asynchronous online video that is self-paced with continuous assessments, in 10-minute chunks that fit the attention span, with feedback loops, and repetition, can offer much better education than conferencing tools. Key parts of workforce education must be hands-on, but much content learning can be moved online, saving instructors for mentoring and learning-by-doing. Online education is becoming widespread and can be optimized with blended - combined in-person and online - learning. Online can be joined with: virtual and augmented reality (VR/AR) technologies for learning by doing, with computer gaming and simulations, with blockchain certification (which enables secure rapidly accessible verified credentials), with in-person bootcamps, and with digital tutors for more individualized instruction (when artificial intelligence (AI) advancements make further progress). This is just one option, what are others?

We can start to see the shape of a new workforce education system. It could include:

- **New education technologies**, including online, VR/AR, gaming, digital tutors and AI, as described above.
- **Short Courses** that take weeks and months not years and better fit student schedules. These can be developed as stacked modules that also embed industry-recognized credentials. These short courses and credentials in turn should connect to community college certificates and degrees.
- **A "Trifecta"** of programs at community colleges that reach not only community college students, but incumbent workers and high school students.
- **Apprenticeships or "Apprenticeships Light"** to break down the current work/learn barrier. These can be offered collaboratively by community colleges,

high schools and employers. Regional coordination can include employer and regional associations and local government.

- **Raise community college completion rates.** Too often these can be in the 30% range but the workforce situation would get a lot better if they were 70%. Starting students with technical courses, so they can see their career opportunity, and combining them remedial courses, which are tied to career skills, is an effective way to do this.
- **Technical and Comprehensive High Schools.** While some states kept their vocational high schools, too many were closed. States and regions can support new technical schools or build skills programs into existing high schools.
- **We need an expanded employer role.** This is vital for apprenticeships, training standards, industry-recognized credentials and programs at community colleges and high schools that reflect employer needs.
- **New curricula for advanced fields.** We lack curricula for new, emerging fields, particularly in advanced manufacturing. There is a key role here for the advanced manufacturing institutes.
- **Unified efforts at the state level.** Federal workforce programs are stove-piped, and these stovepipes are duplicated at the state level as states carry out these programs. But some states are connecting these programs at the state level, enabling a more unified workforce education approach.
- **A new labor market Information system** is needed by employers, education institutions and workers. A stronger information system means stronger labor markets that benefit all participants.

The Defense Workforce

How do we tie these overall recommendations to the Defense Department and its needs?

DOD has massive workforce education needs. It must train service personnel in operations, maintenance and repairs. It needs to help departing service members and veterans to keep military service an attractive option, it needs to upgrade its own industrial base workforce of 88,000 at depots, arsenals, and shipyards. And it needs to upgrade the skills at tens of thousands defense contracting firms, small and large, that make its platforms and equipment which employ millions of workers. Up to one-third of the 250,000 U.S. manufacturing firms have defense contracts.⁸ Because the services have well-established training programs for their military personnel, I want to focus here where there are less established workforce systems – in the categories of the defense industrial base, defense contractors and departing service members. Jobs in manufacturing are a particular focus for these groups.

DOD, then, faces a series of workforce challenges, including: adopting advanced manufacturing, preparing service members for subsequent careers, and in emerging technology areas where it needs expertise, such as artificial intelligence (AI) and cybersecurity.

Advanced manufacturing is a particular challenge for DOD, as DOD has now clearly recognized.⁹ The U.S. manufacturing productivity rate is at historically low levels, stagnating for the last 15 years. Small and mid-sized manufacturers (SMMs) are falling behind larger firms in efficiency and productivity and this gap is widening, yet almost half our industrial output is from these smaller firms.¹⁰ The U.S. has been ceding major parts of its manufacturing base to foreign competitors and falling behind in new manufacturing technologies. This is a major problem for DOD given its need for secure and reliable supply chains.¹¹ Advanced manufacturing – applying our still-strong innovation capacity to innovation in manufacturing technologies and processes – is the way out.¹² It will enable us to build the efficiency and productivity we need to compete. This means developing technologies in such areas as robotics, AI, 3D printing, power electronics, optics and photonics, advanced materials, and production cybersecurity. DOD's industrial base, operators and contractors need to implement all these technologies to get to the new manufacturing efficiencies and cost savings it requires.

But we won't get to the new manufacturing technologies unless we have a workforce ready to implement them. So, we need new workforce training systems and DOD must be a part of this because it has particularly acute needs. Yet small firms won't support workforce education in new manufacturing technologies unless they have orders in place requiring these new technologies. Thus, technology implementation has to accompany workforce implementation – these programs must work in tandem.¹³ Education and training lag behind technology adoption, as noted above, which creates a skills gap and slows adoption of advanced manufacturing technologies. So proactively developing workforce education alongside the emerging manufacturing technologies is essential to close the skills gap and increase the adoption of advanced manufacturing. The advanced manufacturing institute program is well-positioned to do this.

When DOD looks at education programs it needs for its workforce, it can consider encouraging and promoting many of the new policies outlined above. DOD can play an important role through active support for new online education technologies, for short modular courses that can be stacked to lead to certificates or degrees, for embedding employer-recognized credentials in education programs, for programs that reach incumbent workers, for apprenticeships, for efforts to raise completion rates, for developing new curricula in advanced fields, and for labor market information systems for skills and skill demand. DOD's massive contracting role gives it an influential role in a series of important industrial sectors. In addition, these are best practices that DOD can promote and encourage in programs for its own industrial base workforce, and for departing servicemen and women and veterans.

DOD Workforce Education Programs

How should DOD engage? One area for workforce engagement is in DOD's extensive modernization agenda involving advanced technologies. While it has undertaken technology development planning, it has not mapped workforce skill needs and demands required for modernization against its development plans to create a skills map that can line up against its technology mapping. Obviously, it's very important that the two match up. This Subcommittee has recognized this need in its FY22 report asking for a study on how DOD's "modernization strategies may impact these [workforce] needs and possible future gaps in the next five to ten years."¹⁴

DOD has some important assets to deploy in this effort to engage its workforce. Let me highlight four that I believe are particularly positioned to make a difference on defense workforce education: the advanced manufacturing institutes, the IBAS program, the services' programs applying virtual reality for training, and its office for local defense community cooperation.

Advanced manufacturing institutes: DOD's OSD ManTech supports nine of the 16 manufacturing institutes and collaborates with the others that are part of the Manufacturing USA program first launched in 2013.¹⁵ Each institute has programs in workforce education in its advanced technology area. The institutes have the right mix of key actors - industry, education institutions and state and local governments - to perform three critical tasks: develop innovative learning programs using new tools like digital and blended learning; create programs that can scale across multiple regions and technology domains; and promote a positive image for careers in manufacturing achievable through relevant certificates, community college, or advanced degrees. Various Institutes have made significant accomplishments in developing online education modules for advanced manufacturing, applying virtual reality technology, developing programs to educate departing service members for advanced manufacturing careers, and developing and promoting high school curricula in advanced manufacturing. OSD ManTech understands this workforce need well and is pushing programs to support its manufacturing institute efforts.

Best Practices: A new National Academies of Sciences report has recommended that the institutes:

- Develop "knowledge, skill and ability (KSA) elements and corresponding competencies" since these will be key to effective advanced manufacturing curricula,
- Develop "educational materials with and to be used by its education and industry ecosystem,"
- Develop "online materials" to scale up their education and training programs, and
- Develop "industry-recognized credentials" with industry partners,
- Form "regional engagements" with area industry and education institutions to introduce advanced manufacturing training;
- Map "skill demand and develop skill roadmaps" that complement their technology development roadmaps.¹⁶

The study found these were key best practices that need to be in place at each institute. Many of the institutes are already undertaking a number of these efforts, but they are not now adequately resourced to support them.

Networking Across Institutes: The Academies report also noted that employers won't want to train for just one advanced manufacturing technology. In other words, they will want to adopt skill packages for a range of new technologies: 3D printing, robotics and digital production plus specialty areas like flexible electronics or lightweight materials, depending on their needs. These technology skill sets will need to be interoperable and complementary. But the institutes must be focused, appropriately, on their particular technology and related skills. The report therefore recommended that a cross-institute mechanism be developed to support the institutes in combining these skills into common packages so manufacturing firms can more readily adopt them, and not be forced to deal with them one at a time.¹⁷ Overall, as noted, the institutes are not adequately resourced to undertake their major workforce tasks. They require an additional supporting mechanism across the institutes to address such gaps as: reaching SMMs, improving workforce diversity, expanding online training, data gathering on workforce demand and needs, and increasing partnering with community colleges and industry. A centralized program element operating across the institutes could be a big enabler to expand workforce effectiveness. The ManTech program understands this need to facilitate network functions and collaboration on workforce projects across the manufacturing institutes and their manufacturing technologies, but needs the resources to undertake this step.

Common Online Platform: The Academies report also strongly encouraged, and many of the institutes have already developed, online workforce education materials. To enable access, OSD ManTech is developing an online education site through Open edX for posting these materials not only from the Institutes but from other DOD sources as well. This could be a key step in both developing curricula in advanced manufacturing, which is in significant part missing now, and in scaling up access to it.

Overall, the Manufacturing Institutes can play a critical role for DOD in implementing workforce education in advanced technology fields, and OSD ManTech requires more support to accomplish its important workforce education goals.

Industrial Base Analysis and Sustainment (IBAS): IBAS has the responsibility for strengthening and maintaining critical skills in the defense industrial base. As you know, while ManTech and the Manufacturing Institutes help enable advanced manufacturing, IBAS maintains ongoing manufacturing skills and capabilities in the defense industrial base. It has invested more than \$300 million directly into the industrial base over Fiscal Years (FY) 2019-2021. Since FY19, through its National Imperative for Industrial Skills¹⁸ initiative, the IBAS program has partnered with industry and academia and invested over \$80 million in industrial workforce development and training projects to help improve or scale workforce pipelines supporting a range of defense weapon system development, production, and sustainment needs, with a focus on skills such as welding, advanced machining, electronics, precision optics, metrology, digital/additive manufacturing and other Industry 4.0 skills that have entered production facilities.

The IBAS workforce education projects under its National Imperative for Industrial Skills, that enable industry and education institutions to partner to solve ongoing defense workforce needs, deserve continuing and increased overall support for competitively-offered projects. The workforce education efforts in manufacturing clearly need to scale up if DOD needs are to be met and change is required.

Service Training Development Centers: Each of the military services has a center for training development adjacent to each other in Orlando, Florida, where new education technologies can be demonstrated and developed, particularly virtual reality and augmented reality joined with computer gaming and simulation platform technologies.¹⁹ These centers are moving the new education technologies into a central focus for training service men and women in their operational tasks. There is nothing quite like this in the civilian sector. This unique development capability could be applied not only to operational training but to advanced manufacturing and other DOD workforce education needs if requirements were formulated.

Office of Local Defense Community Cooperation: this program (formerly the Office of Economic Adjustment) provides a way to assist communities affected by defense contracting or employment opportunities. In general, it assists communities and regions in supporting DOD missions, particularly its defense manufacturing community support program, which includes workforce education efforts along with development of defense critical technologies.²⁰ It is a means for DOD to support workforce education on a regional basis with competitive awards to defense-dependent communities.

Conclusion

We have a workforce education system that isn't working well as a system and needs large scale reform. We have a deep disconnect between work and learning, workforce education is underfunded, our federal programs don't mesh, we lack programs and curriculum for the advanced skills that are increasingly required, existing programs don't reach incumbent workers that need upskilling, we dismantled most of our vocational high schools, we underfund community colleges, we don't offer lifelong learning, and we have a broken labor market information system.

These are big challenges, but we are seeing a mix of new ideas and new programs that show us a way out: short courses with modules that stack to degrees and certifications, programs that reach incumbent workers and high school students with advanced skills, new apprenticeship programs, new online education technologies, improved community college completion rates, better integration between employers and education institutions, new curricula in advanced fields, unified workforce programs at the state level, and improved labor market information all offer ways out.

DOD has a big stake in strengthening our industrial base and therefore in strengthening its workforce. Innovative workforce education approaches for its own industrial base workforce, for the tens of thousands of firms that are defense contractors,

and for its departing service members and veterans, are key. The new best practices summarized above should guide DOD's efforts with these groups. But it is not only about incentivizing others, DOD has workforce programs it can deploy. I have highlighted four particular programs that I believe can play an important role in getting DOD the workforce it needs – ManTech and its advanced manufacturing institutes, IBAS, the services' training development centers, and workforce efforts at the office of local defense community cooperation

My thanks, again, to the Subcommittee for this opportunity to testify.

ENDNOTES:

¹ Detailed in, William B. Bonvillian and Sanjay Sarma, *Workforce Education, A New Roadmap* (Cambridge, MA: MIT Press 2021), 43-59.

² Bonvillian and Sarma, *Workforce Education*, 44-47.

³ U.S. Census Bureau, Education Attainment in the U.S., Release No. CB20-TPS.09, March 30, 2020.

⁴ National Student Clearinghouse Research Center (NSCRC), *Completing College, National and State Reports*, Dec. 2021, 4, https://nscresearchcenter.org/wp-content/uploads/Completions_Report_2020.pdf

⁵ Susan Lund, Kwellin Ellingrud, Bryan Hancock, James Manyika, and Andre Dua, *Lives and Livelihoods: Assessing the near term impact of Covid-19 on US Workers*, McKinsey Global Institute, April 2021, <https://www.mckinsey.com/~media/mckinsey/industries/public%20and%20social%20sector/our%20insights/lives%20and%20livelihoods%20assessing%20the%20near%20term%20impact%20of%20covid%2019%20on%20us%20workers/lives-and-livelihoods-assessing-the-near-term-impact-of-covid-19-on-us-workers.pdf>.

⁶ Bureau of Labor Statistics, *The Employment Situation September 2021*, Household Data, Summary Table A, Unemployed, Oct. 8, 2021, <https://www.bls.gov/news.release/pdf/empsit.pdf>.

⁷ Bureau of Labor Statistics, *The Employment Situation, Labor Force Participation Rate*, September 2021, Oct. 8, 2021, 2, <https://www.bls.gov/news.release/pdf/empsit.pdf>.

⁸ Ben Armstrong, *Advanced Technology, Advanced Training, A New Policy Agenda for U.S. Manufacturing*, MIT IKIM, May 2021 (report for OSD ManTech), 10-11.

⁹ Office of the Secretary of Defense, *Acquisition and Sustainment Industrial Policy*, Report to Congress on Industrial Capabilities, 2020, Jan. 2021, 8-20, <https://media.defense.gov/2021/Jan/14/2002565311/-1/-1/0/FY20-INDUSTRIAL-CAPABILITIES-REPORT.PDF>.

¹⁰ Armstrong, *Advanced Technology, Advanced Training*, 11.

¹¹ OSD, *Report to Congress on Industrial Capabilities*.

¹² William B. Bonvillian and Peter L. Singer, *Advanced Manufacturing, the New American Innovation Policies* (Cambridge, MA: MIT Press 2018).

¹³ Armstrong, *Advanced Technology, Advanced Training*, 21-24.

¹⁴ House Appropriations Committee, *Report to Accompany the Department of Defense Appropriations Bill for Fiscal Year 2022*, 59-60,

<https://docs.house.gov/meetings/AP/AP00/20210713/112896/HMKP-117-AP00-20210713-SD003.pdf>.

¹⁵ DOD Manufacturing Technology (ManTech) Program, Manufacturing Innovation Institutes, <https://defenseinnovationmarketplace.dtic.mil/business-opportunities/manufacturing-usa-institutes/>

¹⁶ National Academies of Sciences, National Materials and Manufacturing Board, DOD Engagement with its Manufacturing Innovation institutes, report, October, 2021, 3-8 - 3-10, C-22, and Recommendation 3.1). (Note: the author served on the committee that developed the report)

¹⁷ National Academies of Sciences, DOD Engagement, 3-12 and Recommendation 3.1.

¹⁸ Industrial Base Analysis and Sustainment, <https://www.businessdefense.gov/IBAS/Opportunities/> and https://sam.gov/opp/9373c7a3654c4f318908aeb5c7814b40/view?keywords=cs-2%200-1601&sort=-relevance&index=&is_active=true&page=1.

¹⁹ Bonvillian and Sarma, *Workforce Education*, 4-6, 231-232.

²⁰ See, for example, DOD, Defense Manufacturing Communities Support Program, award announcement, Sept. 22, 2021, <https://www.defense.gov/News/Releases/Release/Article/2785070/dod-approves-25-million-in-grants-under-defense-manufacturing-community-support/>.

BIO – William B. Bonvillian**Current and Recent Work Experience:**

William B. Bonvillian, is a Lecturer at the Massachusetts Institute of Technology, teaching innovation and science policy courses in the Science Technology and Society and Political Science Departments. He is also Senior Director, for Special Projects, at MIT's Office of Digital Learning leading research projects on workforce education. Previously, from 2006-2017, he was Director of MIT's Washington Office, reporting to MIT's President. In this position, he worked to support MIT's strong and historic relations with federal R&D agencies, and its role on national science policy. He assisted with major MIT technology policy initiatives on energy technology, the "convergence" of life, engineering and physical sciences, advanced manufacturing and online higher education. Prior to MIT, he served for seventeen years as a senior policy advisor in the U.S. Senate where his legislative efforts included science and technology policy and innovation issues. He worked extensively on legislation creating the Department of Homeland Security, on national Intelligence reform, on climate change, on Defense and life science R&D, and on national competitiveness and innovation, including legislation leading to the America Competes Act in 2007.

Prior Teaching, University Lectures, Committees Awards:

Prior Teaching: He has also taught on the adjunct faculty at Johns Hopkins' School of Advanced International Studies on energy technology policy, and at Georgetown, and George Washington on science and technology policy.

Lectures: He has lectured and given speeches before numerous organizations on science, technology and innovation questions, including the 2012 annual Alan Bromley Memorial Lecture at the University of Ottawa, and invited lectures and talks at Cambridge University's Babbage Conference and Institute for Manufacturing, Stanford University Duke University, University of Toronto, Georgia Tech, the University of North Carolina, Universidade de Campinas in Brazil, Universidad Central de Caribe in Puerto Rico, Industrial College of the Armed Forces, Cornell University, the National Graduate Research Institute for Policy Studies (GRIPS) in Tokyo, American University in Cairo, Carleton College, Rochester Institute of Technology, and Southern Illinois University.

Committees: He is on the National Academies of Sciences' standing committee for its Innovation Policy Forum, served for seven years on the Board on Science Education of the Academies, and on six other Academies' Committees. He has chaired the American Association for the Advancement of Science (AAAS) Committee on Science, Engineering and Public Policy for four years, is on the Polaris Council for the Government Accountability Office's Science and Technology Assessment and Analysis program, is a member of the Babbage Forum at Cambridge University (UK), serves on the Board of the Information Technology and Innovation Foundation (ITIF), serves on the Advisory Council of the Mystic Seaport Museum, and served on the Governor of Connecticut's Transportation Finance Panel.

Awards: He was the recipient of the IEEE Distinguished Public Service Award in 2007 and was elected a Fellow by the American Association for the Advancement of Science in 2011 for "socially distinguished" efforts "on behalf of the advancement of science and its applications."

Workforce Education and Advanced Manufacturing Efforts:

In recent years, he has worked extensively on workforce education issues, evaluating programs nationwide and leading MIT research projects. He has also worked advanced manufacturing innovation issues, speaking and writing extensively on these topics. He was an advisor to MIT's noted "Production in the Innovation Economy" study of manufacturing from 2011-14, and a participant for two MIT presidents in the President's Advanced Manufacturing Partnership on its major 2012 and 2014 reports that helped lead to the advanced manufacturing institutes and related legislation and policies. He has served on three National Academies Committees studying the advanced manufacturing institutes, in 2017-18, 2018-19 and 2020-21.

Books:

His book (with Prof. Sanjay Sarma of MIT) *Workforce Education, A New Roadmap* was released by MIT Press in 2021, <https://mitpress.mit.edu/books/workforce-education>, and his book (with Peter L. Singer) *Advanced Manufacturing - The New American Innovation Policies*, was published by MIT Press in 2018, <https://mitpress.mit.edu/books/advanced-manufacturing>. His book (with Distinguished Prof. Charles Weiss of Georgetown), *Technological Innovation in Legacy Sectors*, concerns the challenge of innovating in legacy economic sectors, was published in the fall of 2015 by Oxford University Press and is summarized at: <https://global.oup.com/academic/product/technological-innovation-in-legacy-sectors-9780199374519?cc=us&lang=en&>. His book, with Prof. Weiss, entitled *Structuring an Energy Technology Revolution*, was published by MIT Press in 2009 and is summarized at: <https://mitpress.mit.edu/books/structuring-energy-technology-revolution>. In addition, he co-edited and (with Richard Van Atta and Patrick Windham) and contributed chapters to *The DARPA Model for Transformative Technologies* released by Open Book Publishers in 2020, <https://www.openbookpublishers.com/product/1079>.

Book Chapters:

His book chapters include: "A Summary of the DARPA Model," Essay 1 in *Visions of DARPA – Embracing Risk, Transforming Technology* (Iain Mansfield and Sir Geoffrey Owen, editors) (London, UK: Policy Forum 2020); "The Rise of Advanced Manufacturing in the United States," chapter 11 in the OECD book *The Next Production Revolution, Implications for Governments and Business* (Alistair Nolan, editor, Paris: OECD May 2017); "Applying Innovation Policy to the U.S. Energy Challenge," chapter 11 in *Delivering Energy Policy in the EU and US* (Raphael Heffron and Gavin Little, eds., Edinburgh Univ. Press 2016); "The Problem of Political Design in Federal Innovation Organization" in the Stanford Univ. Press book *The Science of Science Policy* (spring 2011); "The Connected Science Model for Innovation" in the National Academy book *21st Century Innovation Systems for the U.S. and Japan* (May 2009) and "The Once and Future DARPA" in the book *Blindside* (Brookings Press, Francis Fukuyama, ed., 2007).

Articles:

His articles in recent years include: in *Science*: "Advanced Manufacturing Policies and Paradigms for Innovation", (December 6, 2013); "Two Revolutions in Learning" (with S. Singer), (March 22, 2013); in *Science and Public Policy*: "New Model Innovation Agencies – An Overview" in (July 2014), v.41 n.4, 425-437; in the *Journal of Technology Transfer*: "ARPA-E and DARPA: Applying the DARPA model to energy innovation" (with R. Van Atta), (Oct. 2011); in *Nature*: "A New Strategy for Energy Innovation" (with J. Alic, D. Sarewitz, and C. Weiss), (July 15, 2010); in *Environment*: "Stimulating a Revolution in Sustainable Energy Technology" (with C. Weiss, July/Aug. 2009); in *Innovations*: "Reinventing American Manufacturing: the Role of Innovation" (special manufacturing issue Summer 2012), "Complex, Established 'Legacy' Sectors: The Technology Revolutions that do Not Happen" (with C. Weiss, Spring 2011); "Taking Covered Wagons East: A New Innovation Theory for Energy and Other Established Sectors" (with C. Weiss, special energy issue Fall 2009); in *Annals of Science and Technology Policy*, "Advanced Manufacturing: A New Policy Challenge" (March 2017); in *Technology Analysis and Strategic Management*: "Legacy sectors: barriers to global innovation in agriculture and energy" (with C. Weiss), v. 25, no. 10 (Nov. 2013), 1189-1208; in *MIT Energy Initiative Working Papers*: "Energy Storage for the Grid – Policy Options for Sustaining Innovation" (with D. Hart and N. Austin), , April 2018 ;in *American Interest*: "What Economists Don't Know About Manufacturing" (with P. Singer), March 2018. "ARPA-E on the Chopping Block" (online feature (March 30, 2017), "All that DARPA Can Be" (Sept./Oct. 2015); "The Innovation State" (July/Aug. 2009); "Power Play – The DARPA Model and U.S. Energy Policy", (Nov./Dec. 2006) (reprinted in the book *Blindside* – above); in *Issues in Science and Technology*: "America Needs a New Workforce Education System" (with Sanjay Sarma), March 9, 2021; "Fixing an Imperfect Labor Market Information System" (with Sanjay Sarma), Fall 2018 (Special "Future of Work" Issue); "The Quest for Quality Jobs" (with Sanjay Sarma), Fall 2018 (Special "Future of Work" Issue); "Donald Trump Voters and American Manufacturing (Summer 2016);

"Forum: DOD's Role in Energy Innovation" (Winter 2015) 10-14; "The Online Challenge to Higher Education" (with S. Singer, Summer 2013); "Time for Climate Plan B" (Winter 2011); "Stimulating Innovation in Energy Technology" (with C. Weiss, Fall 2009); "The Politics of Jobs" (Summer 2007); "Meeting the New Challenge to U.S. Economic Competitiveness" (2004); "Organizing Science and Technology for Homeland Security", (with K.V. Sharp, 2002); in *Bridges*: "Will the Search for New Energy Technologies Require a New R&D Mission Agency?" (2007); in *Technology in Society*: "Science at a Crossroads" (2002), and reprinted in the *FASEB Journal*; in *ITIF reports*: "Emerging Industrial Policy Approaches in the United States," October 20, 2021; "Innovation Orchards': Helping Start-Ups Scale," (with Peter S. Singer) (March 2017); in *Industrial and Corporate Change* (Oxford Univ. Press): "DARPA and its ARPA-E and IARPA Clones: a unique innovation organization model," v. 18, no. 1, Oct.1, 2018; *MIT Work of the Future Research Brief* "Applying New Education Technologies to Workforce Education" (with Sanjay Sarma), Oct. 14, 2020; in *OECD Forum Network*: "Can Online Education 'Retool' the Post-Pandemic Workforce" (with Sanjay Sarma), June 11, 2021; *Day One*: "Ensuring Manufacturing USA Reaches its Potential," August 2021; "Restoring U.S. Leadership in Manufacturing," Jan. 23, 2020.

Previous Work and Education:

Prior to his work in the Senate, he was a partner at a large national law firm. Early in his career, he served as the Deputy Assistant Secretary and Director of Congressional Affairs at the U.S. Department of Transportation, working on major transportation deregulation legislation. He received a B.A. from Columbia University with honors, an M.A.R. from Yale Divinity School in religion; and a J.D. from Columbia Law School, where he also served on the Board of Editors of the *Columbia Law Review*. Following law school, he served as a law clerk to Hon. Jack Weinstein, a Federal judge in New York. He has been a member of the Connecticut Bar, the District of Columbia Bar and the U.S. Supreme Court Bar.

https://en.wikipedia.org/wiki/William_Boone_Bonvillian

Truth in Testimony Disclosure Form

In accordance with Rule XI, clause 2(g)(3)(v) of the *Rules of the House of Representatives*, witnesses are asked to disclose the following information. Please complete this form electronically by filling in the provided blanks.

Committee: Appropriations

Subcommittee: _____

Hearing Date: October 28, 2021

Hearing Title : _____

Workforce Development and the Department of Defense

Witness Name: William B. Bonvillian

Position/Title: Lecturer at MIT, and Senior Director, Special Project, MIT Open Learning office

Witness Type: ☐ Governmental ☒ Non-governmental

Are you representing yourself or an organization? ☒ Self ☐ Organization

If you are representing an organization, please list what entity or entities you are representing:

FOR WITNESSES APPEARING IN A NON-GOVERNMENTAL CAPACITY

Please complete the following fields. If necessary, attach additional sheet(s) to provide more information.

Are you a fiduciary—including, but not limited to, a director, officer, advisor, or resident agent—of any organization or entity that has an interest in the subject matter of the hearing? If so, please list the name of the organization(s) or entities.

Research staff – MIT Open Learning office (MIT's online education program)

Please list any federal grants or contracts (including subgrants or subcontracts) related to the hearing's subject matter that you or the organization(s) you represent have received in the past thirty-six months from the date of the hearing. Include the source and amount of each grant or contract.

MIT Open Learning (as a subcontractor to the state of Mass.) is undertaking a research project as one part of Massachusetts' state program to develop manufacturing workforce education curricula in the state's community colleges; the state received \$2.3 million from DOD for the overall, multiyear project, which is ongoing. (Note: I will also shortly start a research project on best practices for manufacturing workforce programs as manufacturing leaders also supported by a DOD award to MIT's Institute for Knowledge, Innovation and Manufacturing.)

Please list any contracts, grants, or payments originating with a federal government and related to the hearing's subject matter that you or the organization(s) you represent have received in the past thirty-six months from the date of the hearing. Include the amount and country of origin of each contract or payment.

None

Please complete the following fields. If necessary, attach additional sheets to provide more information.

- ☐ I have attached a written statement of proposed testimony.
- ☐ I have attached my curriculum vitae or biography.

* Rule 30, clause 3(a)(1), of the U. S. House of Representatives' rules.

(3A) Each committee shall, to the greatest extent practicable, require witnesses who appear before it to submit in advance written statements of proposed testimony, and to limit their written presentations to the committee to brief statements thereof.

(4) In the case of a witness appearing at a congressional hearing, a written statement of proposed testimony shall include— (A) a curriculum vitae; (B) a disclosure of any financial interests or conflicts of interest, past or present, relating to the subject matter of the hearing; and (C) a disclosure of whether the witness has, in the past 24 months, been employed by, or received any honoraria or other compensation from, any organization or entity that has an interest in the subject matter of the hearing.

(5) The disclosure required by (4) shall be made— (A) for the witness and, in the case of each Federal grand jury or subcommittee hearing, of each member of the grand jury or subcommittee, at the time of the witness's appearance before the committee or grand jury; (B) in the case of a witness appearing at a congressional hearing, in the written statement of proposed testimony; and (C) in the case of a witness appearing at a congressional hearing, in the written statement of proposed testimony.

(6) Such statements, with appropriate statements as to the person(s) or persons of the witness, shall be made publicly available in electronic form 24 hours before the witness appears in the relevant proceedings, but not later than one day after the witness appears.

Accreditations

Worldforce Development and the Department of Defense

False Statements Certification

Knowing and providing material false information to the committee, or otherwise concealing material information from its committee submission, is a crime (18 U.S.C. 1001). This form will be made part of the hearing record.



Witness signature

October 13, 2021

Date

Ms. McCOLLUM. Thank you. I know we have asked you to cover a lot in 5 minutes. Thank you so much.

Dr. Griffiths, please go ahead with your testimony.

SUMMARY STATEMENT OF DR. GRIFFITHS

Ms. GRIFFITHS. Thank you. Chairwoman McCollum, Ranking Member Calvert, and members of the committee, thank you for the opportunity to speak with you today.

As a former commissioner of the National Security Commission on Artificial Intelligence, I led the line of effort charged with examining the implications of AI and associated technologies for the U.S. national security and defense workforce and making recommendations for government action and reform.

I should also note that I am here speaking in my personal capacity, as the Commission sunset on October 1, 2021, per our congressional mandate.

The U.S. still leads the world in AI, but our lead is rapidly shrinking, and China is catching up. China moved in 2016 when 250 million Chinese citizens saw the AI program AlphaGo defeat the best Go player in the world. This moment provoked policy-makers in China to swiftly organize and dedicate enormous resources towards AI and the global technology competition.

In March this year, we delivered our final report to Congress and the President. This gives Congress a clear blueprint for how to stay ahead.

Before I speak to the NSCAI's recommendations focused on talent and workforce, I would like to provide you with a high-level overview of our main conclusions and recommendations. We reached a few overarching judgments.

First, the government is not organized or resourced to win the technology competition against a committed competitor, nor is it prepared to defend against AI-enabled threats.

And second, the Nation must be AI ready by 2025 to defend and compete in the coming era of AI-accelerated competition and conflict, both priority areas for government action.

First, leadership. We need organizational structures that accelerate the government's integration of AI and its promotion of AI across the country. This should include a Technology Competitive Council at the White House.

Second, talent. We have a huge talent deficit in government, and we need to cultivate AI talent nationwide and ensure that the world's best technologies come and stay in the United States.

Third is hardware. We are too dependent on semiconductor manufacturing in East Asia, and Taiwan in particular. Most cutting-edge chips are produced at a single plant separated by just 110 miles of water from our principal strategic competitor. We must revitalize U.S. cutting-edge semiconductor fabrication capabilities and implement a national microelectronic strategy, and the goal should be to stay two generations ahead of China in state-of-the-art microelectronics.

And the fourth area is innovation. AI research will be very expensive. We need the government to help set the conditions for broad-based innovation across the country. This should include a national AI research infrastructure, and we should reach \$40 bil-

lion in annual research funding for the next 5 years to cover AI R&D for defense and nondefense research.

However, talent is the centerpiece of any winning AI strategy, and incremental change will just not be enough. The military needs expertise both in and out of uniform or it will be unable to build the systems or perform the tasks described in our report, and the DOD is unlikely to develop that expertise quickly enough on its own. And as a result, if the DOD is going to be AI ready by 2025, as we have recommended, congressional action will be needed.

Allow me to briefly describe four high priority recommendations in the report.

First and most critical for the AI workforce is the need for military and civilian career fields in software development, data science, and artificial intelligence.

The inability of our military's digital subject matter experts to spend their careers working in digital fields is arguably the single most important issue impeding modernization. Without these career paths, DOD will continue to struggle to recruit new talent, identify talent, and retain its current talent.

Our second priority is training junior leaders. We recommend the military services incorporate AI topics into precommissioning and entry-level training for junior officers and training for both junior and senior noncommissioned officers.

Our third priority is to incentivize emerging technology literacy among senior officers. Using the Goldwater-Nichols Act incentivization of joint competency as a model, Congress should require DOD to create an emerging technology certification process in critical billets, and servicemembers would earn their certification by serving in noncritical emerging technology billets, fellowships with industry and academia, graduating certified courses, and earning commercial certifications.

And, finally, we have made two significant proposals in addition to the reforms.

One, build the U.S. Digital Service Academy. The U.S. Government should create the USDSA, an accredited, degree-granting university that produces technically educated graduates for the service obligation of civil servants.

And, two, establish a National Reserve Digital Corps. Many of the most talented technologists in the U.S. are eager to serve their country but unlikely to become full-time government employees or military reservists.

The government needs a mechanism to tap this talent reservoir. So the government should establish the NRDC modeled after the military Reserves that allows civilians to work for government 38 days a year as advisers, instructors, and developers.

Let me close by saying that just as AI is poised to impact all sectors of society, it is also poised to impact all dimensions of national security. So I urge you and your colleagues in Congress to review the full range of our national security problems addressed in the report and adopt the recommendations to address them.

Thank you again for the opportunity to appear.

[The information follows:]



Written Testimony of Dr. José-Marie Griffiths

U.S. House Appropriations Subcommittee on the Department of Defense

Testimony Provided for Hearing: Tuesday, October 26, 2021, 2:00 PM EST

Chairwoman McCollum, Ranking Member Calvert, and esteemed Members of the Committee, thank you for the opportunity to speak with you today.

I am here today to discuss a topic that is tremendously important for our national security -- artificial intelligence. As a former Commissioner of the National Security Commission on Artificial Intelligence (NSCAI), I led the line of effort charged with examining the implications of AI and associated technologies for the U.S. national security and defense workforce, and to make recommendations for government action and reform.

Before I begin, I wish to note that I am here speaking in my personal capacity, as the Commission sunset on October 1, 2021, per our congressional mandate.

I am truly grateful for the opportunity to have served on the NSCAI. The Commission was composed of a diverse group of technologists, business executives, academic leaders, and national security professionals, all nominated by Congress or the Executive Branch. Over the past two years, we operated in a transparent manner and emphasized the need for action. We executed our congressional mandate by hearing from and engaging a wide range of stakeholders, and delivering several sets of recommendations. This work culminated in our final report delivered to the Congress and President in March. We commend Congress for adopting a number of our recommendations in last year's defense authorization legislation, and look forward to seeing further authorization and appropriation in this year's NDAA.

The United States still leads the world in AI, but our lead is rapidly shrinking and China is catching up.

China moved aggressively forward in 2016 -- when they saw the AI program known as AlphaGo defeat the best Go player in the world. More than 250 million Chinese citizens watched this game live. This astounding moment set policymakers in China to swiftly organize for an AI and global technology competition. Since then, they have created strategies and focused enormous resources towards dominating technologies that we consider fundamental for us to maintain global advantage.

As I stated before, the Commission delivered our final report to Congress and the President earlier this year in March. Taken as a whole, our report gives Congress a clear blueprint for how



to stay ahead. We need your help to enact all the recommendations to ensure that we remain competitive in these critical technologies.

Before I speak to the Commission's recommendations focused on talent and workforce, I would like to provide you with a high-level overview of our main conclusions and recommendations.

The NSCAI Final Report presents an integrated national strategy to reorganize the government, reorient the nation, and rally our closest allies and partners to defend and compete in the coming era of AI-accelerated competition and conflict. It is divided into two parts.

- Part I, "Defending America in the AI Era," outlines the stakes, explains what the United States must do to defend against the spectrum of AI-related threats, and recommends how the U.S. government can responsibly use AI technologies to protect the American people and our interests.
- Part II, "Winning the Technology Competition," addresses the critical elements of the AI competition and recommends actions the government must take to promote AI innovation to improve national competitiveness and protect critical U.S. advantages.

The recommendations are designed as interlocking and mutually reinforcing actions that work best when taken together. The 16 chapters in the Main Report provide top-line recommendations. The accompanying Blueprints for Action outline concrete steps that Congress and the Executive Branch can take to implement the recommendations. The Commission has provided as much specificity as possible—including by drafting proposed legislative text and executive orders—to help the President and Congress move rapidly.

Overall, we reached a few **overarching judgments**:

- First, the government is not organized or resourced to win the technology competition against a committed competitor nor is it prepared to defend against AI-enabled threats.
- Second, the nation must be AI-Ready by 2025 to defend and compete in the coming era of AI-accelerated competition and conflict.

Further, there are **four priority areas for government action**:



- **First, leadership.** We need organizational structures that accelerate the government's integration of AI and the government's promotion of AI across the country. This should include a Technology Competitiveness Council at the White House.
- **Second, talent.** We have a huge talent deficit in government. We need to build new digital talent pipelines and expand existing programs. More broadly, we need to cultivate AI talent nationwide, and ensure that the world's best technologists come and stay in the United States. I'll expand on this priority area shortly.
- **Third, hardware.** We are too dependent on semiconductor manufacturing in East Asia and Taiwan in particular. Most cutting-edge chips are produced at a single plant separated by just 110 miles of water from our principal strategic competitor. We must revitalize U.S. cutting-edge semiconductor fabrication capabilities, and implement a national microelectronics strategy. The goal should be to stay two generations ahead of China in state-of-the-art microelectronics.
- **Fourth, innovation.** AI research will be very expensive. We need the government to help set the conditions for broad-based innovation across the country. That should include a national AI research infrastructure. And we should reach \$40 billion in annual funding in the next five years to cover AI R&D for defense and non-defense research.

Finally, **two themes** cut across these pillars:

- The first is **partnerships**. We need to build coalitions with like-minded nations to advance the development and use of AI and other emerging technologies in ways that support democratic values.
- The second is **responsible use**. In the face of digital authoritarianism, the U.S. needs to present a democratic model of responsible development and use of AI for national security. Public trust will hinge on justified assurance that the government's use of AI will respect privacy, civil liberties, and civil rights. We have a set of recommendations to help ensure this.

This brief overview brings us to the primary purpose of why this Committee has called for this hearing today.

Talent is the centerpiece of any winning AI strategy. The Commission has examined the government's current shortcomings and concluded that existing programs will not bring enough



digital talent into public service to meet serious shortages. Scholarship and service programs are limited in scale and will not create a common set of ideas, shared experiences, professional culture, or a common mission to improve the government's digital talent. We must fundamentally re-imagine the way the U.S. Government recruits and builds its digital workforce. Incremental change will not be enough.

Each time my fellow commissioners discussed the workforce, we arrived at the same conclusions:

- The military needs to have expertise, both in and out of uniform, or it will be unable to build the systems or perform the tasks described in our report.
- And, the DoD is unlikely to develop that expertise quickly enough, on its own.
- As a result, if the Department of Defense is going to become AI-ready, especially by 2025 as we have recommended, congressional action will be needed.

More specifically, there are **four high priority workforce recommendations in the report.**

First and most critical for the AI workforce, is the need for military and civilian career fields in software development, data science, and artificial intelligence. The inability of our military digital subject matter experts to spend their careers working in digital fields, is arguably the single most important issue impeding modernization. Without this career path, DoD will continue to struggle to recruit new talent, identify talent, and retain the talent it already has. I should note that many of the military and civilian experts we spoke with when the Commission started, have since left government service, because they were unable to continue working on AI. We must stop bleeding talent. This is a well-known problem, and the creation of career fields is a relatively straightforward solution.

Our second priority is training junior leaders. We must fundamentally change how junior leaders use and interact with AI, and other information processing agents. Junior leaders must not only understand how to team with machines, but learn when to trust machine outputs. We recommend the military services integrate AI topics into pre-commissioning and entry-level training for junior officers and training for both junior and senior non-commissioned officers.

Our third priority is to incentivize emerging technology literacy among senior officers. We often speak of the need for a culture change in DoD. The most effective way to change culture is to change incentives. Using the Goldwater-Nichols Act's incentivization of joint competency as a



model, Congress should require DoD to create an emerging technology certification process and critical billets. Service members would earn their certification by serving in non-critical emerging technology billets, fellowships with industry and academia, graduating certified courses, and earning commercial certifications.

Finally, in addition to the reforms above, **we have made two significant workforce proposals:**

1. **Build the U.S. Digital Service Academy:** The U.S. Government should create a United States Digital Service Academy (USDSA), an accredited, degree-granting university, that produces technically educated graduates with a service obligation as civil servants. The USDSA would be an independent entity within the federal government, advised by an interagency board that would be assisted by a federal advisory committee composed of commercial and academic leaders in emerging technology. The academy would be a partnership between the public and private sectors, both working together towards a common goal of developing a modern, digitally proficient workforce. The Academy would help meet the government's needs for expertise in artificial intelligence, software engineering, electrical engineering, computational biology, and several other areas. Students would attend the school tuition free, and receive a highly technical education. Graduates would then enter the government as civil servants, with a five year service obligation.
2. **Establish a National Reserve Digital Corps.** Many of the most talented technologists in the United States are eager to serve their country but are unlikely to become full time government employees or military reservists. The government needs a mechanism to tap this talent reservoir. The government should establish a National Reserve Digital Corps modeled after the military reserves that allows civilians to work for the government 38 days a year as advisors, instructors, and developers. We could incentivize participation with a training and education fund and a scholarship program modeled after Reserve Officer Training Corps or ROTC. While short-term volunteers are not a substitute for full-time employees, they can help improve AI education for both technologists and non-technical leaders, perform data triage and acquisition, help guide projects and frame technical solutions, build bridges between the public and private sector, and other important tasks.

* * *

Let me close by saying that just as AI is poised to impact all sectors of society, it is also poised to impact all dimensions of national security.



While the Commission has formally sunset, former NSCAI staff and Commissioners standby ready to assist and work with you on further details of each recommendation. For your convenience and consideration, we have produced draft legislative language for each of these recommendations in the final report to review. I urge you and your colleagues in Congress to review the full range of national security problems addressed in the Report, and adopt our recommendations to address them.

Thank you again for the opportunity to appear before you.

Appendix E: Funding Recommendation Table

Funding Recommendation Table

Chapter	Recommendation	Cabinet Departments, Major Agencies, and Program Offices	Amount	Appropriations Detail
Chapter 1 – Emerging Threats in the AI Era	1 Create a Foreign Malign Influence Response Joint Interagency Task Force (JIATF).	Office of the Director of National Intelligence	\$30 million	-
	2 Increase DARPA funding for media media authentication, disinformation detection, attribution, and disruption.	Department of Defense; USD(R&E) - DARPA	\$60 million to \$80 million	-
	3 Fund a machine speed AI-enabled cyber defense acceleration study.	Department of Homeland Security	\$10 million	-
	4 Increase DARPA funding for AI-enabled cyber defense research.	Department of Defense; USD(R&E) - DARPA*	\$20 million	-
	5 Increase National Institute of Standards and Technology AI testbed funding.	National Institute of Standards and Technology	\$25 million	-
	6 Provide funding for a SolarWinds threat review.	Cyberspace Solarium Commission	\$6.5 million	-

Chapter		Recommendation	Cabinet Departments, Major Agencies, and Program Offices	Amount	Appropriations Detail
Chapter 2 – Foundations of Future Defense	1	Establish a dedicated AI Fund.	Department of Defense: USD(R&E)	\$200 million	-
	2	Increase investments in AI R&D.	Department of Defense	\$8 billion	-
	3	Establish a fund to to accelerate procurement and integration of commercial AI solutions for business applications.	Department of Defense: Joint Artificial Intelligence Center	\$100 million	-
	4	Provide funding to build enterprise data sets.	Department of Defense: Office of the Chief Data Officer	\$125 million	-
	5	Provide funding for technology scouting tools, data, and a technology fellows program.	Department of Defense, USD(R&E)	\$10 million	-
Chapter 3 – AI and Warfare	1	Develop innovative operational concepts that integrate new warfighting capabilities with emerging technologies.	Department of Defense: USD(R&E)	\$5 million	-
	2	Incentivize experimentation with AI-enabled applications through the Warfighting Lab Incentive Fund (WLIF).	Department of Defense: USD(R&E)	\$10 million	-
	3	Encourage a culture of "Thinking Red."	Department of Defense: Joint Warfighting Analysis Center	\$2.5 million	-

Chapter	Recommendation	Cabinet Departments, Major Agencies, and Program Offices	Amount	Appropriations Detail
Chapter 3 – AI and Warfare	4	Direct the military services, in coordination with the Under Secretary of Defense (for Acquisition and Sustainment), the Joint Staff, and the Defense Logistics Agency, and enabled by enterprise services and expertise at the JAIC, to prioritize integration of AI into logistics and sustainment systems wherever possible.	Department of Defense: Office of the Deputy Secretary of Defense	\$100 million -
	5	Define a joint warfighting network architecture by the end of 2021.	*Department of Defense: Office of the Chief Information Officer*	\$5 million -
Chapter 5 – AI and the Future of National Intelligence	1	Work with the intelligence community to establish a 10-year, \$1 billion, Program of Record to provide long-term, predictable funding for technologies identified in the technology annex to the National Intelligence Strategy.	Office of the Director of National Intelligence	\$1 billion annually for FYs 2022-2032 -
Chapter 6 – Technical Talent in Government	1	Congress should create a National Reserve Digital Corps.	Office of Management and Budget	\$16 million -
	2	Congress should establish a STEM Corps.	Department of Defense	\$5 million for FY 2022 & \$5 million for FY 2023 -
	3	Congress should create a United States Digital Service Academy.	New Entity	\$40 million initial appropriation -

Chapter	Recommendation	Cabinet Departments, Major Agencies, and Program Offices	Amount	Appropriations Detail
Chapter 7 – Establish- ing Justified Confidence in AI Systems	1 Appoint responsible AI leads and supporting staff in each agency critical to national security.	Department of Defense; Office of the Director of National Intelligence; Department of Homeland Security; Federal Bureau of Investigation; Department of State; Department of Energy; & Department of Health and Human Services	\$21.5 million	This funding supports one responsible AI lead and two supporting staff. Additionally, the funding includes responsible AI leads for each of the armed services in the Department of Defense and each of the agencies of the Intelligence Community.
Chapter 8 – Upholding Democratic Values	1 Congress should establish third-party testing center(s) to allow independent, third-party testing of national security-related AI systems that could impact U.S. persons.	National Institute of Standards and Technology	\$1.2 million	-
Chapter 9 – A Strategy for Competition and Cooperation	1 Create a Technology Competitiveness Council.	The White House: Executive Office of the President	\$2 million	-
Chapter 10 – The Talent Competition	1 Congress should pass a new National Defense Education Act.	Department of Education; National Science Foundation	One time appropriation of \$8.2 billion	-
Chapter 11 – Accelerating AI Innovation	1 Establish a National Technology Foundation.	New Entity	\$30 million initial appropriation for start-up expenses; \$1 billion for FY 2022; \$5 billion for FY 2023; \$10 billion for FY 2024; \$15 billion for FY 2025, & \$20 billion for FY 2026	-

Chapter	Recommendation	Cabinet Departments, Major Agencies, and Program Offices	Amount	Appropriations Detail
Chapter 11 – Accelerating AI Innovation	1 Increase federal funding of Non-Defense AI R&D at compounding levels.	Multiple agencies, including: the NSCAI proposed National Technology Foundation; National Science Foundation; Department of Energy; National Institute of Standards and Technology; National Institutes of Health; & National Aeronautical and Space Administration	\$2 billion for FY 2022; \$4 billion for FY 2023; \$8 billion for FY 2024; \$16 billion for FY 2025; & \$32 billion for FY 2026	-
	2 Expand the Network of AI Research Institutes.	National Science Foundation	\$200 million for FY 2022; \$200 million for FY 2023; & \$200 million for FY 2024	-
	3 Establish an AI Innovator Award.	National Science Foundation	\$125 million	-
	4 Establish a team-based AI Award.	National Science Foundation	\$50 million for FY 2022; \$100 million for FY 2023; \$150 million for FY 2024; \$200 million for FY 2025; & \$250 million annually for FYs 2026-2028	-
	5 Implement the NAIIRR Roadmap.	National Science Foundation	\$30 million	-
	6 Fund an AI Data Program.	Department of Energy	\$25 million	-
	7 Sponsor an Open Knowledge Network.	National Science Foundation	\$25 million	-
	8 Form a network of Regional Innovation Clusters.	National Institute of Standards and Technology	\$200 million for FYs 2022-2026	Funding recommended at \$20 million per Regional Innovation Cluster

Chapter	Recommendation	Cabinet Departments, Major Agencies, and Program Offices	Amount	Appropriations Detail
Chapter 13 – Microelectronics	1 Increase federal grants for microelectronics manufacturing.	Department of Commerce	\$15 billion total	\$3 billion per project on average
	2 Increase funding for DARPA's Electronics Resurgence Initiative (ERI).	Department of Defense: USD(R&E) - DARPA	\$400 million for FY 2022 & \$5 billion total for FYs 2022-2026	These funding levels should ramp up on an annual basis as absorptive capacity increases
	3 Increase funding for National Science Foundation semiconductor research.	National Science Foundation	\$300 million for FY 2022 & \$2.5 billion total for FYs 2022-2026	These funding levels should ramp up on an annual basis as absorptive capacity increases
	4 Increase funding for Department of Energy semiconductor research.	Department of Energy	\$400 million for FY 2022 & \$4.5 billion total for FYs 2022-2026	These funding levels should ramp up on an annual basis as absorptive capacity increases
	5 Establish the Advanced Packaging National Manufacturing Program.	National Institute of Standards and Technology	\$1 billion for FY 2022 & \$5 billion total for FYs 2022-2025	-
	6 Establish the National Semiconductor Technology Center.	Department of Commerce in collaboration with the Department of Defense and Department of Energy	\$100 million FY 2022 & \$2 billion total for FYs 2022-2026	-

Chapter	Recommendation	Cabinet Departments, Major Agencies, and Program Offices	Amount	Appropriations Detail
Chapter 15 – A Favorable International AI Order	1	Provide funding for U.S. International Development Finance Corporation to execute development financing for technology infrastructure projects.	U.S. International Development Finance Corporation	\$1 billion -
	2	Provide funding to support U.S. International Development Finance Corporation development financing initiatives.	Department of State; U.S. Agency for International Development	\$200 million -
	3	Provide funding for U.S. Agency for International Development Digital Strategy.	U.S. Agency for International Development; Bureau of Democracy, Development, and Innovation	\$200 million -
	4	Provide funding for an Interagency AI Standards team to support National Institute of Standards and Technology AI Standards Coordinator and fund travel and other administrative needs.	National Institute of Standards and Technology; Department of Defense; Department of State; Office of the Director of National Intelligence; Department of Energy; Department of Homeland Security; U.S. Agency for International Development	Funding includes five full-time employee (FTE) from National Institute of Standards and Technology and one FTE from each of the following departments and agencies: Department of Defense, Department of State, Office of the Director of National Intelligence, Department of Energy, Department of Homeland Security, and U.S. Agency for International Development.
	5	Provide funding to support grants for small- and medium-sized businesses to participate in international data and technical standards efforts.	Small Business Administration	\$1 million -

Chapter	Recommendation	Cabinet Departments, Major Agencies, and Program Offices	Amount	Appropriations Detail
Chapter 15 – A Favorable International AI Order	6 Funding for administrative costs associated with establishing an U.S. Center of Expertise relationship with GPAI/OECD.	National Science Foundation	\$1 million	-
	7 Funding for the Multilateral AI Research Initiative (MAIRI), including establishing and maintaining physical center; supporting research initiatives; created a trusted learning cloud resource; and supporting U.S. researchers' travel and involvement in workshops, conferences, and events.	National Science Foundation; Department of State; Department of Energy	\$12.15 million annually for FYs 2022-2027	\$10 million to National Science Foundation/ Department of State/ Department of Energy for research and personnel; \$2M to National Science Foundation for infrastructure; \$150,000 to National Science Foundation for administrative costs.
	8 Provide funding for trusted learning cloud to facilitate collaborative R&D with allies and partners (envisioned as a component of MAIRI).	National Science Foundation; Department of State	\$11.3 million	Funding includes underlying infrastructure, data storage and sharing capacity, grants for researchers, foreign assistance grants.
	9 Provide funding to support grants for scholars and researchers to participate in international data and technical standards efforts.	Department of State	\$5 million	-

Chapter	Recommendation	Cabinet Departments, Major Agencies, and Program Offices	Amount	Appropriations Detail
Chapter 15 – A Favorable International AI Order	10 Provide funding for immediate augmentation and training of U.S. diplomatic corps for efforts related to AI and emerging technology (funding does not include future funding needs which we recommend be determined by a focused planning effort to be undertaken by Department of State).	Department of State	\$8 million	\$550,000 - STAS; \$550,000 - Office of Communication and Information Policy; \$400,000 - Office of Science and Technology Cooperation; \$3.8 million - Regional Technology Officers (12 locations); \$1.25 million - Office of the Special Representative to Silicon Valley; \$450,000 - FSI training.
	11 Provide funding for the Bureau of Cyberspace Security and Emerging Technologies.	Department of State	\$20 million	-
	12 Provide funding for public diplomacy and engagement activities on AI innovation and democratic values.	Department of State	\$5.5 million	-
	13 Provide funding for AI exchange programs to support U.S. values and fund participation by developing countries in multilateral AI activities.	Department of State	\$8.5 million	-
	14 Provide funding for efforts to promote U.S. innovation and values and support American Spaces, Tech Camps, Maker Spaces, Speakers Program, and other initiatives.	Department of State	\$3 million	-

Chapter	Recommendation	Cabinet Departments, Major Agencies, and Program Offices	Amount	Appropriations Detail
Chapter 15 – A Favorable International AI Order	15 Provide funding for tracking and analysis of public opinion to measure impact of engagement efforts and guide strategic planning.	Department of State	\$1 million	-
	16 Provide funding for U.S. Science Envoys and Embassy Science Fellows programs.	Department of State	\$1 million	-
	17 Provide funding to support U.S. leadership in AI through Emerging Technology Coalition and internal programs.	Department of State: Office of the Under Secretary for Economic Growth, Energy, and the Environment (E)	\$5.5 million	Funding includes ETC support, creation of an advisory committee on emerging technology, private sector engagement, multilateral R&D efforts, tech-oriented diplomatic efforts, innovation enhancements.
	18 "Funding to support promotion of human rights and fundamental freedoms in AI context through civil society initiatives, promoting AI and emerging tech to counter censorship, and supporting research and awareness campaigns"	Department of State: Office of the Under Secretary for Civilian Security, Democracy, and Human Rights (J): Bureau of Democracy, Human Rights, and Labor (DRL)	\$1.5 million	-
	19 Provide funding to support use of AI for national security/ military applications through cooperation with allies and partners, to include joint exercises, grants, fellowships, and other activities.	"Department of State: Office of the Under Secretary of State for Arms Control and International Security (T)"	\$3 million	-

Chapter	Recommendation	Cabinet Departments, Major Agencies, and Program Offices	Amount	Appropriations Detail	
Chapter 15 – A Favorable International AI Order	20	Provide funds to support building technical capacity in emerging democracies and market economies to counter malign influence.	Department of State	\$3 million	-
	21	Provide funds to support research grants on malign influence in AI ecosystems.	Department of State	\$2 million	-
	22	Provide funds to support public diplomacy initiatives on international AI standards and tracking and reporting of impact on public engagement.	Department of State	\$2 million	-
	23	Provide funds to support US Global Innovation through Science and Technology (GIST) Initiative.	Department of State	\$1 million	-
	24	Provide additional funding to support foreign assistance activities around emerging tech and digital infrastructure, to include planning, assessments, and provision of assistance. Funds would support targeted, digital programs in several areas, including rule of law (INL), democracy and human rights (DRL), security cooperation (AVC/PMISN), and technical assistance (EB, STAS, others).	Department of State	\$230 million	-

*Unless otherwise noted funding is annual beginning in Fiscal Year 2022.
**All funding figures should be considered initial estimates for consideration by Congress and the Executive Branch.

Truth in Testimony Disclosure Form

In accordance with Rule XI, clause 2(g)(5)* of the *Rules of the House of Representatives*, witnesses are asked to disclose the following information. Please complete this form electronically by filling in the provided blanks.

Committee: Appropriations

Subcommittee: Defense

Hearing Date: 10/26/2021

Hearing Subject : _____

Based on concerns about our country's ability to properly meet the future workforce demands for the Department of Defense, Chairwoman McCollum will hold a hearing on October 28th to address this topic and testimony on the aspects of this problem would inform members on the scope of the problem that exists and how we can make the needed changes to address it.

Witness Name: Dr. José-Marie Griffiths

Position/Title: President of Dakota State University & former Commissioner, National Security Commission on AI

Witness Type: ☐ Governmental ☒ Non-governmental

Are you representing yourself or an organization? ☒ Self ☐ Organization

If you are representing an organization, please list what entity or entities you are representing:

FOR WITNESSES APPEARING IN A NON-GOVERNMENTAL CAPACITY

Please complete the following fields. If necessary, attach additional sheet(s) to provide more information.

Are you a fiduciary—including, but not limited to, a director, officer, advisor, or resident agent—of any organization or entity that has an interest in the subject matter of the hearing? If so, please list the name of the organization(s) or entities.

Please list any federal grants or contracts (including subgrants or subcontracts) related to the hearing's subject matter that you or the organization(s) you represent have received in the past thirty-six months from the date of the hearing. Include the source and amount of each grant or contract.

Please list any contracts, grants, or payments originating with a foreign government and related to the hearing's subject that you or the organization(s) you represent have received in the past thirty-six months from the date of the hearing. Include the amount and country of origin of each contract or payment.

Please complete the following fields. If necessary, attach additional sheet(s) to provide more information.

- ☒ I have attached a written statement of proposed testimony.
- ☐ I have attached my curriculum vitae or biography.

* Rule XI, clause 2(g)(5), of the U.S. House of Representatives provides:

(5)(A) Each committee shall, to the greatest extent practicable, require witnesses who appear before it to submit in advance written statements of proposed testimony and to limit their initial presentations to the committee to brief summaries thereof.

(B) In the case of a witness appearing in a non-governmental capacity, a written statement of proposed testimony shall include—

(i) a curriculum vitae; (ii) a disclosure of any Federal grants or contracts, or contracts, grants, or payments originating with a foreign government, received during the past 36 months by the witness or by an entity represented by the witness and related to the subject matter of the hearing; and (iii) a disclosure of whether the witness is a fiduciary (including, but not limited to, a director, officer, advisor, or resident agent) of any organization or entity that has an interest in the subject matter of the hearing.

(C) The disclosure referred to in subdivision (B)(ii) shall include— (i) the amount and source of each Federal grant (or subgrant thereof) or contract (or subcontract thereof) related to the subject matter of the hearing; and (ii) the amount and country of origin of any payment or contract related to the subject matter of the hearing originating with a foreign government.

(D) Such statements, with appropriate redactions to protect the privacy or security of the witness, shall be made publicly available in electronic form 24 hours before the witness appears to the extent practicable, but not later than one day after the witness appears.

False Statements Certification

Knowingly providing material false information to this committee/subcommittee, or knowingly concealing material information from this committee/subcommittee, is a crime (18 U.S.C. § 1001). This form will be made part of the hearing record.

Jose-Marie Griffiths

Witness signature

October 21, 2021

Date

Appropriations

10/28/2021 ----- Based on concerns about our country's ability to properly meet the future workforce demands for the Department of Defense, Chairwoman McCollum will host a hearing on October 28th to address this topic and testimony on the experts of this problem would inform members on the scope of the problem that exists and how we can make the needed changes to address it

Ms. MCCOLLUM. Thank you.
Mr. Beale.

SUMMARY STATEMENT OF MR. BEALE

Mr. BEALE. Good afternoon, Chairwoman McCollum, Ranking Member Calvert, and members of the Defense Appropriations Subcommittee.

Again, my name is Xavier Beale, the vice president of trades at Newport News Shipbuilding, an operating division of Huntington Ingalls Industry, and it is my honor to represent the shipyard here today to discuss our approach to workforce development, challenges in the future, and provide some recommendations for committee consideration.

In my role, I have a responsibility to provide and prepare a capable production and maintenance workforce to perform the critical work we do in support of our United States Navy. Equally important, I represent the interests of thousands of our Nation's skilled craftswomen and craftsmen.

In 1991, I started my shipbuilding career as a pipe fitter. I have also worked on behalf of our fellow shipbuilders within our Human Resources division, with an aim to ensure all shipbuilders and future shipbuilders have the opportunity to learn, grow, and reach their full potential.

I understand that Chairwoman McCollum and several subcommittee members recently visited Naval Base Kitsap and Puget Sound Naval Shipyard. Your experience at the public Naval shipyards is similar to what you would see here at Newport News Shipyard. Both private and public shipyards have similar needs and face similar challenges, and I invite you to visit us when you have time.

Huntington Ingalls consists of three operating divisions: Newport News Shipbuilding, Ingalls Shipbuilding, and our Technical Solutions Division. All three divisions of our company face similar challenges in the attraction, development, and deployment of their respective workforces.

At Newport News Shipbuilding, we are building the new *Ford*-class aircraft carriers and *Virginia*-class fast-attack submarines and performing refueling and complex overhaul on *Nimitz*-class aircraft carriers.

At 25,000 strong, we are the largest industrial employer in Virginia. We partner with over 2,500 supplier businesses from across all 50 States. So our impact to the economy is much greater than just Newport News, Virginia, and the Hampton Roads region.

Our Integrated Digital Shipbuilding initiative, or IDS, as we call it, is the future of shipbuilding. CVN-80 is the future USS *Enterprise*, which when delivered to the Navy in 2028 will be the first *Ford*-class aircraft carrier completely built in a digital environment.

We believe there is a role for Federal investment in IDS given its potential across the nuclear shipbuilding enterprise, from new design and construction in the private shipyards and our supplier base, all the way through the ship's operation and maintenance life cycle overseen by the Navy and public shipyards.

While the digital transformation is good news, we face significant challenges in terms of a highly skilled workforce. We understand the need to build a workforce pipeline that will help sustain our business for future decades, and we believe in starting early.

We partner with our area schools to expose students and parents to our business for future decades, and we believe in starting early. So we have partnered with our area schools to expose students, parents, and teachers to our company and the opportunities that a shipbuilding career offers.

We are also looking at ways to use regional training centers to develop our future workforce. They are most cost effective as they can serve multiple age groups and draw from the entire region. They can standardize curricula around employer needs and create clear pathways from high school to community college to employment within their specific region.

Thanks to the support from the Department of Defense's Industrial Base and Sustainment, which we call our IBAS office, the Institute for Advanced Learning and Research in Danville, Virginia, has recently piloted an accelerated training and defense manufacturing program to help the defense industrial base leverage its training infrastructure. Newport News Shipbuilding provided curriculum development support and will have participants in the program's pilot cohort.

We believe there is potential for the same synergy in Hampton Roads where we have several strong organizations seeking to address the region's workforce development.

There is no doubt major hurdles exist to building the maritime workforce that our shipyard and our maritime industrial base would need to ensure long-term success.

These hurdles are not insurmountable, but industry and individual businesses cannot do it alone. With that in mind, here are some ideas on how you can help us be more successful.

Help the Navy work to develop standard prehire curricula and certificates that can be adopted within all Navy communities. The more centralized curriculum development can be done by the customer, the easier and more efficient it will be for everyone.

Over the past few years, the Department of Defense's Industrial Base Analysis and Sustainment office has been a major source of workforce development investment, and expanding across these funds will support the entire shipbuilding industrial base.

So, in conclusion, there is a great need for increased investment in Federal workforce development to support the overall growth of shipbuilding talent. With your help and the partnership of other local, State, and Federal allies, the defense industrial base will prosper and be in a better position to provide the support our Navy needs and our Nation deserves.

I thank the committee for their time and look forward to your questions.

[The information follows:]

**Testimony of Xavier Beale
Vice President, Operations, Newport News Shipbuilding
House Appropriations Subcommittee on Defense
October 26, 2021**

Chairwoman McCollum, Ranking Member Calvert, and distinguished members of the House Defense Appropriations Subcommittee, thank you for this opportunity to share my thoughts with you today about the very important topic of workforce development.

I appreciate your interest in the workforce development challenges our industry faces and I am honored to be here representing Huntington Ingalls Industries' Newport News Shipbuilding division.

My name is Xavier Beale. Since 2018, I have served as vice president of trades for Newport News Shipbuilding (NNS), based in Newport News, Virginia. In this role it is my responsibility to provide and prepare a capable production and maintenance workforce to perform the critical work we do in support of our United States Navy.

Equally important, I represent the interests of thousands of our nation's skilled craftswomen and craftsmen.

This is important to me because I have walked in their shoes. In 1991, I started my shipbuilding career as a pipefitter, and my father still works as a welder to this day. I've also worked on behalf of my fellow shipbuilders in various capacities within our Human Resources division – with an aim to ensure all shipbuilders and future shipbuilders are afforded an opportunity to learn, grow and reach their full potential.

Outside of Newport News Shipbuilding, I served in the Virginia Army National Guard and worked in behavioral health, so I bring a unique perspective and healthy respect and knowledge of the importance of workforce development not only to Newport News Shipbuilding but also the larger maritime industrial base.

I've shared my perspective in our region as a member of the Virginia Board of Workforce Development, the Virginia Foundation for Community College Education board of directors, the Local Initiatives Support Corporation, Hampton Roads local advisory council and Hampton Roads Community Action Program's board of directors.

I'd like to start off with a brief overview of Huntington Ingalls Industries, our parent company, as well as share a little background about our Newport News Shipbuilding division.

I understand that Chairwoman McCollum and several subcommittee members recently visited Naval Base Kitsap and Puget Sound Naval Shipyard. While we are a company that supports our United States Navy, your experience at the public naval shipyards is similar to what you would see at Newport News Shipbuilding. Both private and public shipyards have similar needs and face similar challenges.

Today I will focus on our challenges, what is working well for us, and finally, I will discuss several recommendations and opportunities for your consideration.

Huntington Ingalls Industries

First, who we are.

Huntington Ingalls Industries, or HII, is America's largest military shipbuilding company and defense technologies provider. Headquartered in Newport News, Virginia, we employ approximately 44,000 workers at our facilities throughout the United States and around the world. We also provide a wide variety of products and services to the commercial energy industry and other government customers, including the Department of Energy.

Huntington Ingalls consists of three operating divisions: Newport News Shipbuilding which I will discuss in more detail below, Ingalls Shipbuilding, and our Technical

Solutions Division. All three divisions of our company face similar challenges in the attraction, development, and deployment of their respective workforces. Before a detailed discussion of Newport News Shipbuilding's workforce development posture, I would like to highlight briefly some of the unique aspects of the workforce needs at Ingalls Shipbuilding and Technical Solutions Division.

Ingalls Shipbuilding

Ingalls Shipbuilding is located in Pascagoula, Mississippi on 800 acres of land along the Pascagoula River. Employing 11,500 employees, Ingalls is the largest manufacturing employer in Mississippi and a major contributor to the economic growth of Mississippi and Alabama. Ingalls is the largest supplier of U.S. Navy surface combatants, and has built nearly 70 percent of the U.S. Navy fleet of warships.

On average, Ingalls hires over 2,000 new employees each year. Over the next two years, Ingalls will need to hire over 6,000 new employees to support production needs.

To meet this ever increasing workforce demand, Ingalls has developed a "grow your own" approach to workforce development by creating awareness at the earliest stages of learning with K-12 partnerships, particularly, in high schools across the Gulf Coast region; providing and supporting pre-hire, unpaid training to the unemployed and under-employed; hiring of entry-level employees at competitive wages which includes paid training and upward mobility of wages post-training.

Technical Solutions Division

Comprising more than 7,000 professionals worldwide, Huntington Ingalls Industries' Technical Solutions division provides mission-critical national security solutions to government and commercial customers worldwide. The needs of these government and commercial customers are diverse and unique, and therefore so are the skill sets required to meet our customers' requirements. One of the most urgent issues facing this part of our business is the development of a sustainable source of cleared, cyber

professionals to meet the emerging needs of our customers. We appreciate the Subcommittee's focus on this critical issue and we are supportive of efforts to grow the cyber workforce throughout both government and industry. In other parts of our business, Technical Solutions has implemented best practices from Newport News Shipbuilding's Apprentice School and trades training programs to create similar pipelines of talent acquisition and development for the performance of work in support of the Department of Energy Weapons Complex, including at Los Alamos National Laboratory in New Mexico. Workforce and talent development is a key enabler of mission success for Technical Solutions Division and will continue to be a priority for our business.

Newport News Shipbuilding

Newport News Shipbuilding was founded 135 years ago and is a division of Huntington Ingalls Industries. At Newport News, we design, build, maintain and inactivate nuclear-powered aircraft carriers and submarines. Our facility spans 550 acres and we are the Navy's sole designer, builder, and refueler of aircraft carriers, and one of two companies able to build nuclear submarines. Currently, we are building the new Ford-class aircraft carriers and Virginia-class fast-attack submarines, and performing Refueling and Complex Overhaul (RCOH) on Nimitz-class aircraft carriers.

The ships we build carry out some of our country's most important missions, and there is no other place in the world capable of doing the work we do.

At 25,000 strong, we are the largest industrial employer in Virginia. Many of our shipbuilders are third, fourth and even fifth generation, and we boast more than 1,000 master shipbuilders, a title we give to our employees who have worked at Newport News for 40 or more consecutive years.

As Virginia's largest industrial employer, we are the heart of Hampton Roads and a bedrock for our community and state. But shipbuilding is the ultimate national effort with

a national impact. In fact, there are over 2,500 supplier businesses from across all 50 states employing several thousand workers who help us build and maintain our nuclear Navy fleet.

Today, we are working on 37 ships and supporting the Department of Energy's Kesselring site, which trains the sailors who operate nuclear-powered ships. In fact, Newport News Shipbuilding is busier now than at any time over the last four decades.

How we accomplish our work is also undergoing a transformation. We are moving from traditional paper blueprints to digital formats, making work easier to understand and visualize. Additionally, we use technologies like robotics, laser scanning, augmented reality and additive manufacturing – or 3D printing – to build ships.

Our Integrated Digital Shipbuilding initiative—or iDS—is the future of shipbuilding. Not only does it enable cost savings, improved predictability, and ultimately lower lifecycle costs for Navy ships, it also enables an inexperienced workforce by accelerating their journey to proficiency. We believe there is a role for expanded federal investment in iDS given its potential across the nuclear shipbuilding enterprise, from new design and construction in the private shipyards and our supplier base all the way through the ship's operation and maintenance lifecycle overseen by the Navy and the public shipyards.

Our Workforce Development and Hiring Challenges

While this digital transformation and our workload are good news, they also present significant challenges in terms of hiring a skilled workforce.

Over the last five years, Newport News Shipbuilding has hired more than 17,000 people, and we will need to hire an additional 7,000 over the next 5 years, of which 50% will be within skilled trades.

Being a Navy contractor adds additional requirements that challenge an already strained labor pool. Our contracts require that applicants be U.S. citizens, pass a background check and hair follicle drug screening, and a physical agility test before they are hired. These requirements alone significantly limit the available talent we can hire.

And while the work we do is rewarding and allows us to play a significant role in our nation's defense, we grapple with a widespread devaluing of technical education and manufacturing jobs. Competition for employees is fierce. Not only are we competing against companies that offer remote work options, we are competing with a society that does not naturally gravitate to shipbuilding as a "first option" for their children.

In Hampton Roads, we have numerous ship repair and public yards ramping up their workforce as they take on greater ship repair and overhaul work. An off-shore wind manufacturing hub is being established that will compete for similar talent, and significant road and tunnel construction projects are drawing from the same limited pool of skilled laborers. But, Hampton Roads is not unique – there are many regions within the U.S. that have an insufficient supply of skilled trade workers to meet the maritime industrial needs.

To meet our hiring goals, we partner with more than 20 veterans' organizations and local military installations to hire veterans. We recognize the skill, leadership and strong work ethic that our transitioning service members offer to the private sector. We also work with several programs to recruit people that are differently abled.

And like other companies, we take our recruiting efforts on the road. We developed a mobile recruiting center by outfitting a trailer that showcases our Integrated Digital Shipbuilding efforts to demonstrate to students from K-12, community colleges and four-year college campuses what a career in today's shipbuilding industry looks like. By bringing shipbuilding to them, it helps us change the narrative and combat the stereotypes that may be associated with manufacturing.

And since no one shows up at Newport News Shipbuilding with a degree in shipbuilding, we make significant investments in the training and development of our people. As such, we:

- Spend over 100 million dollars on workforce training and development each year.
- Operate The Apprentice School, which for more than a century has served as a key component of our workforce development effort. Over the years the school has evolved into a leadership academy, and offers registered apprenticeships in 19 shipbuilding trades and eight optional advanced programs, accredited associates degrees and accredited engineering degrees.
- We also provide a robust trades training program and partner with area high school CTE programs, and community colleges. Through a partnership with local Virginia community colleges and the Virginia Ship Repair Association, we've helped to develop a pre-hire training program in 7 different trades that creates a skilled talent pipeline for the Hampton Roads maritime industrial base. Again, we are committed to driving solutions that will improve not just the health of Newport News Shipbuilding but the entire maritime ecosystem.

We also understand the need to build a workforce pipeline that will help sustain our business for future decades, and we believe in starting early.

So we partner with our area school systems, and through a program we call Shipbuilders Educating and Engaging Kids, or SEEK. We send our shipbuilders into Pre-K through 12th grade classrooms to expose students, parents and teachers to our company and the opportunities that a shipbuilding career offers.

We also have a program at the shipyard we call GEMS. The acronym stands for "Girls with Engineering Minds in Shipbuilding." It is an after school program in underserved

middle schools geared toward girls who are interested in pursuing engineering and other STEM careers. In 2019, we added a similar program for at-risk boys called YME - or Young Men in Engineering.

To educate our new workforce, we must reshape how we are training our shipbuilders to ensure they are equipped to work in a digital world. Four years ago, Newport News Shipbuilding teamed with Old Dominion University (ODU) to create the Virginia Digital Shipbuilding Workforce Program. Under this initiative, ODU is incorporating aspects of digital shipbuilding into engineering and design and IT courses while also looking to more effectively incorporate digital components into trades training programs.

We are also modernizing our curriculum to include more digital content at The Apprentice School, and we recently established Youth Builders, a pre-apprenticeship program designed to strengthen high school students' readiness to succeed in our apprenticeship program.

We've also partnered with the City of Newport News and Old Dominion University on a new state-of-the-art facility within Brooks Crossing, which is a new development in Newport News' Southeast community, an urban, low-income community not far from the shipyard.

A portion of the building is used by our shipbuilders to implement new digital technologies into our engineering and manufacturing processes. But the best part is the first floor of the building, where kids in the Southeast community are introduced to STEM-related jobs and fields of study. It's a wonderful opportunity for us to grow and develop a new generation of engineers, scientists and mathematicians.

While all of these efforts have worked well for us, rightsizing the talent pipeline is not something Newport News Shipbuilding can do alone. It takes partnerships at the regional, state, and federal levels; innovative programs; and financial investment.

We believe effective workforce development starts with public school curriculum.

Over the years, K-12 education has been standardized around core subjects with the goal of getting students into colleges. Until recently, career and technical education was marginalized or removed from many secondary schools.

If students are going to choose to enter Career and Technical Education (CTE) training programs in high school, they need to be exposed to and sold on these career pathways as early as middle school.

In Hampton, Virginia, the public schools have transformed their four high schools into 16 academies focused on 41 career pathways. Students begin learning about careers in middle school to inform which academy they choose to attend in high school.

In Danville, Virginia, and surrounding counties, public schools have implemented the Great Opportunities in Technology and Engineering Careers (GOTEC) Career Connections program that gives middle school students hands-on engagement with equipment like welding simulators, CNC machining simulators and robotics through a gamified curriculum. Although the program is still in its infancy, it is not only causing students to think about high school CTE programs, it is also diversifying the students who pursue trades careers by attracting more women.

A recent grant awarded under the Defense Manufacturing Community Support Program will allow for GOTEC Career Connections to be piloted in two school systems in Hampton Roads.

Regional Training Centers in defense manufacturing hubs are also an effective approach to workforce development.

Too often, schools all want to build the same training centers and offer the same programs. Each public school division and community college wants its own training centers even if they serve the same metro area and are only a few miles apart. Regional training centers are more cost-effective in that they can serve multiple age groups and draw from the entire region.

A regional training center does not prohibit schools from having in-house training, but it provides an overall hub around which all training is based. The regional center can monitor employer demand signals, standardize curricula around employer needs and create clear pathways from high school to community college to employment within their specific region.

In addition to Danville's GOTEC Career Connections program, the community offers a regional training center that reaches their high schools, community colleges, and higher education centers. Led by the Institute for Advanced Learning and Research (IALR), the regional training center is made possible by more than \$80 million in investment in workforce development facilities and equipment – largely financed through tobacco settlement funds, local community foundations, and economic development funds.

Thanks to support from the Department of Defense's Industrial Base and Sustainment (IBAS) office, IALR recently developed the Accelerated Training in Defense Manufacturing (ATDM) program to allow the defense industrial base to leverage its training infrastructure. Newport News Shipbuilding provided curriculum development support and will have participants in the program's pilot cohort.

Training programs must be accessible and affordable.

One of our most successful short-term training programs at Newport News Shipbuilding is our Marine Trades Training (MTT) program that provides students with two to three weeks of pre-hire training before they join the company. But even this program has barriers to access.

The program requires students to be in the training facility for over eight hours per day and many people in low-wage jobs cannot afford to be without an income during the training period. Transportation, childcare and other basic needs also prevent some potential trainees from seeking workforce development opportunities.

Newport News Shipbuilding is seeking to address these challenges by partnering with our local workforce council and community colleges to develop HR STRONG--the Hampton Roads Skilled Trades Rapid On-ramp Network for Growth. This program will

enhance the MTT program with level 2 and level 3 training and provide eligible trainees with a stipend and wrap-around services while they complete training.

We have also taken advantage of two state funded programs in Virginia that remove cost barriers for trainees. The New Economy Workforce Credential Grants and the new "Get a Skill, Get a Job, Give Back," or G3 program will pay for most, if not all, costs for non-credit workforce credential training programs at Virginia community colleges.

In recent months, federal stimulus programs like the CARES Act have provided funding to make training programs, such as MTT, more accessible to underserved populations, but those initiatives are not permanent.

And programs such as HR STRONG, G3, and the New Economy Workforce Credential Grants are ripe for replication and additional funding from federal, state, and private sources.

Workforce development collaboration across the regional defense industrial base would pay dividends.

As I mentioned earlier, Hampton Roads has a robust defense industry. The region's military bases, original equipment manufacturers (OEM), shipbuilding and repair facilities and suppliers all share similar workforce needs but tend to work independently to address their challenges.

We've seen examples in places like New England and Philadelphia where a regional approach among the defense industry has worked well. For example, the Southeastern New England Defense Industrial Alliance (SENEDIA) leads regional submarine workforce development efforts by leveraging established pipelines in Connecticut and Rhode Island, sharing best practices, and supporting the development of similar pipelines in Massachusetts and New Hampshire. They have an enviable record of success with nearly 4,000 trainees placed into jobs in the regional industrial base to date.

A similar initiative is currently being established in the Philadelphia area to align existing workforce development pipelines in support of growth in federal work at the Philly Shipyard.

We believe there's potential for this same synergy in Hampton Roads where we have several strong organizations seeking to address the region's workforce development challenges. The Hampton Roads Workforce Council, the Maritime Industrial Base Ecosystem, and the Virginia Ship Repair Association are all good partners serving valuable roles, but none has been able to take on the centralized coordination role that has proven successful in New England.

The Way Ahead

There's no doubt major hurdles exist to building the maritime workforce that our shipyard—and our maritime industrial base—will need to ensure long-term success. But these hurdles are not insurmountable, as evidenced by some successful efforts being pursued across the country that are worthy of emulating and expanding.

But industry – and individual businesses – cannot do it alone. With that in mind, here are five ways you can help us be more successful:

First, be our ambassador for standardized curricula.

All Navy shipyards have needs for craft workers with similar skillsets. Some have unique needs – for example, our workforce at NNS has to be trained up to Navy Nuclear standards. But the basics are the same across industry.

Can the Navy work to develop standard pre-hire curricula that can be adopted and credentials that can be awarded in all Navy communities? Standardized curricula can be easily shared and implemented in communities around the country. And credentials tied to existing Navy technical publications will help our hiring and training offices identify the right candidates for a given job and determine what level of training is needed after joining the company.

Second, incentivize collaborative approaches in regions and government.

The examples I mentioned earlier in New England and Danville, Virginia, demonstrate that good things can come from a regional approach. Grants, tax credits, and other incentives at both the state and federal levels can encourage a joint regional effort.

In the same vein, consider cross-agency coordination. Multiple federal agencies, such as the Department of Labor and the Department of Education, have a role in workforce development and each makes grant programs available every year to support different aspects of workforce development. By coordinating their programs with the Department of Defense, grant programs could better address the needs of the defense industrial base.

Third, develop a dedicated source of workforce development funding that meets maritime defense needs.

Over the past few years, the Department of Defense's Industrial Base Analysis and Sustainment (IBAS) office has been DoD's primary mechanism for workforce development investment. IBAS has invested in strong programs, including some that I mentioned earlier. We recognize that the Subcommittee's strong support for IBAS in previous appropriations bills has been a key enabler of these investments, yet additional funds and guidance are still needed for capital, curricula, and staff if we are going to be successful in meeting our maritime workforce development challenges. Recognizing that all defense contractors, including the supply base, have significant workforce development needs, we should look to dedicated sources of funding in those regions. Perhaps this could entail including a workforce development incentive in all contracts or developing a new workforce development line item in the Department of Defense or the Department of the Navy's budget.

Because of the strong Subcommittee support in previous defense appropriations bills, there have been recent submarine and destroyer contracts which included funds that shipbuilders can designate to key suppliers to help build their capacity and infrastructure. Similar funds could be established to improve the capacity of workforce partners.

Fourth, support greater access to training for underserved populations.

The lesson we have learned from our Marine Trades Training program is that just because training is made available does not mean that everyone can access it. In fact, some who stand to benefit the most from learning a trade experience the greatest barriers to access such as lack of transportation, child care, or sufficient financial resources to allow them to enroll in training programs.

Long-term, federal subsidies to assist with these needs – like those provided during the pandemic through the CARES Act – would make such programs more robust and accessible.

And finally, support digital innovation at all levels of the defense industrial base.

At Newport News Shipbuilding, we are well into our digital transformation. But soon, we will need all of our subcontractors and suppliers to work from the same technology, and not all of them are prepared for that.

We need the support of the Subcommittee and Navy to help to ensure suppliers are ready for this transformation in their infrastructure, equipment and workforce. Our partners at Old Dominion University's Digital Shipbuilding Workforce Program are well-positioned to partner and share training best practices.

At a time when we need to rebuild the defense industrial base, we cannot afford to lose existing contractors and suppliers because they are not keeping up with the digital transformation that is underway.

Conclusion

In the Department of Defense's fiscal year 2020 Industrial Capabilities Report to Congress, it refers to the defense industrial workforce as "an endangered species." The report identifies human capital as a specific risk to the shipbuilding industry, stating that "in addition to the challenges found in other manufacturing sectors throughout the U.S., shipbuilding has unique challenges, such as too few replacements for retiring workers, insufficient labor mobility, the perception of unattractive physical working conditions, and the cyclical nature of shipbuilding."

There is a great need for increased federal investment in workforce development to support the overall growth of shipbuilding talent. The stakes are significant in light of the U.S. Navy's requirements for the capabilities this workforce provides. In an economy used to point and click shopping, these are capabilities that are developed and delivered over years, and the workforce must be nurtured and maintained. With your help, and the partnership of other local, state and federal allies, the defense industrial workforce will prosper, and be in a better position to provide the support our Navy needs, and our nation deserves.

I'm excited for what the future holds, and appreciate being here to address the specific opportunities and challenges ahead.

Truth in Testimony Disclosure Form

In accordance with Rule XI, clause 2(g)(5)* of the *Rules of the House of Representatives*, witnesses are asked to disclose the following information. Please complete this form electronically by filling in the provided blanks.

Committee: Appropriations

Subcommittee: Defense

Hearing Date: 10/26/2021

Hearing Title : _____

Workforce Development and the Department of Defense

Witness Name: Xavier Beale

Position/Title: Vice President, Trades

Witness Type: ☐ Governmental ☒ Non-governmental

Are you representing yourself or an organization? ☐ Self ☒ Organization

If you are representing an organization, please list what entity or entities you are representing:

Newport News Shipbuilding division of Huntington Ingalls Incorporated, a fully owned subsidiary of Huntington Ingalls Industries, Inc.

FOR WITNESSES APPEARING IN A NON-GOVERNMENTAL CAPACITY

Please complete the following fields. If necessary, attach additional sheet(s) to provide more information.

Are you a fiduciary—including, but not limited to, a director, officer, advisor, or resident agent—of any organization or entity that has an interest in the subject matter of the hearing? If so, please list the name of the organization(s) or entities.

Newport News Shipbuilding division of Huntington Ingalls Incorporated, a fully owned subsidiary of Huntington Ingalls Industries, Inc.

Please list any federal grants or contracts (including subgrants or subcontracts) related to the hearing's subject matter that you or the organization(s) you represent have received in the past thirty-six months from the date of the hearing. Include the source and amount of each grant or contract.

Jobs for the Future (JFF) was awarded U.S. Department of Labor funding to expand equity and inclusion in apprenticeships. Newport News Shipbuilding Apprentice School is one of nine subcontractors funded in the grant.

Please list any contracts, grants, or payments originating with a foreign government and related to the hearing's subject that you or the organization(s) you represent have received in the past thirty-six months from the date of the hearing. Include the amount and country of origin of each contract or payment.

Newport News Shipbuilding has no contracts, grants or payments with a foreign government. However, the Technical Solutions division of Huntington Ingalls Industries is part of the Naval Shipbuilding Institute (NSI), a joint venture with Kellogg Brown and Root's (KBR) Government Services division, to establish and manage Australia's new Naval Shipbuilding College. This effort is in support of Australia's mission to recapitalize its shipbuilding and maritime sustainment industry over the next several decades.

Please complete the following fields. If necessary, attach additional sheet(s) to provide more information.

- ☒ I have attached a written statement of proposed testimony.
- ☒ I have attached my curriculum vitae or biography.

*Rule XI, clause 2(g)(5), of the U.S. House of Representatives provides:

(5)(A) Each committee shall, to the greatest extent practicable, require witnesses who appear before it to submit in advance written statements of proposed testimony and to limit their initial presentations to the committee to brief summaries thereof.

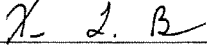
(B) In the case of a witness appearing in a non-governmental capacity, a written statement of proposed testimony shall include— (i) a curriculum vitae; (ii) a disclosure of any Federal grants or contracts, or contracts, grants, or payments originating with a foreign government, received during the past 36 months by the witness or by an entity represented by the witness and related to the subject matter of the hearing; and (iii) a disclosure of whether the witness is a fiduciary (including, but not limited to, a director, officer, advisor, or resident agent) of any organization or entity that has an interest in the subject matter of the hearing.

(C) The disclosure referred to in subdivision (B)(ii) shall include— (i) the amount and source of each Federal grant (or subgrant thereof) or contract (or subcontract thereof) related to the subject matter of the hearing; and (ii) the amount and country of origin of any payment or contract related to the subject matter of the hearing originating with a foreign government.

(D) Such statements, with appropriate redactions to protect the privacy or security of the witness, shall be made publicly available in electronic form 24 hours before the witness appears to the extent practicable, but not later than one day after the witness appears.

False Statements Certification

Knowingly providing material false information to this committee/subcommittee, or knowingly concealing material information from this committee/subcommittee, is a crime (18 U.S.C. § 1001). This form will be made part of the hearing record.



Witness signature

10/22/21

Date

Ms. MCCOLLUM. Thank you.
General Carlisle.

SUMMARY STATEMENT OF GENERAL CARLISLE

General CARLISLE. Chairwoman McCollum, Ranking Member Calvert, and distinguished members of the committee, I want to thank you for the opportunity to share my experiences and industry perspective on the challenges facing the future of the defense workforce.

Providing America's national security faces challenges, including a critical shortage, as has been mentioned, of skilled, educated, and cleared personnel to work in the defense ecosystem.

Many factors are causing the widening gaps in our workforce with which we must contend. Without comprehensive investments in all of our Nation's human capital, we won't be able to fill these gaps, much less ramp up expeditiously in times of national need.

The defense sector mirrors the workforce challenges faced by the greater organic industrial base: unmet demand for STEM talent, increasing shortages in skilled personnel who can build the systems we need to stay competitive, uneven access for all of America's talent pools, and the evolving work environment the COVID crisis has only accelerated.

As a trade association, the National Defense Industrial Association represents the interests of defense companies of all sizes and sectors with the majority of our membership comprised of small business. Adverse impacts to small businesses are felt throughout the supply chain. As these companies seek to transition ideas to capabilities, they face a marketplace where demand is outstripping the supply of STEM talent.

Coupled with the competition for new talent, companies cannot afford to lose talented, highly skilled employees, which is their most coveted asset, to other sectors, and in today's world, to retirement.

On the vocational side, we have spent decades as a society selling a 4-year degree as the ultimate path to opportunities and career success. While true this is a great path, it is not the lone path.

The push for college for all has had the unintended consequences of messaging that skilled careers are somehow second class. That could not be farther from the truth. For many with the talent and desire, noble skilled careers can be both lucrative and fulfilling.

Unique to our sector is the often required security clearance. The security clearance process can be a high and sometimes impossible hurdle to clear for many qualified candidates.

This barrier is particularly detrimental for small companies who find it difficult to find the right talent, and then can ill-afford to pay them while they are waiting, oftentimes months, to get them cleared to work on a classified contract. This prevents many small businesses from entering and remaining part of the defense ecosystem.

We believe that being part of a solution to the defense workforce challenges is fundamental to NDIA's mission and what we exist for. As such, we have established a multi-year Defense Workforce Project, known as DWP, and we will hold our first initial Defense Workforce Summit this December.

As our “Vital Signs” report shows, there is a need for diversity within the defense sector. This is not just diversity of race and gender, but also of diversity of thought. To increase the propensity to enter the defense sector, we need to ensure more people see themselves as part of the national security enterprise.

We also need to recognize the existing talent pool of veterans and military spouses who have familiarity with the defense mission and make entrance for their career pathway a more streamlined process.

Educational opportunities are crucial to supporting our workforce today and into the future. We must address the imbalance in representation in the STEM workforce and increase the number of academically prepared students at the K to 14 level in STEM.

An area too often overlooked is the Career and Technical Education, known as CTE, and we do not see many substantive national approaches to this problem. We in NDIA are identifying centers of training excellence and developing actionable recommendations on adapting and scaling programs nationally to meet the production goals for the next 5 to 20 years.

Finally, experience before and since the COVID crisis began has shown the nature of work is shifting. We need to understand the current trends and to implement the changes that we need to develop the workforce of tomorrow.

A partnership between government and industry is necessary for generational impacts to ensure the future of the workforce. Collaboration is underway in these very Halls of Congress with the establishment of the House Defense Workforce Innovation and Industry Caucus, and it is established with support from both sides of the aisle.

Our focus is to help ensure the defense industrial base has a robust, ready, and cleared defense workforce for 2040 and beyond capable of equipping our Nation’s warfighters to face both impending and unforeseen challenges.

Improving the development of the defense workforce is a work in progress, and, frankly, we don’t know yet how much or what the appropriations are necessary to fund these projects.

We do know that there is funding required, and we really look forward to working with you, all of you in Congress, and we thank you for advancing and recognizing this issue and for your continued support.

Thank you.

[The information follows:]

STATEMENT OF
GENERAL HERBERT "HAWK" CARLISLE (USAF, RETIRED)
PRESIDENT AND CHIEF EXECUTIVE OFFICER
NATIONAL DEFENSE INDUSTRIAL ASSOCIATION (NDIA)
BEFORE THE
HOUSE DEFENSE APPROPRIATIONS SUBCOMMITTEE
ON
WORKFORCE DEVELOPMENT
26 OCTOBER 2021

NOT PUBLIC UNTIL RELEASED BY THE
HOUSE APPROPRIATIONS COMMITTEE

INTRODUCTION

Chairwoman McCollum, Ranking Member Calvert, and distinguished Members of the Committee thank you for the opportunity to share my experiences and industry perspective on the challenges facing the future of the defense workforce.

During my nearly 40 years of service, I witnessed firsthand the vital role a strong defense industry has on ensuring our warfighters have the equipment and support needed to never be in a fair fight. We were secure in knowing the best and brightest minds our country has to offer were working to ensure our success. Previous generations mustered in times of need to support the defense industry. Today, American national security faces many threats, including a critical shortage of skilled, educated and cleared personnel to work in the defense ecosystem. We face competitors who have focused on Science Technology, Engineering, and Mathematics (STEM) education and training and built-out their manufacturing capabilities over the last few decades with an eye to supplant us. While our organic manufacturing base has atrophied and society messaged to our youth that skilled-labor jobs are somehow second class, many of our STEM-focused students have targeted the civilian tech sector rather than the defense industry. These factors and others are causing gaps in the future of our workforce with which we must contend. And, without comprehensive investments in all of our nation's human capital, its young people, changes in policy, and scaling of successful workforce programs, we won't be able to fill these gaps much less ramp up expeditiously in times of national need.

Issues Facing the Defense Workforce

In many ways the defense sector mirrors the workforce challenges faced by the greater organic industrial base—unmet demand for STEM educated talent, increasing shortages in skilled

personnel who can build the systems we need to stay competitive, uneven access for all of America's talent pools, and the adjustments to the evolving work environment that the COVID crisis has accelerated.

Last year, NDIA's annual Vital Signs report on the health and readiness of the defense industrial base highlighted some of the issues facing the defense workforce. The gap in US-based human capital was reported by 18% of our companies as the most vulnerable part of their supply chain. When asked to identify the difficulty of finding workers for STEM-related positions, 82% rated it as "somewhat" or "extremely difficult," while 32% said it was extremely difficult to find cleared workers.

As a trade association, NDIA represents the interests of defense companies of all sizes and sectors, with the majority of our membership comprised of small businesses. Adverse impacts to small businesses are felt throughout the supply chain. As these companies seek to transition ideas to capabilities, they face a marketplace where demand is outstripping the supply of STEM talent. Coupled with the competition for new talent, companies cannot afford to lose current talented, highly skilled employees, their most coveted asset, to other sectors or to retirement.

Issues facing the defense industry parallel some in other industrial sectors, but a few components impact the defense industry more than others. The so-called "valley of death" is one example often cited that is particularly challenging for small, innovative companies. Defense work can be inconsistent for small business innovators, which poses challenges to keeping their workforce intact while remaining reliable participants in government contracts. Their highly specialized workforces can be at risk when they are required to staff up and then slow down due to contract delays, to include things like Continuing Resolutions. High-tech innovators need consistency to keep their highly trained workforce intact. They are challenged when competing for labor with

other sectors, and often with competitors, also experiencing personnel shortages. When government work slows down, companies are forced to figure out how to retain their workforce in lulls. Keeping the workforce engaged by providing paid access to training is one way to keep the workforce engaged. Another issue is addressing the contract rates not matching competitive salaries in the highly skilled workspace. It is a challenge for small businesses to retain their workforce when they cannot compete with the payscales of high-tech commercial corporations.

On the vocational side, we have spent decades as a society selling a four-year degree as the ultimate path to opportunities and career success. While true this is a great path, it is not the lone path. The push for college for all has had the unintended consequence of messaging that skilled careers are somehow second class. That could not be further from the truth. For many with the talent and desire, noble, skilled careers can be both lucrative and fulfilling with the added benefit of not being crushed with student debt.

Another challenge for companies looking for skilled workers are the requirements levied on the types of certifications, qualifications, and workforce conditions for DoD employers which make it a challenge for companies to stay cost competitive. This is not to say all the requirements should be reduced. Rather, it requires an in-depth look at the types of programs that can be put into place so small business employers do not bear the brunt of the cost for this investment.

As I noted before, the defense industrial base has workforce challenges similar to the rest of industry, but unique to our sector is the often-required security clearance. The security clearance process can be a high and sometimes impossible hurdle to clear for many highly qualified candidates. This barrier is particularly detrimental for small companies who find it difficult to first find the right talent and then can ill-afford to pay them while waiting the months it often

takes to get them cleared to work on a classified contract. This prevents many small businesses from entering and remaining part of the defense ecosystem.

Following serious clearance delays and extended timelines, the government has gone to great lengths revamping the system. This is both welcome and heartening. But, there are still fundamental challenges the criteria and process place on defense contractors as they try to hire-on new talent requiring innovative solutions to address exclusionary background issues. These include access to an underutilized immigrant workforce and legal matters from the past use of marijuana, which is now legal in many states. This complicating factor makes the defense industry less appealing or unattainable to many talented people and can be a barrier to entry for both companies and to individual workers.

NDIA's Defense Workforce Project

We believe finding solutions to the defense workforce challenge is fundamental to the National Defense Industrial Association's (NDIA) mission—to work with you and your esteemed colleagues, the Pentagon, academia, and the companies and hundreds of thousands of individual members of the defense industrial base—to ensure this generation and the next have the trained, educated, and clearable defense workforce necessary to protect our nation.

We need a whole of nation approach to tap into all of America's talent pools, increase the number of both skilled workers and STEM graduates while increasing interest in the defense sector as a career pathway. To support this mission, NDIA established the multi-year Defense Workforce Project, known as DWP, in response to the increasing challenges our industry has in getting the right workers with the right capabilities on payroll and delivering for our warfighters and to identify how we can right the ship.

The defense workforce faces diversity and inclusion issues, lagging production of skilled workers through trade school and apprenticeship programs, STEM education limitations, difficulty recruiting and retaining advanced degree and highly skilled personnel, and many issues relating to hiring and retaining a highly cleared workforce. Through the DWP, NDIA is holding its initial Defense Workforce Summit this year on December 9th, with the initial goals to analyze vulnerabilities and identify critical issues by convening multi-sectoral working groups to develop recommendations that speak to the needs and realities of policymakers in Congress, the executive branch, and, importantly, industry as well.

We will disseminate findings and recommendations through targeted communications channels and measure impact and adaptively manage the project. It is vital at the outset to identify where we can make the most significant, fastest difference toward strengthening the defense workforce. Some criteria we are weighing include the maturity of how long the issues have hampered the workforce; does the problem lend itself to a multi-sectoral, team-based approach; are there interested stakeholders willing to lean-in to support recommendations; will the effort fill a gap or need; and is this need addressed elsewhere. These objectives include identifying best practices and programs for scaling nationally, finding awareness and recruitment opportunities, estimating the cost of workforce investments, and developing continuity for outreach operations to deliver the goals set forth by the DWP. Our focus is to help ensure the defense industrial base has a robust, ready, and cleared defense workforce for 2040, capable of equipping our nation's warfighters to face both impending and unforeseen challenges.

Talent Pools

Diversity and Inclusion

To compete and win in great power competition, America needs to draw the best from across all its talent pools. As a nation, we are blessed with a diverse and talented population. As our Vital Signs report shows, there is a need for diversity within the defense sector; this is not just diversity of race and gender but also a diversity of thought. Studies show the most successful teams leverage diversity by approaching a problem set from various angles and developing better decisions and solutions. Looking at the present defense workforce, strides have been made but work remains. For instance, the current cybersecurity workforce does not represent the demographics of the U.S. Recent surveys estimate that two-thirds of cybersecurity professionals are male, and only 26% identify as underrepresented minorities. In STEM education at the Masters of Science level, African Americans only represent approximately 2.4% of the computer science graduates, and women represent only about 27%. To diversify the workforce, we must address access and the underrepresentation of women and minorities pursuing degrees in computer engineering and computer science. A particular focus is necessary for recruiting a diverse workforce, including women, minorities, individuals with disabilities, and veterans, for hard-to-fill positions within government and industry.

In addressing talent pools, we must factor in inclusion to the overall talent acquisition process. It's not just about training and educating more people from under-represented communities but also ensuring they can see themselves as part of the national security enterprise. Our industry is looking at ways to increase interest in the defense workforce by those not traditionally inclined to enter the sector, including recruitment incentives, educational and technical skills training, and workforce development which provide long-term benefits for the defense workforce. While

delivering investments in education and training inclusive to our many varied communities is deeply needed, so too is exposure to the opportunities and sense of mission provided by the defense industrial base. The bottom line is non-traditional pools of talent often don't know of or don't consider jobs in this sector. So, even for those who have made it through an all too narrow education and training pipeline, too few look to careers providing our servicemembers with the capabilities to defend our nation and its interests. A start to addressing this challenge is early and continued exposure from early education through skilled training programs and college education so this sector is seen as both an opportunity and a place where they can make a difference.

Military Education/Skillbridge/Veteran and Spouse Programs

Having served with thousands of great Americans in uniform, I know personally the skills our service members possess and the tremendous impact they can have after service transitioning their skillsets to the private sector or as government civilians. That includes participation in the defense workforce where veterans are a unique opportunity and one we need to further leverage.

One challenge to entry into the defense workforce is a propensity to enter, often from a lack of knowledge of the defense sector. Propensity is shown to come from environmental influences, learning experiences, expectations, interests, and past performance. Veterans and military family members tend to serve and work with the military due to their exposure to the services and having an insider perspective on the positive and negative experiences that come with the proximity to the services available. The cascading effect leads them to be more inclined to seek employment in the defense sector mitigating the propensity challenge.

Veterans transitioning also have an established skillset and have undergone the clearance process. Their familiarity with the sector and understanding of the priorities of the warfighter supports looking at ways to improve the transition from active duty to the defense workforce. Identifying opportunities within the transition process to educate servicemembers on defense industry pathways, whether that is in skilled careers, STEM, or management, would provide an established population with increased opportunities.

Today, this is often limited to the Skillbridge program for those transitioning members able to match with job training for civilian opportunities at the end of their military service. This program, at its best, is a win-win for the company, which is provided a skilled trainee at no cost to them, and the service member, who receives new skills and learns how to transition their military training and expertise into the civilian sector. Today there are nearly 1,300 organizations listed for military members to choose from, but that's out of around 300,000 companies doing business with the Department of Defense. NDIA itself saw challenges in quickly becoming an authorized organization in a timely manner when we identified a member interested in participating in Skillbridge. Due to timing issues, she ultimately had to go elsewhere as we worked through the process. The other issue with Skillbridge is approval remains at the commander's discretion. And, because they often do not have someone to backfill a position, they have little incentive to allow their service member to participate. Fixing this disincentive and expanding the program to where it is the default for transitioning veterans vice a little-known option would be a boon to the defense workforce.

Veteran Readiness and Employment, formerly known as Vocational Rehabilitation, is another avenue where the government could support the pathway to the defense sector with veterans looking to receive job training and education.

Supporting pathways mid-career by allowing for a rotational workforce is another possibility. Efforts to allow active-duty personnel the opportunity to take a leave of absence to go-to industry for a year and then return to the DoD with renewed skills provides a win-win for the service and the industry partner. Often, we only see this at the O-6 (Colonel/Navy Captain) level with the opportunity for Top Level School training during an apprentice type of education within a Fortune 500 company or during Skillbridge. A mid-career opportunity benefits the servicemember with new skills they can bring to their service, helps industry with its knowledge, and provides civilians who haven't experienced the military a better understanding and connection to the end-state customer—the warfighter.

Military Spouse Pathways to the DIB

We believe it is also worth examining spouse employment in the defense sector. We plan to take a closer look in the future at opportunities to collaborate with government programs focused on helping military spouses. For example, My Career Advancement Account Scholarship funding focuses on healthcare, but this could be expanded to include defense sector career pathways. I know from personal experience that our spouses need portable careers. Working to identify positions that remain telework-based provides an opportunity to help spouses remain employed, which supports retention of the military member. An area Congress could assist with is again related to clearance; if a military member is already cleared, the process for their spouse should not require reinventing the wheel. Continuing to support the Military Spouse Employment Partnership is another example of a successful partnership with DoD and companies.

STEM Education Pathways

Educational opportunities are crucial to supporting our workforce today and into the future. We know the United States is educating and graduating too few academically prepared students to address workforce needs in STEM-related careers. The demographics of STEM graduates do not reflect the demographics of the country as a whole. To address future workforce needs, we must address the imbalance in representation in the STEM workforce and increase writ-large the number of academically prepared students at the K-14 level in STEM. Investment is needed to develop youth inclined towards STEM programs, not just by piquing their interest at an early age but by continuing to communicate with the students as they matriculate to university STEM programs including through non-traditional pathways.

Our STEM Pathways Working Group stresses the importance of getting an early start to gauge interest and skill for STEM and cyber-related positions. This is currently being done at many colleges with camps for middle and high school students. We believe agencies' collaborations with STEM camps at universities across the country provide an opportunity to reach the next generation, establish interest, and identify those with a skillset early on. This is being done exceptionally well by NASA and some of the intelligence agencies.

The DWP participants are developing recommendations for policies and practices to increase the numbers and diversity of domestic graduates who are academically prepared to address challenges requiring an understanding and application of STEM fundamentals. One overarching goal will be determining the investments needed to ensure all students and learners have access to and are included in programs that academically prepare students for STEM careers.

NDIA supports the establishment of a coalition by Congress to promote educational opportunities for individuals in the defense industrial base, as included in the House's FY22 NDAA. Ensuring the alliance consists of industry and government contractors' input will be the key to meeting the legislation's intended impact.

As a subset of STEM, the cyber workforce is particularly challenging. The investment in digital transformation and industry 4.0 lags other industrial sectors. A 2019 workforce study estimates that the global cybersecurity workforce needs to grow by 145% to meet the current needs for cybersecurity training professionals. The same report noted that in the U.S. alone, the cybersecurity workforce gap was nearly 500,000. Of the existing cybersecurity workforce, approximately 75% of U.S. workers have at least a B.S. degree, and more than one-third hold an M.S. or Ph.D. degree.

The cyber workforce poses particular challenges due to the necessary security clearances. Recruitment of cyber inclined individuals needs to begin at the high school and even middle school level. Investments in opportunities for this age group can help foster interest in cyber and defense-related careers at an earlier age, helping increase the propensity for those not otherwise considering national security as their focus.

NDIA worked closely with the Cyberspace Solarium and agreed with the findings to involve universities and local colleges to expand cyber-oriented education opportunities. One option may be a rotational workforce, aligning with the pending legislation in the House and Senate, which allows cyber-related positions with opportunities within government and the civilian sector to gain new skills and explore growth opportunities.

Skilled Careers (Career and Technical Education (CTE))

An area too often overlooked is Career and Technical Education, known as CTE, which is an optimal way to create career pathways into the defense industry early. However, we do not see many substantive national approaches, at least ones that are widely known. Programs are localized and are based on relationships built by regional recruiters and supported by state and local government resources. To broaden this pathway requires changing the conversation to recognize college is not the best path for everyone. Counselors, coaches, parents, and teachers need to be informed that a skilled career is a valid path, either as a steppingstone or a long-term career.

Historically, apprenticeships were more commonplace. By bringing back and expanding these opportunities, we can increase interest in defense manufacturing programs and help fill the growing gaps in the workforce. Our near-term objective is to capture and document regional programs and develop best practices that can be replicated, adapted, and scaled at the national level. We perceive there is an eagerness at the federal level, including with proposed legislation to support the expansion of these programs. The DWP Skilled Careers working group addresses the decreasing number of welders, electricians, machinists, and other qualified vocational workers. The goal is to identify areas where the government can encourage the pursuit of these vocational occupations and industry is incentivized to expand its programs.

Addressing the Future of the Workforce and Where Government Can Help

Addressing the litany of issues facing the defense workforce is not a quick fix. DWP's focus is on maintaining a robust, ready, and cleared workforce for 2040 and beyond. This requires thinking beyond today's needs to the future skills and jobs that may not exist today.

Recognizing opportunities for artificial intelligence and machine learning and how they will impact the workforce includes identifying current and possible future issues that could negatively impact the supply chains. This requires a whole of nation approach to both protect and promote American industry to support our warfighters.

A partnership between government and industry is necessary for generational impacts to ensure the future of the workforce. Collaboration is underway in these very halls with the establishment of the Defense Workforce Innovation and Industry Caucus, established with support from both sides of the aisle, in recognition of the need for an open line of communication between lawmakers and the defense industry to educate members and staff on defense industry workforce challenges.

Supporting the future of the defense workforce is a work in progress, and we do not currently know the appropriations necessary to fund these projects. Still, we are confident investments will be essential for the future security of the defense workforce, and we thank you in advance for recognizing this issue and for your support.

Truth in Testimony Disclosure Form

In accordance with Rule XI, clause 2(g)(5)* of the *Rules of the House of Representatives*, witnesses are asked to disclose the following information. Please complete this form electronically by filling in the provided blanks.

Committee: Appropriations 

Subcommittee: Defense 

Hearing Date: 10/19/2021

Hearing Title :

Workforce Development

Witness Name: General Herbert "Hawk" Carlisle, USAF (Ret.)

Position/Title: CEO and President, National Defense Industrial Association (NDIA)

Witness Type: ☐ Governmental ☒ Non-governmental

Are you representing yourself or an organization? ☐ Self ☒ Organization

If you are representing an organization, please list what entity or entities you are representing:

Representing NDIA, a defense industry trade association, and its members.

FOR WITNESSES APPEARING IN A NON-GOVERNMENTAL CAPACITY

Please complete the following fields. If necessary, attach additional sheet(s) to provide more information.

Are you a fiduciary—including, but not limited to, a director, officer, advisor, or resident agent—of any organization or entity that has an interest in the subject matter of the hearing? If so, please list the name of the organization(s) or entities.

Not applicable

Please list any federal grants or contracts (including subgrants or subcontracts) related to the hearing's subject matter that you or the organization(s) you represent have received in the past thirty-six months from the date of the hearing. Include the source and amount of each grant or contract.

Not applicable

Please list any contracts, grants, or payments originating with a foreign government and related to the hearing's subject that you or the organization(s) you represent have received in the past thirty-six months from the date of the hearing. Include the amount and country of origin of each contract or payment.

Not applicable

Please complete the following fields. If necessary, attach additional sheet(s) to provide more information.

- ☐ I have attached a written statement of proposed testimony.
- ☐ I have attached my curriculum vitae or biography.

* Rule XI, clause 2(g)(5), of the U.S. House of Representatives provides:

(5)(A) Each committee shall, to the greatest extent practicable, require witnesses who appear before it to submit in advance written statements of proposed testimony and to limit their initial presentations to the committee to brief summaries thereof.

(B) In the case of a witness appearing in a non-governmental capacity, a written statement of proposed testimony shall include—

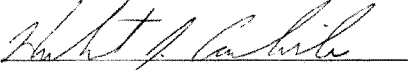
(i) a curriculum vitae; (ii) a disclosure of any Federal grants or contracts, or contracts, grants, or payments originating with a foreign government, received during the past 36 months by the witness or by an entity represented by the witness and related to the subject matter of the hearing; and (iii) a disclosure of whether the witness is a fiduciary (including, but not limited to, a director, officer, advisor, or resident agent) of any organization or entity that has an interest in the subject matter of the hearing.

(C) The disclosure referred to in subdivision (B)(ii) shall include— (i) the amount and source of each Federal grant (or subgrant thereof) or contract (or subcontract thereof) related to the subject matter of the hearing; and (ii) the amount and country of origin of any payment or contract related to the subject matter of the hearing originating with a foreign government.

(D) Such statements, with appropriate reductions to protect the privacy or security of the witness, shall be made publicly available in electronic form 24 hours before the witness appears to the extent practicable, but not later than one day after the witness appears.

False Statements Certification

Knowingly providing material false information to this committee/subcommittee, or knowingly concealing material information from this committee/subcommittee, is a crime (18 U.S.C. § 1001). This form will be made part of the hearing record.



Witness signature

10/19/21

Date



Ms. McCOLLUM. Well, thank you. You all covered a lot. There is a lot to cover.

Mr. Ryan, I am going to go vote. I am turning the virtual gavel over to you, and you can have the first question.

SMALL BUSINESS CHALLENGES

Mr. RYAN [presiding]. Thank you, Chairwoman McCollum.

Let me just first say how impressive this panel is. My district is in Ohio, northeast Ohio, and this has been an issue across the board, obviously not just in defense, not just in the defense industrial base, but workforce obviously.

But you touched upon the issues with semiconductors and manufacturing and lack of a grand strategy in the country and all the rest. I really appreciate all of your contributions here.

Let me ask a couple questions here, because defense corporations, really of all sizes, share the challenges that you mentioned. But underpinning each large corporation are these smaller businesses, and their challenges are often more extreme.

And the Department houses a small business office within the Office of Industrial Policy that manages its outreach to the smaller businesses. And from their statistics, it appears that in 2020, 24.5 percent, or about \$80 billion worth of business, was executed by small businesses. But for small businesses to continue to achieve success, they need to train their personnel, and training programs are difficult for them to execute.

So, General Carlisle, the National Defense Industrial Association can provide us a comprehensive overview of these challenges with a particular emphasis on small businesses. Could you please share with us the unique challenges that small businesses face in attracting and retaining personnel for their skilled career fields?

General CARLISLE. Yes, sir, Representative Ryan. I appreciate the question. And you are right, it is critical.

I think small businesses have a couple of added challenges that large businesses don't. One of them is the challenge of the speed with which the departments sometimes work. It is called the Valley of Death. You can call it a bunch of different things.

But the time it takes sometimes to go from, "Hey, this is a great idea, this is great technology, we have the technology and the workers to get it done," to then being able to put it on contract and start producing it, that can extend time, whether it is a SBIRS contract as it goes from Phase I through Phase III and then try to become a program of record.

Well, larger businesses have ways that they can deal with that. They can move people around. They can use them in other places.

Small businesses, if you have a workforce, many of our members will have to mortgage their house to pay the wages for their workers while they are waiting for their contract to come to fruition. That time lag is a huge challenge for small businesses.

And then the other one is the cleared part of it, the one that I mentioned in my opening statement, and that is security clearances, because many of the programs are classified contracts. Security, it has gotten better, but it has got a long ways to go. It still takes months to get somebody cleared. And if you can start that ahead of time, it works out better.

Internships, I think, are one way to start it. There are a couple of ideas on kind of starting them even in academic institutions or colleges if you have people that are inclined to work towards the defense industry, start their clearance process there.

But those are two big problems that I think face small business. And then, of course, the competition for the workforce in the commercial sector is just daunting to small business in the defense industrial base.

Mr. RYAN. General, what areas have the biggest gap?

General CARLISLE. I would say I think—

Mr. RYAN. Like demand for the worker and the capability or the skill set of the workforce?

General CARLISLE. Yes, sir. I think software engineering is one that is a big player for small business in particular. There is a lot of that out there. But the competition for really high quality coders is a big challenge for them.

Another one is the skilled trades. I mean, you know that the skilled—the welders, the electricians, the pipe fitters, there is a shortage of those, and obviously the competition for those is intense.

And then I think, as mentioned by Chairwoman McCollum, is that the new technology, whether it is hypersonics or AI or machine learning, that just adds to the demand signal for small business.

SOLVING SKILLED TRADE ISSUES

Mr. RYAN. It is interesting. How do you solve the skilled trade issue? I know that is an issue.

General CARLISLE. There are some folks that—

Mr. RYAN. Is there anything we can—I know we have got Helmets to Hardhats, and we have got some of these other creative programs. Do you have any ideas on how we could maybe close that gap a little bit with the skilled trades?

General CARLISLE. Sir, I think there are a couple. I think one of them would be to take advantage of military veterans and spouses, family members of military veterans, because they often have skills in those areas that they have learned either in the military or moving around with the military. That is one place.

There is a thing called SkillBridge. I think that generally goes to more white collar work. I think SkillBridge in some of the skilled trades is another place where you could focus. The Department of the Navy in the Hampton Roads area would probably be great for Newport News Shipbuilding. Often very skilled, very talented.

My brother is from San Diego, a senior chief in the Navy for 26 years and went to work in a skilled trade and stayed in San Diego, and that transition took longer than it should have because he already had all the talent. So I think that is another place that we could do it.

COMMON WORKFORCE CHALLENGES

Mr. RYAN. Got it.

Real quick before I kick it to Ranking Member Calvert. The Defense Workforce Project and the initiative's current efforts to ad-

dress these common workforce challenges facing the industry today, can you tell us a little bit about that?

General CARLISLE. Yes, sir. Thanks for the question.

The Defense Workforce Project has been going on for months. We have four working groups with expertise from around the country, and they are looking at those four different areas. They are looking at the skilled workforce, the CTE, how do we get those welders and shipbuilders and pipe fitters and electricians and plumbers? That is one of the work groups.

Another one is STEM. How do you get better STEM education? We have a lot of academic input on that. How do we get it going back K to 12 or K to 14. We have the tendency to go to just college. You actually have to start it much, much further left of that.

We have another one on diversity. How do we get to all the talent pools in this country? Oftentimes, there are sections of this country that don't understand those opportunities are out there. So how do you get to more of them, get more capability? Because we do have an incredibly talented population.

And then the final one obviously is the world is changing. It is a different work environment. There is automation. There is what COVID did. There are all those things that the work of the future is going to probably look a little bit different than it has in the past, and how do we transition to that.

And our first summit is December 9, and we will start working on laying the groundwork for recommendations and ways to come forward and what we can do to support the challenge of the workforce.

Mr. RYAN. Great. Well, I just want to be clear too. When you said further left, you meant earlier in high school and into—I want to make sure Mr. Calvert is okay. I don't want him to be upset about your comment.

Ranking Member Calvert.

General CARLISLE. Yes, sir.

TRADE EDUCATION OUTREACH

Mr. CALVERT. Thank you, Congressman. I appreciate your recognizing me.

I think maybe this is—it is an interesting conversation about the lack of vocational education in America today. We used to have much more of that. I think it was given a dirty word, unfortunately.

There is a program, I am sure it is shared in other States, in California, where we take 2 years of high school and 2 years of community college for a trade; for instance, fixing air conditioners or being a mechanic or software. A number of trades. And we seem to be getting back to that.

Maybe this is for the entire panel. Is that something we should work toward in the Department of Defense, to encourage that kind of outreach both at the high school and community college level?

General, maybe you can start with that.

General CARLISLE. Yes, sir. I would be more than happy to.

I think that is an incredible idea. There are different kinds of talent throughout our population. And I mentioned my brother ear-

lier. My brother mechanically can fix, make, or build anything. He just has a three-dimensional mind. And there are kids like that.

But when I went to high school, there was auto hobby shop and wood shop. Those don't exist anymore in high school. But those are things that I think—

Mr. CALVERT. We are the same age.

General CARLISLE. Say it again, sir?

Mr. CALVERT. We are the same age.

General CARLISLE. Yes, sir. San Diego, California too. That is where I am from.

I think that the idea of identifying that talent, which you can identify early, and folks that have a propensity and want and look forward to getting into that, a lot of people just love working with their hands, and I think it is a great idea.

Mr. CALVERT. Sure. And by the way, you can also create, in many instances, in these programs with high school and community college, an apprentice program where they can actually earn some money at the same time and learn the process, for instance, welding, be an assistant welder, learn how to do that. And by the time they get their 2-year degree they are making 75,000 to 100,000 bucks a year, which is not bad.

RECRUITMENT AND RETENTION OF AI WORKFORCE

Dr. Griffiths, the Senate recently appropriated a bill in 2022 that includes \$100 million to enhance the Department's recruitment and retention of an AI-literate acquisition workforce. And I think that AI needs to be rapidly developed and integrated into the workforce, especially if we are going to maintain our superiority over threats like China.

Could you speak to how these funds could be utilized in the Department? And should the funding be included in the conference agreement?

This is for Dr. Griffiths.

Ms. GRIFFITHS. There is always somebody who forgets to switch it on, and I apologize for that. Thank you.

Yes. There are a tremendous number of needs for recruiting the AI talent in the Department of Defense. I believe that the funding should be spent in a number of areas. We have both the recruitment of new talent and the identification and education and training of the talent that already exists within the DOD.

The problem with the government, the military and civilian, is we are not fully aware of what digital talent already exists. There are a number of different ways in which that money could be developed and fed into programs, including creating a Digital Corps within every branch of the service and within every branch of government so that you organize the workforce so that people can come in and be deployed, depending on the talent that they already have, the existing talent.

The second would, in fact, be those career fields, because right now you simply cannot move forward within the Federal Government to pursue your career along those lines, particularly in the military. Like the Medical Corps, what we have recommended is a Digital Corps like the Medical Corps where you can pursue your entire career in the digital field that you have capabilities in.

And then we also have recommended, as I mentioned, the National Digital Reserve Corps and the U.S. Digital Service Academy for really expanding efforts to bring talented people into the government. We believe that the National Digital Reserve Corps would be very effective in allowing people in business and industry and academe to provide some resources to the government for periods of time.

We believe that people—we have talked to many, many different people in industry and in academe who are very, very willing to serve government, just not necessarily on a full-time basis. But what they are challenged by are the kinds of challenges that the government faces and the Nation faces as a whole.

Attracting people who are attracted to that kind of challenge would actually expand the workforce at a time when it is going to be very, very hard to build the sufficient capacity that we need in the short period of time. After all, we are 5 years behind China right now, and we have a deficit to make up. We need to move pretty quickly.

Mr. CALVERT. That I would agree with. I hope we are not 5 years behind China, but that is what people say.

And retention is a problem obviously in the government because there is such demand in the private sector for those who receive that education. We have to keep up with pay and benefits to maintain that workforce.

SHIPYARDS

And we mentioned the shipyards. I was over at a shipyard recently, and this weird competition for those who are in the government to those that are working in the shipyard. It is right there in the facilities themselves.

Mr. Beale, you are aware the Navy has failed to deliver a long-term shipbuilding plan to Congress. What impact does it have on your workforce when you are unable to adequately rely on a stable shipbuilding plan that we don't have here in our budget? Are you able to answer that question, Mr. Beale?

Mr. BEALE. Yes, thanks for that question, sir.

It has a significant impact on our ability to plan and really get out there and start working with the pipelines to develop the labor resources that we need to go execute on these programs.

I will go back a second, though, because that lack of having that solidified plan there impedes our ability to address some of the things that were spoken about earlier with respect to moving our engagement efforts to the left.

Right now is the time for us to be engaging with our shipbuilders that we need in 5 years. We should be engaging with them in middle school into high school with those pipeline programs to start introducing them to the skilled trades, allowing them to start to work and perfect on those skills so that when they actually enter the workforce, that those individuals are adding value from day one and we are not spending significant time once they come into the company to train them.

Mr. CALVERT. I agree. We need to move quickly to counter the Chinese aggression in the Pacific. We need more ships, quite frankly, and your comment on the workforce constraints that you are ex-

periencing and what our private shipyards need in order to keep pace with China.

If we are going to put a lot of people to work, we can start building a lot of ships. These are good jobs. We should be up to two ships a month, like China right now is developing 24 to 30 capable warships per year. And so that is a very difficult situation.

With that, Mr. Ryan, I will be happy to yield back to you.

Mr. RYAN. Thank you, Mr. Calvert.

Next is Mr. Ruppertsberger.

Ms. MCCOLLUM [presiding]. And, Mr. Ryan, I am back if you want to go vote.

Mr. RYAN. Okay. Thank you, Chairwoman.

Ms. MCCOLLUM. Thank you.

Mr. CALVERT. I am going to go vote too.

Ms. MCCOLLUM. It appears, looking at my screen, that Mr. Cuellar is not here, Mr. Ruppertsberger is not here. So we will go to Ms. Kaptur.

INNOVATIVE IDEAS

Ms. KAPTUR. Thank you very much, Madam Chair. What an excellent hearing.

My fundamental question to all the witnesses, as they listen to one another, I would like to know which ideas float to the top.

Many of you, as I read your testimony, there are so many different suggestions. It is not cohesive. It is not woven together. And so I would be interested in knowing what you drew from others' testimony that you think are the most important.

I loved Mr. Beale's use of the barbell explanation. We have certain people in the field now, but yet there is this little line in the middle, which is the middle class, and then there is everybody else at the other end of the barbell, and we are not recruiting heavily in that arena. That was a very important point.

We know that in the auto technical sector we lack, just between 2020—by 2024, 642,000 auto mechanics and technicians we don't have. We know in aerospace we lack right now—40 percentage of manufacturers have shortages. We will lack in high skills 1.2 million very shortly, and in lower skilled aerospace, 3.3 million individuals. In welding we are by 2024 to be 400,000 short in a career where you can get cancer because of the fumes. We know we have these massive needs.

I also know that Mr. Carlisle talked about his relative who has a three-dimensional mind. We also know that children who are mechanically inclined and tactile and can work in more than one dimension, we know that sometimes when they are as young as 2 years old.

But our whole educational system is turned upside down. Those talents aren't appreciated even with young students. So by the time they are old enough to get in STEM programs and all the rest of it, it is already too late. It is already too late.

You are all heads of major organizations. What are the most important steps we can take?

I sort of like the idea, Mr. Beale, that you had that in communities that have a defense presence—and you know what? That is one of the few presences I even have in my district, not massive

bases but at least something where we could pull together defense contractors, defense base personnel, and maybe have a day or a 3-day period where we would focus on these skills working with the Department of Defense.

I am just thinking, how do we make this operational at the local level where people live and where educational systems vary in capability?

You are up there at MIT, Mr. Bonvillian, one of my alma maters, and I know how sophisticated that is. I was in Building 7. It doesn't pan out in every community in the country.

Let me ask you, from what you have heard, what are the most important steps? We have talked about AI. We have talked about shipbuilding.

WORKFORCE DEVELOPMENT

If you had to advise the President, what would you say in terms of workforce development? What are the most salient ideas that we, as Members, can act on?

Mr. BONVILLIAN. Congresswoman, I think that is a crucial question, and I do think there are threads that connect all of our witness points here.

A lot of us have pointed to the need for a much stronger technical workforce. And you pointed out we are not creating the numbers in that workforce that we need to get to the advances that we have to reach, and that is a deep problem. So if we continue operating at the same scale, we are just not going to get there.

And then, in addition to the defense workforce and the manufacturing workforce in general, the manufacturing workforce faces a shortage just because of retirements, between 2 and 4 million over the next decade.

We can't just keep the existing system going. We are going to have to scale this thing up if it is going to work.

New education technologies, including online and virtual and augmented reality, computer gaming, digital tutors, all offer opportunities to scale up beyond our additional system.

Manufacturing and other industrial trades are going to require blended learning. They are going to require online and face to face where we can move a lot of material onto the online pieces. I think that will help in scaling.

We are going to need short courses that take weeks and months, not years, to fit the kind of timetable that students have. And particularly we are going to need to upskill a lot of our existing workforce in these new technologies and new areas that are coming on.

They are not going to be able to take a year off. We are going to need to size those and put them into modules that can be stacked and move towards credit and build, importantly, industry-recognized credentials into those programs so that industry can recognize transferable credits, transferable skills, and act on them quickly and hire quickly.

Those are a few, I think, of the key things we need to undertake for our technical workforce. We have got a lot to do with community colleges. We have got a lot to do with lifelong learning. But I think those three pieces could be components in trying to get there.

Ms. MCCOLLUM. Thank you, Ms. Kaptur. Thank you.
Mr. Cole.

PROGRAMS FOR CIVILIAN DEFENSE WORKERS

Mr. COLE. Thank you. Appreciate that.

My first question would be directed to Dr. Griffiths and Mr. Bonvillian.

Do either of the institutions that you represent have specific programs that are targeted towards turning out civilian defense workers, particularly in areas like engineering, cybersecurity, computer programming, those sorts of things, or do you just do it in general for your student body?

Mr. BONVILLIAN. Mr. Cole, I can start on that answer.

Yeah, we do have all those specialized skill areas and are paying, frankly, a lot of attention to scaling up and are starting a whole new College of Computing around information technologies.

But, in addition, MIT is tackling a big task in developing online education technologies. That is the part of MIT that I actually work in.

We have now created—there are 11,000 people on the campus at MIT, but we literally reach millions through our online education programs that all meet MIT quality.

And then, in addition, MIT is cooperating with a lot of programs, a number of programs that help on the skilled technical workforce.

So, for example, I am involved in a program that DOD is supporting in part called MassBridge. The aim of that—and Massachusetts is the eighth-largest defense contracting State, very strong defense companies in the State, very real needs, particularly in the aerospace area for a skilled workforce.

MassBridge wants to develop a program across the community colleges and Massachusetts high schools and vocational schools that will greatly increase the number and increase the new advanced manufacturing skill base in the State by bringing programs to the community colleges and secondary schools, as well as State colleges, in advanced manufacturing, the precise kind of skill sets that this high end defense sector in the State really has need for.

So, a statewide program to pursue, to really put in place a program to educate for advanced manufacturing is something Massachusetts is trying to do. Some other States are trying to do this, too. But I think getting to the manufacturing skill base, that advanced manufacturing skill base, will be key.

Ms. GRIFFITHS. If I could add to that. Dakota State University in the most recent mission set in 1984 was actually to prepare people to work in the computing industry. We have a number of programs across the sectors heavy in computer science and cybersecurity.

But one of the things about South Dakota is that we don't have a community college system, so the public higher education system fills that role. And so my university offers everything from associate degrees all the way through Ph.D.s.

We do have a number of dual credit programs, so high schoolers can accelerate. We have a program that was set in place of working with the local technical colleges for stackable credentials so that students of whatever age can actually take a course, gather their

credentials, and stack those credentials over time going in and out of the workforce according to their timeframe. And we paired that with a program of apprenticeships with businesses and industry around, including the potential for some online apprenticeships.

We have just established what we might call a rapid response noncredit educational program for workforce development in our region and in our State which is aimed to be very, very responsive to workforce needs with courses that can be developed very, very quickly, deployed very quickly, and used for reskilling, upskilling, looking at the retired workforce and bringing some of them back.

There are a lot of pockets of this kind of innovation going on around the United States where particularly smaller institutions who are able to move a little bit more quickly than the larger institutions. There is a lot of innovation around.

We are part of several consortia of schools that are developing these programs and collaborating with others in the area of computing and cybersecurity in particular, but we have our artificial intelligence degrees available in those areas as well.

COORDINATION BETWEEN DOD AND OTHER DEPARTMENTS

Mr. COLE. I am curious if outside of DOD itself—I sit on the committee that funds Department of Labor, Department of Education as well. Is there any coordination between DOD and these other departments, who have quite a lot of money to be able to do specific programs, to address the defense worker shortage? My guess is no.

Mr. BONVILLIAN. Well, Congressman, there is a new attempt to put together an interagency task force to really start to develop, you know, common programs and programs that match up better across these agencies.

We don't really have that now; you are right. But I think there is a growing awareness that programs at the Department of Education that focus, frankly, on college education, at the Department of Labor that focus on underemployed workers, that those need to mesh better, they need to talk to each other. And then, secondly, the defense needs in areas like advanced manufacturing and new technology skills are going to have to draw on the programs that exist.

There is an effort that has begun on an interagency basis to try and make those programs pull better together.

Mr. COLE. Is there something we could do that would facilitate that, speed that up, and, you know, help with that kind of coordination?

Mr. BONVILLIAN. You know, I think you all could really insist that the executive branch pursue it and provide, you know, some, you know—look at the possibility of providing funding support for programs that get to this complementarity that we really need across our programs. Because they really don't work together well now, and they need to.

Mr. COLE. Yes. I think that is something we ought to look at.

Let me go to—

Ms. MCCOLLUM. Mr. Cole? Mr. Cole?

Mr. COLE. Yes.

Ms. MCCOLLUM. I am sorry. You are over time.

Mr. COLE. Okay. That is fine. Thank you very much, Madam Chair.

Ms. MCCOLLUM. We have language in the report language that starts in our bill, I am going to need your help when we go to conference with the Senate to keep that moving forward. Thank you.

Mr. COLE. You have it.

Ms. MCCOLLUM. I do not see Mr. Ruppersberger or Mr. Cuellar. That makes you winner, Mr. Aguilar. I am going to let you go before me, because I have already voted.

PROFESSIONAL DEVELOPMENT

Mr. AGUILAR. Alrighty. Thank you, Madam Chair.

Mr. Beale, you talked a little bit about some of the programs and some of the efforts that you have on the shipbuilding side. Can you talk to me a little bit about Newport News Shipbuilding and the Huntington Ingalls relationship and, how you are providing professional development through your careers, specifically with the companies?

The apprenticeship schools, in particular, have allowed some of these opportunities to pursue bachelor's degrees while folks are building their career. Can you can you talk about some of the successes of those programs? And, you know, what have you learned that could apply to some of your other peers, as well, within industry?

Mr. BEALE. Absolutely. Thank you for that question as well.

We definitely recognize the benefit in lifelong learning, in career development. And Newport News Shipbuilding here, as part of HI, we spend approximately \$100 million annually in training and development of our workforce.

That includes continuing education outside of the company, where individuals can go and pursue associate's degrees, bachelor's degrees, to kind of better prepare them for the next position that they are actually interested in and to strengthen their overall knowledge in some of the positions that they are in.

But I will talk about the apprentice school for a second, since you asked specifically about that. Our apprentice school has been around since 1919 and is the foundation or the cornerstone of our leadership factory here at the company.

We invest vigorously in that program. We have roughly 27 programs in our apprentice school. And so, these are individuals that actually compete to come into the school, with about 10-percent acceptance rate over at the apprentice school. Many people will be surprised to recognize that 10 percent of their entrants actually already have bachelor's degrees as they come into the program.

But our program again, we have 27 programs, 26 of which, when individuals complete those programs, they are actually coming out with accredited associate's degrees. That is something that we recently got awarded. As well as, we have one of our advanced optional programs, that individuals completing our marine engineering program will finish the apprentice school with an accredited engineering degree.

We believe in lifelong learning. We invest in it in the company. And we see the value of that from a retention standpoint with our organization, as well as growth and development.

SMALL COMPANIES' INVESTMENT INTO THE WORKFORCE

Mr. AGUILAR. What would be your advice to small companies who contract with DOD on efforts that they can take to continue to make, you know, investments in their workforce?

Mr. BEALE. I think that is key. We talked a little earlier with respect to retention and the war in talent. One of the things we are proud of here at the company, although we invest that amount in continuing education with our workforce, there are no requirements for individuals to remain with the company after they have completed their educational pursuits.

And what we look at that from a—and, really, that is not just Newport News; that is the corporate perspective, as well, from HII—is we see those intangible benefits from that. Because those employees are staying with the company. They are actually some of your best advertisement when you are going out, looking to attract talent to the company as well.

We see the value of that. And I would encourage other organizations that may not invest in their people in that manner that it is a wise investment. The return on it is pretty significant.

DIVERSE CYBER WORKFORCE

Mr. AGUILAR. Thank you so much.

Ms. Griffiths, I wanted to ask you: One of my priorities has been building a diverse cyber workforce in the Federal Government that includes some local universities—a very parochial interest of mine—like Cal State San Bernardino that seeks to build partnerships with the Department of Defense and other Federal agencies.

Can you talk to me a little bit about, you know, the lens of workforce specialized within AI and how we can support professional development within DOD to ensure that we maintain a diverse AI workforce that builds careers within the Department?

Ms. GRIFFITHS. Thank you for that question.

Yes, the defense AI workforce consists of researchers, implementers, and deployment specialists who are needed to create and maintain AI solutions within the military; the senior leaders, junior leaders, and end users needed to shape the adoption and responsible use of AI solutions; and then the acquisition and contracting personnel needed to quickly and effectively purchase solutions.

The Department of Defense needs to recruit and train its researchers, implementers, and deployment specialists until they have enough proficient technologists to envision, actually envision, and create solutions the Department needs. So, one is sort of a get through, implement what we have, and then look to the future.

But it also needs to train and educate its leaders and end users until they can understand how AI can transform their organizations, manage that transformation, and then use AI responsibly and effectively.

And, most importantly, it needs to incentivize AI and other emerging technology literacy among its senior leaders. And a good point today is that kind of incentivization is just lacking.

Mr. AGUILAR. Thank you so much.

I yield back, Madam Chair.

Ms. MCCOLLUM. Thank you.

I don't see Mr. Womack, so that puts it to you, Mr. Carter. And then, after Carter, Mr. Kilmer.

Mr. Carter.

COMMUNICATION GAPS AND SOLUTIONS

Mr. CARTER. Thank you, Madam—am I on? Okay. Thank you, Madam Chairman.

Mr. Bonvillian, you noted in your testimony that small firms are largely unable to support workforce education in new manufacturing technologies unless they have orders in place requiring these new technologies.

I think this is a good example of the communication gap that exists between DOD and small business. They want to support the mission. Can you share with us recommendations on ways to close this gap?

Mr. BONVILLIAN. Thank you, Congressman. You have pointed to, I think, a very critical problem.

The large manufacturers, including DOD's larger manufacturers, are moving ahead on, you know, implementing higher productivity technologies, but the smaller manufacturers are really kind of falling behind. They are not able to adapt to these new advanced manufacturing technologies, in particular, at the pace that we need.

And since small manufacturers produce about, I think it is 46 percent of U.S. industrial output, you know, we have a real supply-chain problem unless we bring the small manufacturers along with the large ones. And a core problem there is on the workforce education side.

Now, small manufacturers are not going to move on providing new kind of workforce education for new technologies unless they have the new technologies. DOD programs that encourage manufacturers, you know, and particularly small ones, to adopt these new technologies—digital production, robotics, additive, and so on, we need to encourage that technology to get embedded, because that is a real boost to move small manufacturers to get the training for their workforces that they need.

Now, we have seen a number of States that have moved on apprenticeship programs—South Carolina, North Carolina, Minnesota, Colorado, a number of others. I have spent time in South Carolina, and South Carolina has a State-wide apprenticeship program that reaches all of their manufacturers, small and large. And it is a very impressive program.

I spent time in Charleston, South Carolina, where they are developing a youth apprenticeship program that starts in the junior year of high school. And these kids, you know, spend the morning at high school—and, by the way, their employers in the apprenticeship programs tell them they have to take science and math courses. Midday, they take the technical courses at the nearby technical college. Then later in the afternoon, they go to their company, where they are earning quite good wages. So it takes the high school experience, which can often be disruptive—takes those high school students and puts them into much more mature environments.

And South Carolina has been able to make this program work not just with large employers like, you know, Boeing or Mercedes

in the Charleston area, or Volvo, but also with a whole group of smaller employers, the supplier base. And these employers have been the ones that have been the strongest initial supporters of these apprenticeship programs, because they have a workforce shortage problem, they have a workforce skills problem. The apprenticeship programs help them to get their workforce where they need to go.

So, Congressman, I think these kinds of apprenticeship programs that the States can help encourage could be very key. And the Labor Department has got an apprenticeship program, of course, and that needs to be built and expanded. And DOD—it fits right into DOD's needs. And its programs, the assets that I describe in my written testimony, can pick up on these apprenticeship programs.

CAPITAL INVESTMENT

Mr. CARTER. Yes. And I agree with you on the apprenticeship solution to the labor issue, but what about the capital investment in robotics and machinery without having a contract in hand?

Mr. BONVILLIAN. That capital investment is a key problem, particularly for smaller firms, there is no question about it. And we don't really have a good financing mechanism for that, which is an issue area we need to think about, because those capital investments, in turn, will help drive workforce investments too. I agree there is an issue and a gap here.

Mr. CARTER. Making them partner with bigger players is not really their contract.

I yield back.

Ms. MCCOLLUM. Yes, capital investment is also a problem for the technical colleges too. We have to figure out a way to address that.

Mr. Kilmer, and then, if people come back, it will be in this order—Womack, Aderholt, Diaz-Balart—on the Republican side.

Mr. Kilmer.

APPRENTICESHIP PROGRAM AT PUGET SOUND NAVAL SHIPYARD

Mr. KILMER. Thanks, Madam Chair. And thank you to you and to the ranking member for having the hearing on, I think, what is a really important and interesting topic.

I want to apologize if it looks like I am on my cell phone from the phone booth in the Cloakroom. It is because I am. My office is far away in Rayburn. I might as well be in Delaware.

I also just want to thank those who referenced the value of apprenticeships. The committee took a trip, and I was grateful to my colleagues for coming out o Puget Sound Naval Shipyard. Their apprenticeship program is just gangbusters. They have done a fantastic job partnering with Olympic College, offering, you know, high-skilled, specialized apprenticeship opportunities. Graduates get an associate's in technical arts and a journey-level certification through DOL. About a quarter of the workforce there has gone through that.

And, Mr. Beale, I particularly appreciated your comments around how Huntington Ingalls is also leveraging apprenticeships, so thank you for that.

And thanks, Mr. Aguilar, for bringing that up.

INNOVATIVE LEARNING WORKFORCE RESULTS

I guess the other thing I wanted to just raise Mr. Bonvillian, I will take this question to you. I am really struck that the ability for, you know, our Department of Defense to prevail on any number of its missions depends on cutting-edge innovation within our technical base. And that requires fostering innovative learning opportunities for the workforce.

You know, what we have seen, at least from what I can tell, is the DOD investing in STEM education opportunities in K-12, in higher ed. You know, beyond the educational infrastructure that it owns, for example, the war colleges, the Department partners with all levels of public and private civilian institutions.

I guess my question is this: How are we doing? You know, will these investments in education programs meet the need? Do you have a sense of how Congress ought to measure return on investment? You know, as we look at these programs, does Congress need to provide the Department any authorities or resources it doesn't have, particularly so that it can anticipate future needs and target its education efforts accordingly?

Mr. BONVILLIAN. Congressman, I have paid particular attention to the advanced manufacturing institutes, and there are nine that the Department of Defense sponsors. And DOD sponsors these because its manufacturers have to get to advanced manufacturing if they are going to stay up and if they are going to be able to effectively compete. And we can't, you know, continue this pattern, if we want to have secure supply chains and get to modernization, of relentless, continuing outsourcing. We are going to have to build our own capabilities. But to do that, we have to be able to compete effectively.

The manufacturing institutes have taken on the role of nurturing these new advanced manufacturing technologies and moving them into the manufacturing base, including the defense manufacturing base. And then part of their responsibility is on the workforce side.

So, in a recent National Academies study, the Academies recommended that the institutes—and many of them are doing this—need to develop, you know, a set of best practices in this skilled technical workforce area to develop educational materials that can be used by industry and by education institutions in these defense ecosystems, develop online materials to help with scale-up, develop industry-recognized credentials. Because, again, we don't have curriculum in these new advanced areas; it has to get built in large part, right?

And to implement this, they need to form regional engagements, the Academies recommended—and many institutes are doing this—with area industry, with area educational institutions. And they have to map skill demand and develop skill roadmaps that, in turn, tie to their technical advanced manufacturing roadmaps as well, right?

I think those skilled roadmaps that will plot demand and the way demand is being met is a great way to get to the metrics part of your question. We don't measure this now, but the institutes could start measuring in these advanced technology fields to the

extent that we are bringing our workforce on and it is meeting the numbers that our manufacturers are going to require.

Mr. KILMER. Anything further you think Congress ought to do on this front, in the 20 seconds I have left?

Mr. BONVILLIAN. You know, I mentioned four assets that DOD has got: you know, its IBAS program; these amazing service training development centers that are in Orlando that develop VI and AI and digital learning technologies for military training; the Office of Local Defense Community Cooperation; and the manufacturing institutes at ManTech. These are all assets that could be deployed by DOD, given additional resources, that start to meet the scale of the problem that we really now face.

I would look hard at—there are a number of other programs, of course; I have just mentioned four. But I think those programs are certainly worthy of a close look and potential scale-up to really meet this problem.

Mr. KILMER. Thank you.

Thank you, Madam Chair. I yield back.

Ms. MCCOLLUM. Well, thank you.

I do not see Mr. Womack—I am going to go slow in case they pop up—or Mr. Aderholt or Mr. Diaz-Balart, Mr. Ruppersberger or Mr. Cuellar.

I am going to ask kind of a summarizing question of all three of you. Just maybe take a minute, minute and a half.

WHOLE-OF-GOVERNMENT APPROACH

What I am kind of hearing from you is there needs to be whole-of-government approach—local government, State government, Federal Government. And all of our government approaches also have, you know, the dotted line to working with the business community for economic development. They also have a dotted line to education, whether it is high school, whether it is technical school, whether it is college.

The DOD needs a better workforce to be ready for the future. Our industries need a better workforce to go into the future. We are going to be talking to our next panel, where they have actually kind of put a committee and looked at it together.

But if you have one idea of something that you think works well and we should build on it, or one thing that you think we are missing that this committee should be looking at—and we are going to have to talk to our sister organizations here in Appropriations, the Department of Labor, Education. We are going to have to speak with the authorizers, as well, too.

Just take a minute, maybe give us your, you know, wishlist of something that you would like to really see us home in on. And we can start in the opposite order of which people gave their testimony, and we will start with you, sir, Mr. Carlisle.

General CARLISLE. Madam Chairwoman, thank you very much.

You know, I think—and it was highlighted by my esteemed colleagues on the witness panel here. You know, it really is—you mentioned it. It is a whole-of-government—it is actually a whole-of-country approach. And I think that is what it needs to be.

I almost feel like it is almost a Manhattan—I know that is used a lot, but the Manhattan Project-type discussion, because it really

does take the interagency to work together. Obviously, it takes Congress on legislation and appropriations to be able to put it together. And then it takes industry input as well.

You know, we reacted, in the pandemic, with things like the Paycheck Protection Program and things like that. If you talk about capital investment and the ability to do advanced manufacturing, if you talk about internships and apprenticeships, if you talk about small business having a problem bridging the valley of death or awaiting clearance—so if there is a way, with industry contributing and the government contributing, to kind of put together a holistic plan.

You know, there are some great ideas out there that work individually in regional areas with respect to the CTE. There are some great programs in STEM education. I think we need to continue to work on diversity within our workforce and really getting to every bit of the talent pools that exist out there, the people that don't have the opportunity because they just don't know that these opportunities exist. And then, you know, what the work environment is going to be like in the future with machine learning, AI, automation, and robotics as we move forward.

But it really has to be, in my opinion, a whole-of-country approach, because we are in a competition that we have to—we have to do something to that effect, because the workforce and the innovation that exists inside the American public is really our answer to this competition that we are in. So I do think it is that approach and how do you bring all those together in a consolidated, holistic approach to the challenge.

Ms. MCCOLLUM. Mr. Beale.

Mr. BEALE. Great question, Madam Chairman, and I completely agree that this has to be a holistic approach.

And to take on your question about one thing, if I had one thing that I would recommend, it would be looking at the successes that we have had in different parts of the country from a regional approach perspective.

And we talked earlier about some of the things that we are doing with early identification, early introduction to STEM. And, obviously, that "M" is more than mathematics; it is manufacturing as well. But when we are looking at the here and now—because right now we have a significant deficit across the country when we are looking skilled labor.

And one solution to that—and we have seen success in other parts of the country—is a regional approach with regional training facilities. And those training facilities can really alter the state-of-the-art training that we need to accelerate the learning and the growth that we actually have and the industrial base with our skilled trades.

One such example of that is some of the pilot things that we are doing here in Virginia, down in Danville, with the accelerated training center that we have down there for skilled trades. When I look at a region such as we have here in Hampton Roads, in the hub of maritime employers that we have here, there is a great opportunity to establish something like that right here with the work going on.

One of the things I would offer, though, as we are looking to develop those regional training facilities, that we think about equity in access as well. Because there are barriers out there to some of our most underserved communities. And ensuring that we actually have solutions that enable them to take advantage of these training programs is going to be paramount to the success of those individuals, the industrial base, and communities in which we all live.

Ms. MCCOLLUM. Very true. I have a lot of first- and second-generation Americans whose families don't even know what an apprenticeship program or a trade school is, or people who, because of at times the lack of mobility in our society, don't have family members or—and so times it makes a difference for people to even know there are jobs out there. So well-said, and thank you for saying that.

Dr. Griffiths.

Ms. GRIFFITHS. Thank you. Yes, I agree in the whole-of-America approach, in a way. I think this requires bold moves. Things are moving quickly, especially in other countries, and China is not the only country that we compete with.

I think if I were to have one recommendation, it would be our recommendation on the National Defense Education Act, version 2. The first one came about just after World War II and was focused on STEM education and language education. And our recommendation is to focus this on STEM and AI and software development and those kinds of careers.

To me, if we don't focus on the future, we will never build a sustainable workforce. We will just only fix it with a Band-Aid short-term. And to really address this issue in the long term, we really have to get to K-12 education. We need to improve the teachers and give the teachers at those levels the skills they need to be able to teach. We need to expose young people to the range of opportunities that exist and will exist.

And, you know, just in the final statement, only 42 percent of Americans earn any degree of any kind, and we don't want to leave 58 percent behind.

I think we do need this all-of-government approach, involve industry, involve academia, and focus on the next generation. But that will only work if the government reorganizes and reforms itself to be able to accept the young people who are going to develop skills in those areas, so it is a two-part recommendation.

Ms. MCCOLLUM. Ken, you had a few members who hadn't asked questions yet. We were trying to find out if they were staying for the second vote and coming back: Mr. Womack, Mr. Aderholt, Mr. Diaz-Balart. We are in touch with Ruppertsberger and Cuellar's office.

Mr. CALVERT. Yes, Dutch just got back. I just did the second vote, so I am good.

Ms. MCCOLLUM. You are good. Okay.

So have we heard from any of the other offices?

No, we have not.

Mr. Ruppertsberger, if your office is listening and you are on the way back for questions?

Mr. CALVERT. He should be there. We walked up together.

Ms. MCCOLLUM. I will give him another second, because he is—I just got something in the chat.

You should have seen Members of Congress when we first did our virtual hearings. It was not beautiful. This one is rough because of votes, but the other ones are really bad.

So Mr. Ruppertsberger will be with us in just a minute.

And here he is.

Mr. RUPPERSBERGER. I am here now.

Ms. MCCOLLUM. Okay. I knew you would have great questions, so I wanted to wait for you. So you get the last question.

Mr. RUPPERSBERGER. I was thinking about it, walking over from the vote, on the elevator. So here it goes. You ready?

Ms. MCCOLLUM. All right.

NATIONAL SECURITY MISSION HIRING FOR RECENT GRADUATES

Mr. RUPPERSBERGER. Good.

Well, first thing, I thank the panel for being here. This is something very important to the future of our national security, and I am glad we have this topic.

To the panelists, thank you for your time today and lending us your expertise as we discuss this very important topic on better preparing the next generation to lead our great country in the matters of national security.

Mr. Bonvillian and Dr. Griffiths, from the academic point of view, I consistently hear from colleges and universities in my district that they have very little ability to engage their students with DOD missions and research until those students are employed directly on a DOD program.

My question is, what can the Department of Defense do to better engage with undergraduate and graduate students jointly on research, with the aim to better excite these students to come to work for the government on a national security mission once they obtain their degrees?

To the whole panel.

Ms. GRIFFITHS. Shall I jump in? Thank you for that question.

I think one of the best ways to engage students while they are still in school would be to make their professors, their faculty members, more aware of the opportunities. So we have seen a program where our faculty go and work with one or another agency during the summer, come back and bring those ideas back to their students, and then their students engage in summer internships and get a real sense of what is going on with practical internships.

What we found, then, is those students are often selected to get their clearances early, and many of them have their clearances by the end of their third year. And many of them also have a job offer by the end of their third year.

I think making the faculty members more aware of the opportunities will bring along a bunch of students at a time, rather than focusing on single students at a time. That is one of the ways we do it.

Mr. BONVILLIAN. Congressman, I just wanted to echo Ms. Griffiths' comments there, that that would be—I think that internship and personal experience kinds of program, if they could be more

broadly offered, that is a great way to introduce talented students to DOD-hard, DOD-complex problems.

Mr. RUPPERSBERGER. Okay. Good.

Anyone else?

General CARLISLE. Yes, Representative Ruppertsberger, Hawk Carlisle here. It is good to see you again, sir. It has been a while since we have traveled together.

But I think that, you know, part of this is on DOD. I think DOD needs to really reach out. There is so much being done in academic institutions and so many opportunities. I think there are some programs episodic, as Ms. Griffiths said, but I think if there is a broader push on DOD to get out to these universities—and it is my—I mean, bring some of these educators out to see what we are doing with the equipment or with the technology that is being developed.

So, you know, it is really an outreach on the part of DOD to really spend time and effort in showcasing what we are doing and what we are trying to do and have that interaction and get a better view of DOD inside of the academic institutions and certainly with the educators and the students.

Mr. RUPPERSBERGER. Well, I agree. That is why I asked the question.

I am chair of the Naval Academy Board, and I know Steve Womack is chair of the West Point Board. And we have——

Ms. MCCOLLUM. So——

Mr. RUPPERSBERGER. Yeah?

Ms. MCCOLLUM. I can't hear anybody right now.

Mr. RUPPERSBERGER. Can you hear? Hello? Betty?

Is China involved with this?

I think Betty—well, can everybody else hear me? Well, let me finish this question.

And, Dr. Griffiths, what I was saying about the boards, they have a summer program where a lot of people who want to go come and they learn about the institutions. And I think we have to do the same thing a lot more aggressively with other colleges, and especially where we need engineers and people like that.

With your background, Dr. Griffiths, though, you likely understand better than most about how easy of a time these high-skilled workers with technical degrees have finding jobs in the private sector with extremely high compensation, and the government will never be able to compete with these salaries.

What are the drivers to attracting these workers? We always hear "the mission," but a lot of times they don't become aware of the missions until they are hired. How do we fix that?

Ms. GRIFFITHS. Yes, you are absolutely right, Representative——

Ms. GRIFFITHS. Shall I go ahead? Okay.

I think you are absolutely right; it is making people aware. And I think if you wanted to formalize this——

Ms. MCCOLLUM. We have a vote going on, so——

Mr. RUPPERSBERGER. Keep talking.

Ms. GRIFFITHS. Keep going?

This was the idea behind the civilian National Digital Reserve service, if you wanted to formalize that kind of relationship be-

tween academia and the government. So, that is what we were hoping would happen as a result of that.

I think the other opportunity exists for the DOD to recognize that some of their existing employees could, in fact, do a sort of top-up and get the additional qualifications through a relationship with academia.

And a number of academic institutions have done a lot of work to understand the technical education and training that it is received in the military and to create the equivalencies in their own academic programs. So we have a number of articulation agreements with the National Security Agency, with the Community College of the Air Force, et cetera, where people can top up their credentials, if you like, and earn the remainder of their degree online while they are working in the government.

There is a two-way effect there. And I think bringing the government workers together with academics will improve the situation.

Mr. RUPPERSBERGER [presiding]. Okay. Good. I thank you for your answers.

And the committee now is going to take a brief recess.

[Recess.]

OPENING REMARKS OF CHAIR MCCOLLUM

Ms. MCCOLLUM [presiding]. This hearing will resume and come back to order.

I wish I could have thanked a little more eloquently the first panel for what they did. They were so patient. It was a great discussion and something to be followed up with and ask the authorizers also to look into this issue, as well as on the education and workforce authorization committee.

We are going to start the second panel. I see you are all present. We are done voting, so you won't face the disruptions that the first panel had.

We are pleased to welcome today four distinguished individuals as witnesses. And the subcommittee wants to thank each and every one of you for your service.

In the last panel, we heard many different ideas that were presented to address our defense workforce development challenges. And if you had an opportunity to hear them and hear the questions, I know you will be taking a lot of what was discussed in consideration when you are delivering your challenges for the Department.

Under Secretary Cisneros should be presenting testimony on behalf of the Department and the services. And we have other people also participating: Under Secretary of the Department of Air Force Gina Ortiz Jones; Mr. Christopher Lowman, senior official performing the duties of Under Secretary for the Department of the Army; and Ms. Meredith Berger, the senior official performing the duties of Under Secretary for the Department of the Navy.

We want to thank you all for being here.

And we will start off with Under Secretary Cisneros.

SUMMARY STATEMENT OF UNDER SECRETARY CISNEROS

Mr. CISNEROS. Chairwoman McCollum, Ranking Member Calvert, and members of this distinguished subcommittee, I appreciate the opportunity to appear before you today along with my esteemed colleagues from the military departments to discuss the Department of Defense's efforts to recruit, retain, and develop the military and civilian workforce of the future.

In the 2 months I have served as the Under Secretary of Defense for Personnel and Readiness, I am awed and humbled every day by our servicemembers and DOD civilians for their incredible talent and hard work to address new national security challenges.

Yet they can only continue to do this through a sustained emphasis on workforce development, one that focuses on recruiting and retention, training, and education of a workforce that can compete and win against our most advanced competition now and in the future.

We know we are in fierce competition for talent, and we must address this issue with the same urgency and emphasis we place on development of our weapons systems or operational readiness.

From the start of this administration, the Secretary of Defense made it clear that taking care of our people and developing the workforce would be at the top of his agenda. He has highlighted the need for innovative thinking with respect to managing our people, cultivating talent, and creating new career paths and incentives for services both uniformed and civilian.

We must drive significant shifts in the way our institutions think about the intersection of technology and personnel. We must start with how we recruit. The Department relies on multiple levers to support recruiting efforts, including financial incentives and advertising campaigns.

We also recognized that to recruit and retain the best and brightest we must have a diverse and inclusive force representative of the Nation they serve. The Department leverages relationships with historically Black colleges and universities and minority-serving institutions to expand its reach across demographics and to help convey the benefit of military service.

We must also remain diligent to ensure the military compensation package is attractive to recruit and maintain the talent we need today and into the future.

In personnel readiness, we will continue to review policies to assist the impact of recruiting efforts, and the military services are using targeted retention levers to mitigate shortages. We also rely on a variety of programs, such as lateral entry, to recruit highly qualified individuals directly from the civilian population to fill critical requirements.

The Department's civilian workforce is a critical element of the total force, performing a vital function in support of the warfighter. The Department recognizes the need to recruit the right civilian talent to maintain our competitive edge and succeed against modern threats.

As critical enablers of our warfighters, DOD civilians serve in a wide variety of roles in areas around the country and the world. We must recognize them as an integral partner in our total force

and develop lifecycle programs and pipelines for recruiting, retaining, re-skilling, and up-skilling, like we do with our military personnel.

To achieve a competitive edge, we are investing in broadening and outreaching and increasing our use of skills and competency-based assessments. In June of this year, we launched the DOD civilian career website to promote civilian employment opportunities and career paths and to debunk the perception that DOD service is solely a uniformed service.

Congress has also provided streamlined direct hiring authorities for high-demand skills. So, on September 30, I provided guidance to DOD components on maximizing the use of hiring flexibilities, to include direct hiring, which will allow us to attract and recruit civilian talent with expertise with AI, data science, and software development.

The Department is proactively focused on growing and developing its pipeline of future talent and has seen great success in the use of a variety of internships, scholarships, and fellowship programs. DOD is currently expanding its use of public-private talent exchanges in order to provide opportunities for DOD employees to expand knowledge within their function areas of expertise.

We must also provide adaptive and relevant professional civilian education that emphasizes innovative thinking and ingenuity in warfighting concepts, ensures responsible management of national defense assets, and builds expertise through a concentration on data-centric digital skills and culture.

We are at the nexus of innovation workforce development for the Department. With our partners, my staff is working to support the military departments' combatant commanders and other elements of the Department in delivering the most qualified, capable, and technologically proficient force possible.

We recognize that a lifecycle of investment in our servicemembers and their DOD civilian colleagues will allow us to win the battles of the future. With continued improvements, we believe we can ensure our Nation's military remains the greatest fighting force the world has ever seen.

Thank you again for this opportunity today to showcase our current efforts in this area. We appreciate the subcommittee's continued support for the men and women who serve our great Nation, and look forward to your questions. Thank you.

[The information follows:]

STATEMENT OF

THE HONORABLE GILBERT R. CISNEROS, JR.

UNDER SECRETARY OF DEFENSE FOR PERSONNEL & READINESS

BEFORE THE

HOUSE APPROPRIATIONS COMMITTEE

SUBCOMMITTEE ON DEFENSE

MILITARY & CIVILIAN WORKFORCE DEVELOPMENT

OCTOBER 26, 2021

Chair McCollum, Ranking Member Calvert, and members of this distinguished Subcommittee, I appreciate the opportunity to appear before you today, along with my esteemed colleagues from the military departments, to discuss the Department of Defense's efforts to recruit, retain, and develop the military and civilian workforces of the future.

Over the last 18 months of confronting COVID-19, we have seen time and again that our men and women in uniform, and DoD civilians, continue to meet missions at home and abroad. They must continue to be recognized and commended for their sacrifices and commitment to this Nation. In the two months I have served as the Under Secretary of Defense for Personnel and Readiness, I am awed and humbled every day by our Service members and DoD civilians for their incredible talent and hard work to address new national security challenges. Yet they can only continue to do this through a sustained emphasis on workforce development—one that focuses on recruiting, retention, training and education of a workforce that can compete and win against our most technologically advanced competition, now and in the future. We know we are in fierce competition for talent, and we must address this issue with the same urgency and emphasis we place on development of weapons systems or operational readiness.

From the start of this Administration, the Secretary of Defense made it clear that taking care of our people and developing the workforce would be at the top of his agenda. To that end, Deputy Secretary Hicks established the Deputy's Workforce Council, or the DWC, to support this priority. The DWC is a senior governance and deliberative body consisting of the most senior members of the Military Departments, including my three colleagues here on the panel with me today, and representatives of the Office of the Secretary of Defense and Joint Staff. The DWC is charged with addressing head-on the most consequential and compelling workforce issues facing the Department, such as sexual assault, suicide, domestic violence, family stability, safety, as well as tackling the personnel and manpower strategies necessary to position ourselves for the future. While the DWC is a new initiative and we have just begun our work on these major issues, we are encouraged by the positive and unanimous commitment of the Department's leadership to addressing these very important challenges. We are also very grateful for your leadership on Defense workforce issues, especially as reflected in this Subcommittee's Report language.

During remarks given this summer before the Global Emerging Technology Summit of the National Security Commission, Secretary Austin presented his vision of developing an

Innovative Workforce, noting that the most important investment is in our people. That vision includes recruiting, training, and retaining talented individuals, often young people, to lead the Department into the future. He highlighted the need for innovative thinking with respect to managing our people, cultivating talent, and creating new career paths and incentives for service, both uniformed and civilian. Among other things, this includes incorporating tech skills in basic-training programs, promoting data literacy across all elements of the workforce, and driving significant shifts in the way our institution thinks about the intersection of technology and personnel.

We must start with how we recruit. The Department relies on multiple levers to supporting recruiting efforts, including financial incentives, and marketing/advertising campaigns; the Services balance the use of these levers to effectively and efficiently meet their recruiting missions. The Department is dedicated to overcoming the perceived gap between the American people and the military by expanding and bolstering the strategic tools needed to increase outreach efforts to reach a diverse pool of youth across the nation. Only 29% of today's youth are eligible for military service without a waiver, and only 2% are eligible, high-quality, and likely to serve. Medical disqualifications, including weight issues, remain the primary reason for disqualification. However, we remain committed to expanding our outreach, including to underrepresented populations, and widely sharing the Defense Department's mission and the opportunities it offers. We also recognize that to recruit and retain the best and brightest, we must have a diverse and inclusive force, representative of the nation they serve. The Military Services leverage relationships with Historically Black Colleges and Universities, and Minority Serving Institutions to expand the Department's reach across demographics, and to help convey the benefits of Military Service. Our marketing efforts are not limited to prospective recruits. Influencers such as parents, grandparents, counsellors, and teachers also have a significant impact, and, based on findings from our research data, the Department has invested in Hispanic language marketing efforts, dedicating 15% of media investment to reach Latin-x Influencers across a variety of media platforms.

The Department must also remain vigilant to ensure the military compensation package remains attractive to recruit and retain the talent we need today and into the future. In Personnel and Readiness, we will continue to review policies to assess the impact of recruiting efforts, and the Military Services are using targeted retention levers to mitigate shortages. They are using a

mix of tailored retention bonus, coupled with non-monetary incentives as tools to increase retention in critical career fields and technical specialties. For officers, we are particularly focused on Aviators, Surface Warfare Officers, Submarine Officers, SEALs, Cyber, and Medical personnel where we know retention challenges exist due to a strong demand signal from the civilian labor market. In the enlisted specialties, we are targeting Cyber, Human Intelligence, Special Operations, and Aircraft Maintenance technicians where we know retention challenges exist as well. Reserve Component members, to include the Guard, also bring unique capabilities and professional expertise to the Total Force, gained through years of experience from both their civilian and military careers. We are able to capitalize on their skills, particularly in high-tech fields such as cyber, space, and artificial intelligence (AI), through an accession option known as lateral entry (also available for Active Duty). This program allows the Department to recruit highly qualified individuals directly from the civilian population to fill critical requirements, with the ability to enter at advanced grades based on the level of their education and experience.

The Department's civilian workforce is a critical element of the Total Force, made up of over 790,000 employees (appropriated funds) worldwide, each performing a vital function in support of the Warfighter. The Department recognizes the need to recruit the right civilian talent to maintain our competitive edge and succeed against modern threats. Civilian hiring reform is a top priority for DoD and a national security imperative. The Department is proactively focused on developing its pipeline of future talent. As critical enablers of our warfighters, DoD civilians serve in a wide variety of roles and areas around the country and the world. Many of you have military installations in your districts and home states; so you may know that more than 90% of the DoD civilians are outside of the National Capital Region, out at our posts, bases, camps, and installations. The DoD civilian workforce possesses capabilities, expertise, and skills that directly impact DoD's warfighting mission. They are dedicated professionals who provide training, maintenance, and sustainment of our ships, planes, tanks, and other weapons systems. They are welders, mechanics, and electricians. They are doctors, nurses, social workers, victim advocates, and teachers that take care of our men and women in uniform, and their families. They run and manage military installations, take care of the facilities where our Soldiers, Sailors, Airmen, Guardians, and Marines live and train to fight our wars. We must recognize them as integral partners in our Total Force, and develop life-cycle programs and pipelines for recruiting, retaining, reskilling, and upskilling like we do with our military personnel.

The Department competes with other Federal agencies and the private sector for technical and innovation talent. To achieve a competitive edge, we are investing in branding and outreach, and increasing our use of skill and competency-based assessments. In June of this year, we launched the DoD Civilian Careers Website to promote civilian employment opportunities and career paths, and to debunk perceptions that DoD service is solely uniformed service. We are also using social platforms such as LinkedIn, GlassDoor, and Handshake to better connect the Department with professionals and students alike, allowing hiring managers to expand their outreach capabilities.

Congress has provided significant support to DoD's recruitment and hiring needs, providing streamlined direct hiring authorities for high demand skills. On September 30, I provided guidance to DoD Components on maximizing the use of hiring flexibilities, to include direct hiring, which will allow us to attract and recruit civilian talent with expertise in AI, data science, and software development. The Department is proactively focused on growing and developing its pipeline of future talent and has seen great success in the use of a variety of internship, scholarship, and fellowship programs, which are managed both at the enterprise and component levels.

DoD is currently expanding its use of public-private talent exchanges in areas related to DoD modernization priorities in AI, directed energy, and machine learning in order to provide opportunities for DoD employees to expand knowledge within their functional area of expertise. We must also provide adaptive and relevant professional civilian education that emphasizes innovative thinking and ingenuity in warfighting concepts, ensures responsible management of national defense assets, and builds expertise through a concentration on data-centric digital skills and culture. We provide STEM-focused research grants and scholarships, in an effort to harness new talent that will allow us to grow our science and technology workforce.

Under the umbrella of the Deputy's Workforce Council, we are at the nexus of innovative workforce development for the Department. Along with our partners in Acquisition & Sustainment, Research & Engineering, the DoD's Chief Information Office, Chief Data Office, and Joint Artificial Intelligence Center, my staff is working to support the Military Departments, Combatant Commanders, and other elements of the Department in delivering the most qualified, capable, and technologically proficient force possible. We recognize that a lifecycle of investment in our Service members and their DoD civilian colleagues will allow us to win the

battles of the future on the battlefields of the future. With continued improvements, we believe we can ensure our Nation's military remains the greatest fighting force the world has ever seen. Thank you again for the opportunity today to showcase our current efforts in this area. We also appreciate the Subcommittee's continued support for the men and women who serve our great Nation, and look forward to your questions.

WORKFORCE DEVELOPMENT

Ms. MCCOLLUM. Great. Well, thank you very much.

I am going to ask a question first. I asked the last question for the last panel. And I know you have other folks there that can chime in, if you want them, on any of the questions that the members ask, as I did introduce the panel that is on the dais with you.

In March, Deputy Secretary Hicks established a council to address workforce challenges, including workforce development, talent management, professional military education. And the council has also been charged with important issues, like sexual assault, racism, suicide, domestic violence, and other things, in the military.

Under Secretary Cisneros, the Deputy's Workforce Council has a lot on its plate, with the wide scope of these issues, so I would like to ask you: How is the Department and the council defining "workforce development?" How is the council going to ensure that workforce development piece is adequately addressed and not lost among all the other issues that you have to address? Does this definition match the services' understanding of workforce development and modernization programs?

And can you share with us some more background on the composition of the council and how the services are represented in council meetings? In other words, with all this on your plate, how are you going to prioritize it?

And I would also add—and I did a little bit when I was talking to you earlier—that some of the issues with racism, suicide, and sometimes sexual harassment, those can all be things that keep people in a job or out of a job. You dealing with those issues are important to our workforce, and I want to acknowledge that. But that is on your plate, along with what we have asked you to do.

Mr. CISNEROS. Madam Chairwoman, thank you for that question.

You know, the DWC, the Deputy's Workforce Council, was something, when Deputy Hicks, Deputy Secretary Hicks came in, was sworn in, she started this and really took off and went running with this. She chairs the DWC with the Vice Chairman of the Joint Chiefs of Staff.

And, on the DWC, they have addressed a number of P&R issues, from the ones that you have suggested, whether it be the IRC implementation, sexual harassment, sexual assault; diversity, equity, and inclusion; retention and recruiting; childcare. There are a number of issues that we have dealt with on the DWC, and we will continue to deal with a number of these issues that affect the personnel and the readiness of the people that serve in the Department of Defense, both in uniform and the civilian colleagues.

Workforce management is also an item that, actually, just recently we addressed and that we discussed. And the administration of the Department, from the Secretary on down, is dedicated to really moving the Department forward on these issues and really developing a way that we can not only make sure that we collect and have the individuals that we need and the talent that we need here, but, also, we need a way to identify what we are missing.

There are a number of key issues that we have kind of taken a broad approach to, and we are now kind of working to kind of single in on those. You know, there are different areas of cyber where

we need AI, you know, writing data, collecting data. All these areas are where we need individuals, and we need expertise, and we need specific expertise in these different areas.

And this is one of the things that we are doing and that we have talked about, is how we can single in on these specific areas of need and really how we can take advantage of that, and knowing who has these expertise, both in our civilian workforce and in our uniformed workforce, moving forward. And, also, working to identify the needs that we are going to need not only today but in the future.

Ms. MCCOLLUM. Great.

SERVICES IMPLEMENTATIONS FOR THE WORKFORCE

So let me then just really quickly ask to some of the services that are on: How will what we are doing and some of the implementations that will come forward as you are presented in the future—what expectations should this committee have in order to support our shared mission in having a strong, vibrant workforce?

That is going to probably, I would think, require some funding programs that will have to be identified in specific lines to make sure that the money stays there and that we are laser-focused on workforce development. Is that kind of what I might be expecting in the next budget? Because there has been such a priority, such an emphasis placed on this.

Mr. CISNEROS. Ma'am, we can go to the services to let them talk about what funding needs they may need in order to implement, how we can have a more vibrant civilian workforce to deal with a lot of these work needs. And we can start with the Air Force.

Ms. MCCOLLUM. Sure.

Ms. JONES. Well, Madam Chairwoman, thank you for your leadership on this issue. I know you have spent a lot of time making sure that we are adequately ensuring everyone can serve to their full potential, so I thank you for your attention here.

To your specific question about a need for additional resources, certainly that would be helpful, as we look at making sure our airmen and our guardians and our civil servants have the resources to compete in a high-end fight. And as we look at being sure that we are adequately recruiting the right kinds of folks with specialties in AI and cyber and so forth, as well as making sure that we retain those folks, each of these things will require additional resources, so we appreciate your support in that regard.

Additionally, you know, additional support, for example, with our ROTC programs, as well as our Junior ROTC programs. I think in the previous panel, many of those folks pointed to the fact we need to get to much further left of where we are now to ensure our young folks are ready to serve academically and are exposed to unique service opportunities in the military. And, certainly, we would want those folks to consider the Air Force and the Space Force.

And so, additional resources, for example, in the Junior ROTC program, which is a significant source of diversity for us. Over 70 percent of those folks—excuse me—60 percent of those folks come from underrepresented groups. Forty percent are women. And so,

as we inspire them to a career of public service, we certainly would appreciate your support in that regard.

We also know that the ability to invest in these programs, though, will require that we divest from other programs that are, frankly, going to be less useful in a high-end fight, platforms that are not going to be survivable, relevant, or effective. And, as you point out, there are numerous ways in which we can better invest those things, to include investing in programs that ensure that our personnel are ready for the high-end fight.

Ms. MCCOLLUM. Anyone else want to add to that, from any of the other services, what you have been thinking about?

We heard ROTC, which we already fund. So, if we put extra in it, we are going to put strings on how that ROTC funding goes into ROTC plus workforce development.

But any of the other services want to add anything to that?

Well, hearing none, I will turn to my esteemed colleague from California, the ranking member.

CIVILIAN TO UNIFORMED PERSONNEL RATIO

Mr. CALVERT. Thank you, Madam Chair.

I want to get back on a subject that you are perfectly aware of, and that is, the current ratio of civilian to uniformed personnel is at an all-time high.

I guess I will point this first one to Secretary Cisneros.

You may be aware of the fact that—of that statistic. In my view, that is unsustainable. I know that many civilian employees, particularly at our depots, are needed to carry out DOD's national security mission. And I know, I was here when we expanded the intelligence operations to, obviously, take on the enemy at hand. However, there has been significant growth throughout DOD's bureaucracy. And I don't see how we can afford to maintain the current civilian workforce into the future if we are forced to balance those costs with procurement and research efforts, which are absolutely necessary.

How do we look at middle management, unjustified bureaucracy, to maximize the ability of our high-skilled professionals? And can DOD better apply automation, artificial intelligence, to career fields like healthcare management, obviously those who are in the intelligence business where we have a lot of people that are assessing one thing or another, financial management, supply-chain logistics, to save a lot of money, billions of dollars, and gradually—not having to fire anybody, but just gradually bringing down the workforce and closing obsolete systems and processes?

First, I will ask the Secretary to address that.

Mr. CISNEROS. Thank you, sir. Thank you, sir, for bringing up that question. And I think, throughout the Department, we are looking to see where we can use technology everywhere, whether it is in healthcare or weapons systems, to see how we can become more efficient and more productive. And I will let the services talk about that a little more.

But I do not believe we can put a ratio or a number on the amount of civilians that we have. The civilian workforce that we have at the Department of Defense is an integral part of the defense of our Nation. They play critical roles in the work that we

do. They enable the warfighters so they can be out there defending the Nation and really be out there in an operational mode.

And so, I think it is important that we remember the importance and how important our civilian workforce is. And it is just not, I think, proper for us to put a number on it, we have so many military personnel, so therefore we should have so many civilian personnel.

Mr. CALVERT. But you realize, Secretary, in the history of the United States Department of Defense, this is the highest proportion of civilian employees relative to military force in the history of the Pentagon. Do you think that—as a response to World War II or to Korea or Vietnam or any of the wartime issues. But don't you think that we can look at that workforce and gradually make that workforce more efficient and smaller?

Mr. CISNEROS. Sir, we are always looking to make our workforce more efficient and to see how we can do things better and at a more efficient cost. I know we are constantly doing that, and I will let the Under Secretaries talk to that here in a second.

But, again, I believe the civilian workforce here at the Department of Defense is an integral part of the defense of our Nation. And they play key roles, and we need to make sure that we continue to support them in those key roles.

And, with that, I will turn it over to the service secretaries to talk about their civilian workforce. We will start with the Air Force.

Ms. JONES. Representative Calvert, thank you for the question.

We are not currently incentivizing civilians to retire at this point. The Air Force Personnel Center, however, is conducting a needs assessment to determine which units may need voluntary early retirement authority or voluntary separation incentive payments.

I think when we look at civilian force, though, when we think of the total force, certainly our Active Duty, our Guard and Reserve, we also look at the significant contributions made by our civil servants. Certainly they bring highly technical expertise in many areas, for example, at our Air Force Research Laboratory and some of our more highly technical career fields.

We are also, though, I think, more broadly, looking at how we ensure we don't cut ourselves off from key civilian talent, especially as, frankly, many have reshaped their expectations of quality of life and work-life balance due to COVID. And so we are actually wanting to make sure we have the right—certainly the right size, but also the right capabilities within our civilian force. So looking at everything from telework to some other incentivize programs, again, to make sure that we have the right capabilities in our civilian force to make sure that the entire Department is as strong as they can be.

I will pass it over to my colleague from Navy.

Ms. BERGER. Thank you, Representative Calvert.

And I will echo my colleagues, in that we assess the civilian force is part of the total force, and it is an important contribution for capability, as the Under Secretary from the Air Force just mentioned. As we talk about the civilian force at the Department—and we write it out—we capitalize “Sailors, Marines, Civilians,” and it is because of their contribution.

However, to your point, we are constantly assessing to make sure that we have the right people in the right job at the right time to be able to deliver warfighting capability. And that is the metric that we are using to make sure that we are meeting that need. And it is a need that is changing, so we are constantly assessing to make sure that we are against the need.

Mr. CALVERT. We can go to the Army.

Mr. LOWMAN. Thank you, Ranking Member Calvert.

In the Army, the Army has recently published an "Army People Strategy" that includes both a civilian implementation plan and a military implementation plan. We assess the Army civilians along with the total force.

Right now, the Army civilian workforce represents about a four-to-one ratio, so four military to one civilian. It has been relatively flat for the last 5 years, and so that ratio hasn't changed.

But as we work through in the civilian implementation plan and assess the knowledge, skills, behaviors, and attributes required by the future force, at the same time we are assessing that for our military members, we will execute the appropriate analysis to find out how the incorporation of new technologies, such as AI and machine learning, data analytics, affect the civilian workforce along with the military members.

Over. Thank you.

Ms. MCCOLLUM. Thank you.

Mr. CALVERT. And I would just like to make a point, Madam Chair.

The Marine Corps, on their own, is bringing down the civilian workforce. And I congratulate the Commandant for taking an aggressive movement to look at efficiencies.

But the Department of Defense is one of the largest, if not the largest, enterprise in the world. And as everyone is flattening their middle management structures across the country, we are no different.

And, again, you know, I don't question the fact that the civilian workforce is important, but should we have it exceed the military, the number of uniforms that we have versus relative to civilians? I don't think anyone would agree to that, but it is growing in that direction.

And so, it seems like there is always a reason not to look especially at the middle management structure within the Department of Defense. And I am just not talking in the building, in the Pentagon; I am talking throughout the enterprise worldwide. I just will continue to harp on that, as you know, and bring it up.

Thank you, Madam Chair.

Ms. MCCOLLUM. Thank you.

And I think as we get those numbers and talk about them, where the numbers come from and how they are counted and how dual hatters are counted, would be something that the committee, to answer some of Mr. Calvert's questions, would be interested in knowing.

If you are a dual hatter, are you counted twice? Are you only counted on the civilian side? Are you only counted on the other side?

And that goes more to our Guard and our Reserve than it does. But as we see our Guard and Reserve play a more important role, there is also that civilian aspect that keeps them in their readiness phase.

Mr. Ruppertsberger.

SUPPLY CHAIN ISSUES

Mr. RUPPERSBERGER. Thank you, Madam Chair.

Mr. Cisneros, good to see you. We served together, and I am glad to see that you are working at the Pentagon. And you did a good job in Congress, and we are looking forward to your job at the Pentagon. And how are your sons, doing okay?

Mr. CISNEROS. Well, thank you for those comments, sir. The sons are good. They are wild and crazy as ever.

Mr. RUPPERSBERGER. That is good. Wait till you have grandchildren. Grandkids are the gift you get for not killing your own kids when you raised them. I am kidding.

I wanted to call your attention to an issue that we have all been seeing play out across the country regarding supply chain shortages.

One of the companies in my congressional district, Phillips Corporation, is a family-owned metal machinery supplier that supports the Department of Defense and other critical customers with highly specialized machine tools, servicing, and workforce training needed for the U.S. to compete globally.

Phillips' team has brought to my attention the impact that the microelectronics supply chain shortages will have on their and other U.S. small businesses' ability to supply critical DOD programs and weapon systems.

We cannot allow the supply chain issues we rely on with the commercial market to also affect the readiness of the DOD programs and possibly scores of highly skilled technical workers who manufacture and maintain these systems.

My questions. What issues have been brought to your attention within the Department? To what degree are you coordinating with other leaders at the Pentagon and other Federal agencies? And how do you believe we should prioritize national security programs that depend on components in the commercial market to maintain readiness?

We must maintain our U.S. manufacturing base and broader economic and national security interests. Did you get it?

General CARLISLE. I got it, sir. Thank you for that question.

I believe, the Department believes everything that you just said is true. It is important for our workforce to have the materials that they need in order to support the Department of Defense.

But I believe this is a question that is more well suited for our attainment and sustainment Department. And if you don't mind, I would like to take that for the record and take that to them.

Mr. RUPPERSBERGER. Okay. Make sure we get back. Okay. Good.

Mr. CISNEROS. Yes, sir.

Ms. MCCOLLUM. We are on that with you. We will have our staff wrap up that question and get that answer to Mr. Ruppertsberger.

Mr. RUPPERSBERGER. Okay.

Ms. MCCOLLUM. So next is Mr. Carter, and then Mrs. Bustos.

Mr. Carter.

FUTURES COMMAND IMPACT ON OTHER COMMANDS

Mr. CARTER. Thank you, Madam Chairman.

Under Secretary, I am a big supporter of the great work of the Army Futures Command. I think they do a wonderful job. Texas was chosen—my voice is going in and out, pardon me—Texas was chosen for the Futures Command because of our tech industry that surrounds Austin.

One of the things they wanted to make sure they could do is compete with the private sector and academia for the people we need and sustain owning those people. And as you well know, in the area of tech, those people are very mobile, very, very mobile.

Have we learned anything through the Futures Command that may be of assistance to all of the other commands and to recruit and sustain and retain top talent in STEM and the fields that we need for the future fight we are looking at?

And, if not, what would you suggest we do to make better decisions about retention and recruitment of this talent as we compete with one of our most competitive industries?

Mr. CISNEROS. Well, thank you, Congressman, for that question.

As you know, here at the Department of Defense, we are competing for talent not only against other Federal departments and Federal agencies, but also the private sector out there, and it is fierce competition.

We are doing everything that we can to go and to really do what we can to recruit these individuals. We have scholarship programs, we have fellowship programs that enable us to go out there and get these individuals while they are in college.

Right now, currently, we have the SMART Program, which allows us to go out, and we have, I think, there are currently 400 members in this program. That allows us to pay for their college education. And then, in doing so, they owe the Department of Defense some time in service as civilians.

But over 70 percent of those individuals that participate in this program have stayed throughout its history. So that is a program that has worked for us.

We have a seed program which provides those that just recently received their Ph.D. Program a grant so that they can go out and do research for the Department of Defense.

These are programs that we have. And there are other programs like that. There are the foreign scholarships that deal with languages that allow us to go out and pay for tuition for individuals going out to learn a language. That allows them to go study abroad and learn a language.

And in doing so, they have to come back, and they owe the Department of Defense a year of service. But most of them as well end up staying longer than their commitment that they owe the government.

Recruiting is something that I believe is very important that we need to go out there and do. My first month that I was here, I participated in a roundtable with college presidents talking about this very issue, about how we can work with them to let them know

and to let their student body know about the jobs that we have here within the Department of Defense.

And I have taken it upon myself that we need to go into places where traditionally we haven't gone to recruit a lot, like in Texas. I believe the University of Texas at El Paso is a great example of a university there.

You have many of our State schools in California as well, where I come from, and throughout the country that are minority-serving institutions, Hispanic-serving institutions, historically Black colleges and universities. These are all areas where we can go and we can recruit and bring that talent into the Department of Defense.

With that, I will turn it over to the Under Secretary of the Army here to kind of talk about the Futures Command that you mentioned as well.

Mr. LOWMAN. Thank you, sir.

Thank you, Congressman.

The Army has developed really a human capital strategy that is focused on the acquisition, development, employment, and retention of talent. And so, moving that acquisition, for example, as far left as possible.

We are particularly excited about the changes we have made to our Junior ROTC programs. We have introduced eight learning modules, cyber learning modules. We have introduced robotics. We have introduced these high school students to AI technologies.

In our Senior ROTC program we have enabled summer intern programs. That includes a wide range of both private sector learning institutions, such as MIT Lincoln Laboratory. It includes Army organizations and joint organizations, Army Cyber Command and CYBERCOM.

And then on the civilian side we have just implemented, in addition to our intern programs and our fellows programs, we have just implemented a STEM scholarship program. We will hire 1,000 students over the next 5 years, offset their tuition costs, pay their book costs, require them to work 600 hours to gain some skills during their university career. And then on the back end, they owe the Department of the Army 4 years of service as civilians.

And so, we believe the early acquisition focused on STEM and cyber is critical.

On the recruiting side, much like Secretary Cisneros laid out, we have also implemented an Urban Access Initiative. We have identified 22 metro areas. We are targeting in particular the identification of ROTC candidates from Black and Hispanic groups for ROTC scholarships.

And then the last one, we have done an Army-wide engagement strategy really to target those areas of skills where we don't habitually get into, and that is secondary and postsecondary outreach, HBCUs, and minority-serving institutions.

Thank you.

Mr. CARTER. Thank you.

Ms. MCCOLLUM. Thank you.

Mrs. Bustos.

WORKFORCE PREDICTABILITY AT ARSENALS

Mrs. BUSTOS. All right. Thank you very much, Chair McCollum, and I also want to thank Ranking Member Calvert, for holding this hearing.

I also want to thank our witnesses for your service and for your leadership.

To start, this hearing really hits close to home for me. The Rock Island Arsenal, and my colleagues have heard me talk about this a lot, but it is an island in the middle of the Mississippi River between the States Of Iowa and Illinois, and it is in the district that I am very proud to represent.

The arsenal hosts many, many important functions, including the Joint Manufacturing Technology Center and the Army's Advanced and Additive Manufacturing Center of Excellence. They are doing very, very important work to support the warfighter and sustain the Army.

They are also on the leading edge of manufacturing capabilities that will provide the disruptive technology needed to deter near-peer competition and aggression.

However, I am concerned about resiliency of the organic industrial base and its workforce.

Let me get to my question.

Arsenals are a unique component of the organic industrial base. Unlike depots, they don't have a sustained or predictable workload, and it is challenging for them to predict the medium- and the long-term workforce needs. You have got these boom and bust cycles that create high work rate costs, and it makes it difficult to retain skilled workers.

And I am deeply concerned about the recent layoffs of more than 100 term employees at the Rock Island Arsenal in large part due to significant shifts in anticipated workload in the coming years.

I understand that we have the make or buy guidance. But how can we improve planning and execution for more clear workflow predictability at arsenals?

And I certainly appreciate input from any of you, but I am particularly interested in the Army and the DOD perspectives.

Mr. CISNEROS. Ma'am, with that, I will turn it over to the Under Secretary of the Army, Mr. Lowman.

Mrs. BUSTOS. Thank you.

Mr. LOWMAN. Thank you, Congresswoman Bustos.

So, as you know, Rock Island Arsenal is critical to the Army's organic industrial base. In addition to the three arsenals, the ammo plants, and our five maintenance depots, it constitutes really the leading edge of what manufacturing will look like in the future, things like additive manufacturing, 3D printing.

The Army has just embarked upon a strategic development process that will be completed by the spring of next year which will lay out over a 15-year period what the organic industrial base modernization requirements will look like. That, coupled with the supply chain and the supply chain constraints we have now, linking those two things together.

What capabilities do we need to support a multi-domain capable Army and joint force in the future in terms of manufacturing capa-

bility, what workforce skills are required to support that capability, and then linking our supply chain constraints as a means to predict future workload I think are the three components that will normalize workload and the predictability of workload in the future as we focus to utilize the industrial base capabilities that we have inserted into each one of those organizations, Rock Island in particular.

Thank you.

Mrs. BUSTOS. Thank you.

Any other thoughts on this?

Mr. CISNEROS. Ma'am, I will just let you know that we are working, as far as our workforce, thinking about the workforce of the future, we are thinking about this and really how to rightsize these areas so that we don't have those problems, so that we can stabilize the workforce at various locations throughout the country and around the world for our Department of Defense and really kind of narrowing down and how to really, like you said, rightsize it.

But also to really broaden their skill sets so that if something does happen, we can allow them to do other things and move them into a different field where they will be able to support the Department of Defense.

WORKFORCE NEEDS AND THE COMMUNITY

Mrs. BUSTOS. We have just got a little less than a minute left, but let me take part of that answer that you offered about workforce development and drill down a little bit.

I am a little concerned in our region about the workforce needs at the arsenal and how those are conveyed to our surrounding community, our local colleges, and how the DOD can ensure that there is the best communication and understanding of what the workforce needs with the larger community.

If you could address that, please.

Mr. CISNEROS. Ma'am, I think you are right on there, and I think that is something that, as far as the Department of Defense goes, we need to do better at promoting ourselves and promoting the jobs and the skill sets that we need at the various areas where we are, where we need employees. And that is something that I am committed to and will continue to work on while I am here.

Mrs. BUSTOS. Okay. Very good.

With that, I am out of time, Madam Chair. Thank you very much. And I yield back.

Ms. MCCOLLUM. Thank you.

I think that was very enlightening, what you talked about, the switch on and off for employees with not having dependence upon the workforce. We hear that from small businesses, and we hear that from medium-size businesses as well, the way the Department sometimes even orders supplies.

It is a switch on, switch off, and it doesn't have the smooth sustainability that families and businesses sometimes need and our communities need to feel confident that there is going to be economic success for everyone at the end.

Ms. Kaptur.

RECRUITING IDEAS FOR FUTURE GENERATIONS

Ms. KAPTUR. Thank you, Madam Chair. A very interesting hearing. Sorry we were interrupted by votes. Great to see our colleague, Under Secretary Cisneros.

Really glad to have you there.

I wanted to ask a question that I sort of hinted at in the last round, and that is, if you live in a place with a big defense base, chances are that the Government of the United States will touch your life in some way, if you own a pizza shop or go to a religious institution or whatever. But if you don't have a big defense base, all this we are talking about is rather remote and very far away.

And so one of the questions I have is, for those elements of the military that do exist, and in my region those are largely Reserve and Guard, if we are talking about inspiring a new generation, what can the Department of Defense do annually, rather than just bring the Thunderbirds, okay, where hundreds of thousands of people gather to see them fly over, in terms of inspiring—

Ms. MCCOLLUM. Ms. Kaptur, your sound has cut out. It is still out. There you go.

Ms. KAPTUR. What can the military do to provide an annual event, bridging across all these different programs, instead of, "Here, there, there, everywhere, you have got me all confused now," that are relevant locally as an inspiration to the youngest generation, from age 7 up, so they start thinking about what they might do?

So, for example, in my region, we have Guard mechanics and civilian mechanics repairing F-16 engines. I guarantee you, if you let some of these kids see that, they are going to start getting interested, maybe, if there is a little handout sheet you can give them as they walk out the door.

If you have people who are on a control tower and they are directing airplanes, there are young people that will be attracted to that at a very young age.

If you wait until high school, it is almost too late. Maybe—maybe—in junior high.

But I am asking the Department of Defense to think big about assets you already have out there and to do convenings with the local boards of education and educational programs that are trying to help young people move into these fields that are so needed.

We don't have anything like that in my region. Maybe the Marine Corps does it in North Carolina, or Ken Calvert, you have got a thousand different defense—you know, Twentynine Palms and everything out there. Is it Twentynine or Twentyseven? Whatever it is. And we don't have anything like that. So the opportunity to think about your future doesn't come from the Department of Defense.

Can you think about putting something together that would be remarkable that would make it to places like northern Ohio where we have huge recruitment levels, okay, because of the bad economy, but we really don't inspire very much in terms of education and the ladder up, the ladder up that you are talking about? What might you do there?

Mr. CISNEROS. Well, Representative Kaptur, thank you for the question, and it is good to see you again.

The Thunderbirds are great, and I am sure the Navy would say the Blue Angels and the Army would say the Golden Knights are just as great. And whatever we can do to get them across America, I know they are working hard to do that for recruiting purposes.

But I think you are right, I think there is a generation out there. And it is getting harder, and those people that can actually join the military, serve in uniform right now, I believe only 25 percent are actually qualified to do that. I think less than 1 percent actually does serve in uniform currently right now.

We need to kind of get out there and to really promote and let people know that the Department of Defense, the United States military, no matter what branch, one of our five branches that you decide to serve in is a viable way to get out there, and it could be a viable career.

I always talked about how it changed my life. I joined the Navy when I was 18 years old and led me through my course of education. All the education I have today is because of the United States Navy and my service.

Ms. KAPTUR. If I might. Thinking about it, we have a local board of education that started an airplane repair program in one of our high schools, and it is oversubscribed. They are coming from other States to get into this high school program. And imagine if the mechanics out at the F-16 unit were to invite mechanics from the area and programs from the area.

I think another area also is our disabled vets, like in AI. I have a guy in my district, a 20-year veteran from the Air Force, unfortunately injured, but a wizard on the computer.

I think you ought to take a look at that set of people and see if we can't bring some of them into some of these, I would say, desk jobs if they can't do the physical work as in the past. So I just put that on the table for consideration.

And my time has expired, thank you.

Ms. MCCOLLUM. Thank you.

Well, we don't—Mr. Calvert, I don't see any other members joining us. I have a few things I am going to say in closing. Is there anything that you would like to say in closing before I finish and adjourn the meeting?

EDUCATION AND TECHNOLOGY

Mr. CALVERT. Well, I just wanted to emphasize obviously education, and we need to, as the prior panel, as we bring on a newer workforce, especially in STEM education, which has been brought up a number of times, because it is going to be technology that is going to make or is going to create efficiencies, as it already is in the private sector. And so, whether it is artificial intelligence to do substantial assessment work and the rest.

And so, I am looking forward to working with the Secretaries to find ways to be effective, efficient, and have a manageable workforce.

BUREAUCRACY ISSUES

I may point out, Madam Chair, I have a number of two-stars, they always tell me that there are papers floating around the Pentagon looking for signatures all the time. I get it. I was in business for a long time. Everybody has got to initial off on something or other. And sometimes a larger bureaucracy creates more problems than obviously solving it.

I just, again, I don't want to harp on it, but that is all I have. So thank you.

CHAIR MCCOLLUM CLOSING REMARKS

Ms. MCCOLLUM. Well, they must have been listening to you, because in 2001, military to civilian, this is for the Army, was 4 to 7, and now it is 1 to 4. So I guess you could say maybe for some of the things that you have been working on, a few people are trending in the right direction. But we will get those statistics for you.

Mr. CALVERT. Thank you.

Ms. MCCOLLUM. As I close this up, when I had asked earlier about what the services were doing, only the Air Force responded. So we are going to follow up asking the Army and Navy on that too.

And I notice everybody talked about ROTC, and that is great. We have some wonderful ROTC programs in Minnesota, and they are reaching out to minority and disadvantaged youth to give kids some great experiences.

But ROTC in and of itself isn't a program unless it is designed specifically to do so, to fill the gaps, to look at some of the things we are looking forward in our workforce.

And it also doesn't do anything about addressing those men and women who come in and serve, as Mr. Cisneros pointed out he did when he was 18, and have those young men and women see a career ladder for training and opportunity and career development, both in the Department of Defense, in a branch of the service, and moving forward.

I know that that is one of the big things that you are working on, sir, on how to do that. We want to be a partner in that.

When I was asking you about funding—and I am not picking on the Air Force at all, because I thank her for her response. She said, well, we might have to look at cutting some other place to beef up ROTC.

My question on working with the committee bipartisanly on this is, if we put more money into workforce development, let's say we put some into ROTC too, let's say that that is one of the pots we look at, we want to put funds in there in a way that is dog-eared so it is going there, so we can track its effectiveness along with you.

We want to be a partner with you in this. And that is why I was asking, if you are going to need resources, are you going to dog-ear the resources to make sure that they stay where they are, or do we need to put lines in it? Because you served in Congress, you know that sometimes when we dispose of funding, if we don't dispose of it carefully, somebody else will have a better idea for it.

You are our future for our national defense workforce to keep America safe, strong, and secure, and also safe, strong, and secure as people leave the military and go into the private sector workforce. And so, we want to make sure that when we put tools in the toolbox that they are your tools. We will follow up a little more on that as we get into next year's budget.

We are also going to follow up, sir, on some more information on what is going on with the SMART Scholarship Program, what is going on with the Industrial Base Analysis and Sustainment, because some of that is in your wheelhouse and some of it isn't, but it is all interconnected. And I just wanted you to know we are going to be following up with some of the other folks too.

And then the Manufacturing Technology Program. That came up with the other panel as well. They said some of these programs work really well. Some could be an improvement.

Basically what we heard from the first panel is this needs to be a whole-of-government approach, a whole-of-community approach, a whole-of-nation approach. And so there is a lot of work for everybody to do on this.

We are going to need everybody being creative and thinking about how to achieve this gap. Because in a democracy we give people choices. In an autocracy sometimes a child never gets a choice what they are going to be when they grow up. We want to make sure that they choose in a way that advances their [inaudible].

With that, I want to thank you all for participating today. I want to thank all of you for your patience.

And, with that, this meeting is adjourned.

[Answers to submitted questions for the record follow:]

The Honorable Mr. Cole
Appropriations Committee, Subcommittee for Defense
Questions for the Record

Witnesses: Dr. Griffiths and Mr. Bonvillian

Question One: Our subcommittee has previously discussed the significant need for more well-trained computer science, engineering, and cybersecurity specialists. There is strong bipartisan attention to this particular gap. My concerns are twofold. As you know, meeting this gap is critical in the short and long term for our national security. Our adversaries are growing in number and sophistication on the cyber front. Our own assets are increasingly networked and reliant on advanced computing as well as artificial intelligence. Maintaining security and control of these systems is critical. Secondly, I represent Tinker Air Force Base and the Air Logistics Center there. Their need for computer engineers is literally insatiable (since even well before COVID and broader workforce shortages emerged). There aren't enough graduates produced, not enough students entering the programs, and too much competition for those that do emerge. I want to find a way to help DoD – obviously to include Tinker close to home – meet these needs. What can universities such as yours do to help? How can more students be enticed into these fields? Do you see new ways Congress can help, either directly or through your institutions?

Dr. Griffiths Answer: There is not a shortage of Americans studying computer science. While there has not been a corresponding increase at the graduate level, the number of undergraduate students choosing to major in computer science has increased dramatically.

It is true, however, that relatively few of the students studying computer science choose to join the government or Department of Defense after graduating. Simply put, the government is often not the best place for a computer scientist to do exciting, impactful work. While the government offers unique challenges, and the potential to create solutions with a possible effect on the nation, computer scientists must often overcome supervisors that fail to understand or appreciate their work, resource shortages, rules that prevent them from accessing the tools and data they need, and regulations that prevent them from implementing their solutions. By comparison, private sector companies typically have far fewer constraints, allowing computer scientists to exercise their creativity.

In Chapter 6 of the National Security Commission on Artificial Intelligence Final Report, we argue that to increase the government's digital workforce, agencies must improve how they recruit, build, manage, and employ their digital workers. We believe the government needs a way for digital workers to spend a career focused on their craft, without being forced to move into managerial positions, or being punished for not doing so. We also believe that digital workers need to be guaranteed access to modern software development tools and data sets.

Perhaps NSCAI's most impactful workforce recommendation would be to create a United States Digital Service Academy to meet the growing demand for technologists in government. Such an academy would be a four-year, degree granting university. Students would major in digital fields, such as computer science, data science, mathematics, and others, while also studying topics like civics and ethics. Graduates would become civil servants for a minimum of five years, massively

increasing the government's digital workforce.

Mr. Bonvillian Answer: I agree the question is an important one. My university, MIT, has significantly shifted its education priorities to reflect demand for computer science and related cybersecurity. Computer science is now the largest undergraduate major and MIT has recently established a new and separate College of Computing, making a major funding commitment to it, as part of MIT's recognition that this field is evolving beyond existing resources. Underscoring the commitment, a major new building is also under construction for the new college and its faculty, students, researchers, labs and research facilities. MIT also has a major computer science graduate program, and its Computer Science and Artificial Intelligence Lab (CSAIL) is its largest laboratory.

Overall demand for engineers, including in computer science and cybersecurity is significant, and has been exacerbated by Covid-19, as a new National Academies study, which I was a part of, has confirmed. (National Academies of Sciences, National Materials and Manufacturing Board, DOD Engagement with its Manufacturing Innovation Institutes: Phase 2 Study Final Report (National Academies Press Oct. 2021), <https://www.nap.edu/catalog/26329/dod-engagement-with-its-manufacturing-innovation-institutes-phase-2-study-final-report>). While focused on manufacturing, including technical workforce issues, its findings are also relevant to the computer science workforce. It found, first, that quality online education can play an important gap in skills training by scaling-up education numbers beyond the limits of current in-person institutions (pp. 42-53, 91-92). I note that MIT formed one of the three largest online education platforms, edX, and MIT faculty, through its leading online education course development program, MITx in its office of Open Learning, and through its Open Courseware system, have created hundreds of online courses, including in computer science areas.

In the report's examination of overall technical workforce trends (which includes computer science areas), it also noted that international students play a critical role in filling demand in engineering fields, which includes computer science areas. The U.S. has relied heavily on international students in highly technical fields for more than a century and a half, so this is not a new development, but the issue has been exacerbated by Covid-19:

U.S. technical fields are highly dependent on international students. In 2020, international students received the majority U.S. granted engineering Master's degrees (54 percent) and Doctoral degrees (58 percent). Furthermore, international students represented over 66 percent of the U.S. post-docs employed at U.S. universities and are greater than 50 percent of new advanced manufacturing engineering workforce hires. Thus, if significant and on-going decreases in international graduate enrollments were to occur due to the pandemic, [which has developed] it could lead to significant ramifications on two fronts. First, it could reduce the pipeline of advanced engineering talent being trained to enter the advanced manufacturing workforce. Second, it could lead to reduced numbers of engineering students and post-docs to support U.S. university research programs, including DoD sponsored programs. (p. 88)

The report went on to find that: If DOD desires to have more U.S. citizens trained and residing in the United States to support the development of cutting-edge military systems and advanced manufacturing in high priority areas such as microelectronics and integrated photonics, then policies and programs will need to be put in place to systematically do so. Potential options

could include new grants, fellowships, internships, and other incentives to enable U.S. students—particularly women and underrepresented minorities [who have limited participation in advanced technical fields] - to study in critical technology fields. In parallel, the DoD needs to find ways to help retain top performing international students who have been supporting DoD sponsored research, who have employment opportunities to work in the United States in key advanced manufacturing fields, and who qualify and seek U.S. citizenship. (p. 89)

I believe that a combination of these approaches in computer science and cybersecurity – quality online education, programs to encourage U.S. citizens to study in these fields and work for DoD after their education, and a fresh approach by DoD to using international students in these fields – could play a significant role in helping on overall demand and meeting DoD’s need.

Question Two: How closely do your academic programs coordinate with employers in these types of technical fields to ensure that the curricula and skills emphases are focused on those particularly demanded by the labor market?

Dr. Griffiths Answer: At Dakota State University, we engage with actual and potential employers on both public and private sectors in a number of ways: (1) Industry Advisory Boards meet regularly with the respective deans and faculty to provide insights into changing trends and workforce needs, feedback on how well our graduates are prepared for the current workplace; (2) employer participation in Career Fairs; (3) employer-specific information sessions for our students; (4) employer hosting of internships during which some of our students are able to start their security clearance process; (5) scholarships for service programs; (6) our staff proactively monitor local, regional and national job markets to identify trends and specific skill sets that are then fed directly into the curriculum development and update process.

These efforts have resulted in 98% to 100% placement rates over the past seven years for graduates with undergraduate or graduate degrees in cybersecurity, computer science and related cyber fields. Placement rates measure the proportion of graduates who have a job in the major area of their degrees or are in graduate degree programs within six months of graduation. Our proportion of graduates reporting is over 93%.

Mr. Bonvillian Answer: MIT’s computer science and cybersecurity programs, rated among the best in the world, are well connected to employer needs. As noted above, computer science is MIT’s largest major and a large proportion of its graduates go to industry, including both large firms and entrepreneurial start-ups, as well as to research laboratories. MIT graduates in general have started over 25,000 companies including a number of industry leaders in computing.

Witness: Mr. Beale

Question Three: What projections does NDIA or the industry in general have about the numbers of employees likely to be impacted, particularly terminated, resulting from the vaccination mandate? Do you have insights on disproportionately-affected industries, geographic areas, and/or job classifications? How will those additional manpower reductions affect program schedules, supply chains, and cost (both material and labor)? How would you quantify the costs in total?

Mr. Beale's Answer: Representative Cole, thank you for your questions. Unfortunately, at this time it is premature for us to provide any analytics regarding the impact of the vaccine mandate from the three questions posed. Anything we can provide at this time would be anecdotal, and, as this has been a bit of a moving target with the injunctions and date changes, we cannot provide intel that would meet the standards of our organization for providing reliable data.

Across sectors and company sizes in the defense industrial base (DIB) there is no clear consensus reflecting the mixed messaging companies are receiving. That said, we are hearing from our membership that there will be real impacts despite vaccine rates rising across the DIB. Because DIB positions tend to be highly and uniquely skilled along with many requiring security clearances, even a small percentage leaving the workforce will mean slower schedules, increased costs, and, in some cases, contract failure. We are tracking there may be a disproportionate impact for smaller businesses if employees choose to depart employment with their company due to the mandate. However, we have also heard from small businesses that say having the mandate from government helps reduce the burden on them as it reduces employees' ability to forum shop for companies with varying levels of requirements.

Certain manufacturing, shipbuilder, and transportation representatives have expressed concern they expect to have higher turnover, but most concern is not over having to terminate employees, but rather their choosing to leave for the civilian sector. This is especially the case where a high proportion of the workforce is retirement eligible.

The Honorable Robert B. Aderholt
Appropriations Committee, Subcommittee for Defense
Questions for the Record

Witness: Dr. Griffiths

Question One: Dr. Griffiths, as you and many others have noted, on boarding and readying new technologies such as AI and machine learning are now, and will be in the future, an important step in modernizing our DOD workforce. You noted the responsible use of AI technology and am wondering if we have done enough when it relates to the ethical use of this technology. Do we have working groups or other professionals who are working through the ethics questions? My concern is that we invest all this money and time in this new technology only to find out we haven't worked through numerous legal questions.

Dr. Griffiths Answer: As we make clear in the National Security Commission on Artificial Intelligence (NSCAI) final report, Americans must have justified confidence in artificial intelligence (AI) systems. This is critical because if AI systems do not work as designed, or if they are unpredictable in ways that can have really bad consequences, leaders will not adopt them, operators will not use them, Congress will not fund them, and the American people will not support them.

We need to keep a few important things in mind when talking about how we get to confidence that AI is being developed and used responsibly. Ethics and responsible AI can't be added on after a system is built or after we realize the machine isn't behaving the way we want it to behave. Responsible AI must be baked into the design and development of the system from the beginning. And because an AI system learns as it goes, it is constantly changing. So, we need to make sure throughout the AI lifecycle that it is behaving the way we want it to and make changes when it is not.

It is also important to acknowledge that AI systems are not perfect. So, we will need to accept some level of risk that bad things can happen when using AI. And the amount of risk and whether we should use AI for the task at hand will depend on context and the use case. For example, in a high-threat environment like combat, in some cases it may be reasonable to use an AI that offers some immediate military advantage, while recognizing that it might fail. But in other cases, where for example lives are at stake, a reasonable military leader might want the highest assurances of AI reliability before using the AI machine.

This also means that those charged with using AI need an informed understanding of risks, opportunities, and tradeoffs. They need awareness of the possibilities and limitations in a system's expected performance. This will allow them to answer this question in an informed manner: Under the circumstances at hand, do I have sufficient confidence in the machine to use it?

These are reasons why the National Security Commission on Artificial Intelligence (NSCAI)

recommended that every department and agency critical to national security and each branch of the armed services, at a minimum, should have a dedicated, full-time Responsible AI Lead who is part of the senior leadership team.

The Responsible AI lead in each department should drive policy development and training programs for the department. The Responsible AI lead and her staff support the Department by:

- Providing Responsible AI training to relevant personnel;
- Serving as subject matter experts regarding existing and proposed Responsible AI policy and best practices;
- Shaping procurement policy and guidance;
- Building a central repository of Responsible AI work going on in the department, and lessons learned from practical implementation across the department, to help streamline department efforts; and
- Ensure interagency knowledge sharing for responsible AI.

The Honorable Betty McCollum
Appropriations Committee, Subcommittee for Defense
Questions for the Record
Workforce Development and the Department of Defense – Panel II

OSD POLICY & DEFENSE WORKFORCE COUNCIL

Background: In March, Deputy Secretary Hicks established a council to address workforce challenges – to include workforce development and talent management, professional military education, and using technology to support workforce goals. An analysis of these issues is exactly what is needed to start the process of addressing any gaps that exist.

Question One: Under Secretary Cisneros, can you share with us what the composition of the Deputy Secretary’s Workforce Council is? In other words, are each of the Services represented in council meetings?

Response: Yes. Each Service is represented in meetings of the Deputy Secretary’s Workforce Council (DWC). The DWC is co-chaired by the Deputy Secretary and the Vice Chairman of the Joint Chiefs of Staff. The Secretaries of the Military Departments, Military Service Chiefs, Chief, National Guard Bureau, and Office of the Secretary of Defense Principal Staff Assistants hold standing invitations to the DWC.

- How is the Department defining “workforce development”?

Response: Department of Defense Instruction (DoDI) 1400.25, Volume 410, “DoD Civilian Personnel Management System: Training, Education, and Professional Development (TE&PD),” establishes policy for workforce development, which involves the deliberate planning, programming, budgeting, operation, evaluation, and improvement of TE&PD activities and programs for civilian employees that will enhance individual and organizational performance, assist in achieving performance objectives and the DoD mission, and maximize the return on investment to the DoD.

- Does this definition match the Services’ understanding of workforce development or modernization programs?

Response: Yes. DoDI 1400.25, Volume 410, applies to DoD Components, including the Military Departments, and includes DoD Component Head responsibilities for identifying and implementing effective workforce development strategies.

(TO THE SERVICES)

Question One: How will funding requested to implement the recommendations be presented in future budget submissions? The expectation is that funding for workforce programs will be identified in specific lines – is that what you are planning?

Response: The Army's budget does not have a separate budget line for STEM or in the performance criteria. The Army budget includes funding for STEM programs in Operation and Maintenance, Army SAG 335, Junior Reserve Officer Training Corps (JROTC); and all funding is captured in Junior Reserve Officer Training Corps.

The Navy budget includes funding for STEM programs in Operation and Maintenance, Navy budget line 3C5L, Junior Reserve Officer Training Corps (JROTC). The Navy does not have a separate budget line for STEM. While the budget exhibit does not specifically address STEM programs in the performance criteria, it does highlight the Congressional increases to STEM programs.

In FY 2020, the Navy Junior Reserve Officers' Training Corps (NJROTC) program allocated approximately \$1.7 million to STEM-related items and activities consisting of training aids, curriculum, information technology equipment, and standardized test preparatory courses. In FY 2021, the NJROTC program allocated \$6.7 million to STEM-related items and activities consisting of training aids, curriculum, laptop computers, and the introduction of academic and competitive drones. The FY 2021 Congressional addition of \$6.5 million permitted the NJROTC program to significantly increase its budget for STEM activities to optimize talent in our high schools. In the FY 2022 budget request markup, both the HAC-D (+\$5 million) and the SAC-D (+\$1.5 million) included increases in BLI 3C5L specifically for STEM programs.

Department of the Air Force (DAF) practice is to present explanations of new or high-visibility items in the annual justification documents. Items for which Congress has specifically requested justification are identified in the appropriate program funding lines.

DEPARTMENT OF DEFENSE – OUTREACH PROGRAMS

Background: The Department of Defense provides multiple K-16 education and outreach programs to encourage students to pursue STEM-based careers in the defense sector. In recent years, the Department has initiated K-16 education and outreach programs for Career and Technical Education based careers to address the manufacturing workforce shortfall. According to the Department, before COVID-19 manufacturing growth was constrained by a talent shortfall, with a projected 2.4 million unfilled jobs by 2028. If this persists, the U.S. is at risk of losing \$2.5 trillion in economic output over the next decade, which could threaten the Department's ability to execute its mission.

Question One: Could you each share with members what you believe is your most successful educational outreach program?

Response: The U.S. Army Cadet Command through our JROTC Directorate and Brigades was able to greatly enhance STEM and Cyber Science participation during the past two years. While some of the increase in participation had already been planned in our strategic initiatives, the Congressional Add (+\$3.0 million) for FY 2021 led to increased participation in the Cyber Patriot program, and partnerships with VEX Robotics. The

Army has enhanced JROTC participation in the JROTC Leadership & Academic bowl (JLAB), Cyber and STEM camp partnerships with universities in Mississippi, Alabama and Georgia, and initial participation in the Cyber Start program (Cyber Initiatives). We also began research with the National Flight Academy in Pensacola, Florida for \$750,000, as well as expanded our virtual learning for JROTC Cadets in Louisiana and Florida. One of our most significant areas of progress has been in the area of Hybrid JCLCs (JROTC Cadet Leadership Challenge Camps) where we have expanded work for both traditional and STEM-related activities for our Cadets

The United States Naval Academy (USNA) Science, Technology, Engineering, and Mathematics (STEM) Center has conducted outreach to 14,502 K-12 students and 880 K-12 teachers. The estimated secondary reach of those teachers is 146,710 students. The programs covered topics such as principles of flight, computers, thermodynamics, magnetism, engineering design, electrical circuits, hydraulics, structures, robotics, logic, buoyancy and stability, cryptography, biotechnology, and the environment. The USNA outreach has been implemented in person and virtually due to COVID-19 related restrictions. All programs involve a hands-on project designed to capture the students' imaginations and encourage them to explore the subjects further. All programs are tailored to deliver age appropriate content to the students. The USNA STEM Center is entirely reimbursable and gift funded.

DAF has had success with STEM educational outreach at both the K-12 and collegiate levels. Over the last 10 years, the Air Force has partnered with the FIRST Robotics Competition at multiple regional and championship events. The mission of FIRST is to inspire K-12 youth to be science and technology leaders and innovators. Through the organization, students are engaged in exciting mentor-based programs, designed to build science, engineering and technology skills. The partnership provides recruiters with on-site speaking opportunities and activation space for national/local mobile tour assets, generating awareness of Air Force opportunities and leads for recruiters. Through the partnership, the Air Force has hosted 3 four-day immersive FIRST Leadership Programs, providing 75 FIRST mentors/regional directors with hands-on leadership training taught by Air Force personnel. Throughout the program, mentors attend lectures, take part in team-building exercises and tour various Air Force facilities. To date, the experience has taken place at the Air Force Academy, Eglin and Wright-Patterson Air Force Bases.

Further, one of our most successful civilian outreach programs at the collegiate level has been the Premier College Intern Program which is designed to increase focus on hiring / recruitment of summer interns utilizing a deliberate program with follow on employment and supplemental training immediately upon graduation with focus on STEM, Cyber, Acquisition, intelligence, and mission critical specialties. This program is important because it provides us with unfettered access to "ready to place" graduates from over 200 colleges and universities across the nation, improves hiring time, increases diversity, and ultimately allows DAF to lead the way with prime college talent in our civilian workforce.

Question Two: Under Secretary Cisneros, the Department supports a program known as the Science, Mathematics, and Research for Transformation or the “SMART” Scholarship program – could you please provide the Committee with an overview of this program – who is the Department trying to reach and with what success?

Response: My colleagues in OUSD (R&E), through the DoD STEM effort (www.dodstem.us), execute a comprehensive approach to inspire, cultivate, and develop exceptional STEM talent through a continuum of opportunities to enrich our current and future Department of Defense workforce. The largest program under DoD STEM is the National Defense Education Program (NDEP), which fosters and enhances the DoD’s ability to develop and access high-quality STEM talent vital to national defense, now and in the future. NDEP’s main effort to address workforce development and recruitment of technical talent is through the Science, Mathematics, and Research for Transformation (SMART) Scholarship-for-Service Program (www.smartscholarship.org).

SMART is a highly competitive STEM-focused scholarship-for-service program, empowered to make full-tuition awards during any phase of a scholar’s education in a regionally accredited U.S. university or college. SMART awards scholarships to undergraduate, graduate, and doctoral study in 21 academic disciplines that the Department has identified as critical to national security and DoD’s future. Scholars receive full tuition at an accredited college or university, a generous stipend, and allowances for miscellaneous academic fees and health insurance. Scholars perform an internship with their sponsoring DoD laboratory or facility each summer. Upon graduation, scholars move/return directly into employment within DoD facilities to serve a 1-to-1 employment commitment for each academic year they receive SMART funding. Established by Congress in 2006, the program has awarded over 3,700 scholarships, and transitions 200-400 scholars each year into DoD employment. Ninety-one percent of SMART scholars successfully complete, or are on track to complete, their degrees and service commitment. Nearly 75% of scholars have remained employed by the DoD after completing their service commitment.

By awarding STEM degrees that meet the Department’s needs, the SMART Program concurrently addresses the Department’s modernization efforts, as scholars obtain foundational skills required to be successful in next-generation technologies. The STEM fields most in demand by the participating DoD facilities include electrical engineering, computer science, mechanical engineering, and aeronautical engineering. Further, the SMART SEED grant initiative provides competitive independent research grants to SMART scholars who have obtained their PhD through SMART and are currently serving their employment commitment.

Section 242 and 250 of the Fiscal Year 2021 National Defense Authorization Act authorizes the Secretary of Defense to diversify participation in the SMART Scholarship-for-Service Program. In response and in coordination with the DoD HBCU/MI Program, the SMART Program created a strategy to increase diversity within the program. This strategy includes activities and approaches to attract students from historically Black colleges and

universities and minority institutions (HBCUs/MIs) to the program, while educating participating DoD sponsoring facilities on the technical strengths of HBCU/MIs and the benefits of collaboration with them. In addition to its HBCU/MI initiative, the SMART Program continues to implement a broad range of diversity and inclusion efforts targeting underrepresented/underserved groups through university visits, marketing, social media, and informational webinars. The initiative is having a measured success. The 416 scholars awarded in the 2021 SMART cohort is the largest and most diverse (with respect to gender, ethnicity, and race) in the program's history. The applicant pool for the 2022 cohort (to be awarded in Spring of 2022) is also shaping up to be the most diverse in program history, with a ~4x increase in the number of applications started by students at an HBCU, a ~3x increase in applications started by students at a Hispanic Service Institution, and the number of applications from students at a Tribal Controlled or Native Serving Institution increasing from 0 to 13, as compared to the previous application year.

Question Three: Could you share with the Committee how the Department is investing in the Industrial Base Analysis and Sustainment (IBAS) program and how that program works with the industry/academia to improve the Department's readiness posture?

Response: The IBAS program is one of the Department's two defense-wide industrially focused investment mechanisms, the other investment mechanism being the Defense Production Act Title III program. The IBAS program is a relatively modest investment line sized at roughly \$10M/year; however, it carries significant industrial health and preparedness responsibilities prescribed by 10 U.S.C. § 2508 (Industrial Base Fund); specifically:

- Support the monitoring and assessment of the industrial base
- Address critical issues in the industrial base relating to urgent operational needs;
- Support efforts to expand the industrial base; and
- Address supply chain vulnerabilities.

Using these authorities, the Office of the Deputy Assistant Secretary for Industrial Policy has leveraged IBAS program investments to more actively incentivize and catalyze actions across the defense industrial base (DIB) to address its significant workforce challenges – challenges that are increasingly beyond the capabilities and risk tolerances of industry, academia, states and other federal agencies to solve alone. This is the basis for DoD's "National Imperative for Industrial Skills" (NIIS) initiative, launched in early 2020. NIIS gives DoD an investment and policy platform to more actively partner with private and public organizations in DIB-dense regions (and at the national level) to help de-risk and scale workforce development pipelines to meet critical defense weapon system production and life cycle sustainment needs.

Congress has recognized the value and impact of the IBAS program as an industrial workforce development force multiplier, increasing IBAS program funding significantly in recent years. In FY20 and FY21, the IBAS program has invested over \$80 million in support of 12 NIIS projects around the nation. These projects will test new approaches and identify best practices to scale and sustain our nation's critical industrial skills,

primarily those associated with Career and Technical Education (CTE) tracks like precision machining, maritime/specialty welding, and metrology/inspection. In addition, NIIS projects emphasize emerging CTE tracks, including Industry 4.0 skills such as additive manufacturing, systems engineering technicians, and the like. As a result, momentum around NIIS—now entering year three—continues to build as it and its projects begin to deliver meaningful results for the Department and nation. Based on these early successes, DoD is examining ways to reshape and expand future IBAS program base budgets in support of a more sustained, stronger focus on DoD’s industrial workforce development needs.

Question Four: The Department also supports the Manufacturing Technology Program (MANTECH), which provides centralized guidance to the Department on all matters related to manufacturing technology needs. Could you please provide additional information on how this program promotes high levels of worker education and training?

Response: OSD ManTech is working to promote high levels of workforce education with two areas of action:

- 1) Strategic leadership within the DoD as well serving as a convener across Federal agencies as a co-chair of the Subcommittee for Advanced Manufacturing’s education and workforce development interagency working group.
- 2) Making strategic investments in manufacturing technology program activities across the nine DoD-sponsored Manufacturing Innovation Institutes (MIIs).

Additionally, the DoD created a new budget line in 2021 as a result of the Build Back Better review in support of OSD ManTech’s Manufacturing Education and Workforce Development (M-EWD) efforts to aid in planning and execution. M-EWD’s core capabilities include a digital learning platform for advanced manufacturing education and training applications, and a labor market data tool to enable MIIs and other regional leaders to better understand localized labor market demand for emerging manufacturing occupations. Other key investments include a collaborative effort with the Commonwealth of Massachusetts to incorporate advanced manufacturing technologies in career and technical education across the state, an AM training resources portal for DoD workforce training, and a \$21 million effort led by the University of Texas El Paso and America Makes to develop and deploy AM training to the DoD AM workforce. The nine DoD-sponsored MIIs are leading efforts across the U.S. to develop the advanced manufacturing workforce needed to accelerate commercialization and scale up advanced manufacturing industries in critical technology areas like additive manufacturing (AM), digital systems and cyber security, advanced robotics, microelectronics, and biotechnology. In 2020, eight MIIs lead a total of 87 EWD projects, investing \$17 million and engaging over 52,000 students and incumbent workers to build technical skills and industry connections for advanced manufacturing careers.

**The Honorable Tim Ryan
Appropriations Committee, Subcommittee for Defense
Questions for the Record
Workforce Development and Department of Defense – Panel II**

Question One: I'm sure you're very familiar with both China and Russia's rapid and groundbreaking advancement in the field of hypersonics. Just last week, China tested a hypersonic vehicle that orbited the globe. It is clear to me that we are VERY far behind.

We're working hard in Youngstown, Ohio to bring both hypersonics research and manufacturing to the Mahoning Valley. But we need the people to be able to do the hard science and build these weapons. What do you believe the DoD should be doing, that it already isn't doing, to build the hypersonic workforce needed to compete with China and Russia?

Response: The DoD is systematically moving forward with strategies to recruit, train, and maintain a technical workforce ready for the future of hypersonic systems. For example, Office of the Under Secretary of Defense (Research & Engineering) (OUSD (R&E)), is working to connect the innovators in hypersonics, and the enabling materials and manufacturing technologies, with educators much earlier in the technology development life cycle in order to accelerate our Nation's workforce capabilities both in the near and far term.

Current DoD activities with near-term impact focus on helping the existing workforce obtain the new skills required for advanced hypersonic programs. The goal is to develop a journeyman workforce that can excel across the spectrum of physics-based computation and test and manufacturing.

Within OUSD R&E, the Joint Hypersonic Transition Office (JHTO) stood up the University Consortium for Applied Hypersonics (UCAH) to aid in workforce development. The UCAH currently has 89 University Members and 90 Industry Affiliates. In its first year, UCAH has funded \$25.5M in targeted applied research which engages students in the critical technical areas needed for hypersonic success. Projects focus on teaming students with industry and manufacturers, to help develop the workforce across traditional organizational boundaries. The creation of relevant hypersonic curricula, internships and scholarships assures that these workforce gains are enduring. JHTO has completed multiple industry surveys to help identify knowledge and skills gaps to address through curriculum development. In addition, the Department is identifying opportunities to partner with the US Department of Education and state-level K-12 STEM programs where exposure to hypersonics concepts could expand the future hypersonic workforce.

Also within OUSD (R&E) is the Manufacturing Technology (ManTech) program, which is working to promote an educated and skilled manufacturing workforce across the DoD and defense industrial base, to include for hypersonics manufacturing. Their efforts are concentrated on two areas: 1) strategic leadership for DoD and across federal agencies;

and, 2) investments in education and workforce development projects focused on emerging manufacturing technologies identified as critical to enable the production of defense weapons systems.

The R&E Joint Hypersonics Transition Office and the R&E ManTech program work closely together under the leadership of the Department's senior official for Hypersonics within R&E, the Principal Director, whose capability development roadmap includes workforce as a critical component of delivering hypersonic capabilities at scale.

The Army and Navy are partnered with OSD through a Joint Service Memorandum of Agreement to produce hypersonic capabilities. Under the Hypersonics Joint Service Memorandum of Agreement, the Army has the lead responsibility for the Common Hypersonic Glide Body (CHGB) production and expansion of the commercial industrial base to meet the demand signal for all the Services/Office of the Secretary of Defense.

The Army's hypersonics systems were developed and built in government labs. We are transitioning this manufacturing effort to the commercial industrial base in a collaborative effort and "leader-follower" model. We awarded initial contracts for commercial production in August 2019 and delivered the first hypersonic capability to Army units, ahead of schedule, this past March.

We believe we have the subject matter expertise within our acquisition workforce, academia and now industry to continue the development of hypersonic capabilities and manage the related programs. This is really a larger question about our adversaries' ability to rapidly adopt new technology, which is placing pressure on our acquisition cycle times. If we are to succeed, the Defense acquisition system must move with purposeful speed and agility. The Defense Acquisition Workforce must think critically, make smart decisions, and move quickly to give our Warfighters cutting-edge capabilities, ensuring dominance across every domain. To this end, the Department is focused on three key areas:

- 1) Streamlining acquisition policy to empower workforce decision making, such as through the Adaptive Acquisition Framework;
- 2) Reimagining how we train and develop our workforce, such as through the Back-to-Basics initiative; and
- 3) Transforming Defense Acquisition University (DAU) into a modern learning platform.

Through these efforts we're empowering both individuals and organizations to make programmatic and development decisions that reflect their needs, rather than a mandated, top-down approach. These actions are designed to help our system move with greater speed, agility, and efficiency.

The National Defense Strategy emphasizes the importance of naval power in this era of great power competition. The Department's S&T priorities for this budget include development of the next generation of directed energy and electric weapons; high performance materials and energetics; and development of hypersonics. These investments

support the modernization of key capabilities outlined in the National Defense Strategy. Hypersonics is an emerging technical area that is central to our National Defense Strategy. Efforts are underway across each Service to accelerate the development and transition of hypersonic technology to the field. The Office of Secretary of Defense for Research & Engineering, OSD(R&E) has established the Joint Hypersonics Transition Office (JHTO) to seed S&T investments across academia and industry to both advance the technology and to advance the US hypersonics knowledge base. The University Consortium for Applied Hypersonics (UCAH) seeds Hypersonics S&T investments. UCAH is an inclusive, collaborative ecosystem of universities working with government, industry, national laboratories, federally funded research centers, and existing university affiliated research centers with aim to provide STEM education products to K-12 students as well as advanced degree work for workforce needed to for modern hypersonic flight systems in support of National Defense. Additionally, the JHTO Systems Engineering Field Activity (SEFA) at the Naval Surface Warfare Center Crane (NSWC Crane) is actively providing for the hypersonic education. Multiple efforts are underway to include educational video series on hypersonics technology that will target STEM students. Also, Hypersonics Master's degree (aerospace engineering and astrophysics centered) is being jointly developed by Air Force Institute of Technology (AFIT) and Monterrey Naval Post-Graduate School (NPGS). The master's degree would target both uniformed Service personnel and civil servants and contribute to building the US hypersonics knowledge base and workforce.

Besides the educational opportunities that the DON workforce is leveraging (see above paragraphs), hands-on R&D efforts in the Naval Lab and Warfare Centers is further advancing the know-how and technical capabilities of the DON workforce. Examples include a study to ensure that necessary modeling and simulation (M&S) codes are sufficiently accurate to support hypersonics programs to accelerate hypersonic vehicle development, and a second example is the research into high temperature advanced materials for maneuvering performance of hypersonic vehicles. Additionally, the DON, through grants, works with academia and businesses/industry to advance the technologies essential to Hypersonics.

Through education and hands-on technical efforts, the workforce essential to developing and maintaining Hypersonics knowledge is continuing to increase in industry, academia and the Naval Lab/Warfare Centers.

The Department of the Air Force is prioritizing hypersonics technology development and is engaged with DoD, industry and academia in a portfolio of investments to advance warfighting capabilities as well as the talent and infrastructure to develop, test, and produce these capabilities at scale.

Question Two: In order to compete with both China and Russia, the Department must innovate and accelerate more than at any other time in recent memory. We can't afford to spend years, or even decades, to bring new warfighting capabilities online. What good is a weapons system that's out of date by the time it's fielded?

I believe the key to speeding up the acquisitions process, and also bridging the “Valley of Death” that we are all familiar with, is a trained and innovative acquisition workforce. What are the department and individual services doing to train their acquisition professionals in the skills they need to innovate and accelerate?

Response: The Department is modernizing talent development and management for the acquisition workforce. We are moving away from the old model of large amounts of required training delivered at set times to a model where training and information is delivered at the time it is needed. Increasingly, training and knowledge are delivered by webinars, websites and smaller units of learning. This allows us to get new information and tools to the workforce much faster, accelerating the pace at which the acquisition system adapts. The benefits of this approach can be seen in the rapid adoption of the Adaptive Acquisition Framework, and will be a powerful tool available to us as we continue to improve acquisition.

The Army is committed to the development of an agile, adaptive, and innovative acquisition workforce, with the requisite critical thinking skills and acquisition acumen to accelerate delivery of capability to the force. We will enable this through three primary means:

- Aggressively implement “Back-to-Basics for the Defense Acquisition Workforce”, working with DAU to minimize “scrap learning”, focus on job-relevant training, and foster a culture of life-long learning oriented on rapid delivery of capability.
- Leverage the Acquisition Leader Assessment Program (ALAP) to assess and develop critical thinking skills, and better understand the strategic potential and readiness of our future Product and Project Managers to occupy key billets.
- Continue to offer career broadening assignments and training with industry opportunities in order to propagate best practices and better equip our acquisition professionals to leverage the new authorities Congress has provided to accelerate the pace of programs, while also mitigating cost and performance risks.

The civilian acquisition workforce in the DON plays a vital role in the Department’s ability to maintain maritime superiority. Navy civilians provide long-term stability and continuity to the DON’s missions, offering unique technical expertise, allowing the warfighter to execute their missions. To continue to fulfill our responsibility to the warfighter we must attract, hire, develop, and retain a capable workforce. The DON must be intentional in the preparation and execution of providing the right workforce development approach, to the right people, at the right time to develop a highly qualified diverse workforce capable of performing current and future naval science and engineering functions. Key will be focusing on developing a technically robust workforce, adept to change, and equally proficient in the traditional technical specialties of their functional domains, and the emerging concepts and technologies. Technical workforce developmental tracks need to reflect a balanced level of education (academic, acquisition, and technology) and experiential opportunities; hence hands-on work for the DON’s technical workforce advances their skill sets and the DON’s capabilities. A key authority for the Services, and indeed the DON, is 10 U.S.C. 2363. With this authority, Naval Lab and Warfare Centers are able to conduct cutting edge basic and applied research, work on transition/prototypes,

and fund workforce development to innovate and thus accelerate capabilities. The program's goal is to maintain the scientific and technical vitality of Naval Lab and Warfare Centers through research projects, technical training, and other workforce innovations. The program also provides a proving ground for new concepts in research and development in order to increase the speed of technology transition to the fleet and warfighter.

The DAF established Digital University to help increase digital literacy by providing access to free courseware to all DAF Air and Space Professionals. Subjects include game development, language learning, computer programing, resiliency, and leadership development.

The DAF has also partnered with Defense Acquisition University (DAU) to establish a credentialing framework that allows acquisition professionals to tailor related skills by offering job-centric credentials in functional areas, such as systems engineering, cyber resiliency, and software engineering.

Question Three: When military are used to perform non-deployable functions that can be done by civilian employees or the private sector, how does that affect the numbers of military that are available for deployment?

Response: The Department's overarching policy on the use of military personnel to perform certain functions is Department of Defense Instruction (DoDI) 1100.22, Policies and Procedures for Determining Workforce Mix. This Instruction establishes the principle of military essentiality; whereby military personnel are only supposed to be used for military essential functions. This policy enhances the lethality and operational capability of the Department by ensuring military personnel are being used at the "tip of the spear" to the maximum extent practicable. However, there are a variety of reasons that military personnel may be assigned to non-deployable positions (for example, esprit de corps, or the need for military-unique knowledge and skills). Such positions, however, are still considered military essential, and the Department regularly undertakes reviews of its functional classifications to ensure that military personnel are appropriately aligned against military essential functions.

Deploying units are manned at 100% or near 100% fill for deployments. Army Regulation (AR) 570-4 (New version is still in staffing) restricts borrowed military manpower (BMM) assignments to military essential functions pursuant to DoDI 1100.22. As long as the functions performed pursuant to BMM/Temporary duty are military essential, soldiers can still be assigned to duties outside their MOS.

Utilization of Soldiers for "non-deployable functions" is inconsistent with OSD policy and 10 USC 129a (g) (1) -"General policy for total force Management:" "Functions performed by civilian personnel should not be performed by military personnel except....." Pursuant to DoDI 1100.22, (Subject: Policy and Procedures for Determining Workforce Mix), " manpower shall be designated as civilian except when one or more of the following conditions apply:

- (1) Military-unique knowledge and skills are required for performance of the duties.
- (2) Military incumbency is required by law, E.O., treaty, or IA.
- (3) Military performance is required for command and control, risk mitigation, or esprit de corps.
- (4) Military manpower is needed to provide for overseas and sea-to-shore rotation, career development, or wartime assignments.
- (5) Unusual working conditions or costs are not conducive to civilian employment."

DAF limits use of military personnel to perform non-military essential functions or missions that would hinder our ability to be deployed in support of the National Military Strategy or degrade our ability to perform assigned missions. Many of our military perform the same functions in peacetime as they do in wartime or contingency operations. As a matter of policy, DAF bases the decision whether to use military personnel on the following criteria: whether military-unique knowledge and skills are needed for the performance of duties; whether military incumbency is required by law; whether military performance is needed for command and control, risk mitigation; esprit de corps; overseas rotation for career development, or wartime assignments; or mitigation of unusual working conditions or costs which are not conducive to civilian employment. Utilizing civilian employees (or contractors where permissible) ensures military end strength is available to sustain the operational, deployable force structure while also reducing overall personnel costs. As an example, launch and recovery of aircraft and the associated maintenance is the same regardless of the mission flown. The same can be said of operating an airfield in that the work is the same for virtually all missions. The job they do at home station is the job they will do to support wartime/contingency operations. The current DoD goal for deployment to dwell is 1:3 for the active component (1:5 for the Reserve Component), meaning active-duty troops will spend three years at home for every one year deployed or mobilized. Further, the Air Force is overhauling its force generation and deployment model with the aim to provide a more standardized schedule that both Airmen and combatant commands can understand while also providing enough down time for rest and training.

More specifically, do you understand how this inefficient utilization of military in non-deployable functions can lead to increased stresses on the force on those military that are available for deployment, reflective in suicide rates, PTSD, domestic violence incidents, etc.?

Response: The Department is concerned about any issue or situation that adds additional stressors to Service members and their families. Deployments are generally recognized as a stressful time for military personnel, not limited only to combat exposure. Deployment-related stressors may include family separation, mental health concerns, and presence or absence of protective factors. It is important to note that the dynamics and causes of suicide are complex, and there is no single cause for suicide among Service members or the general U.S. population.

Do you understand how using military for non-military essential functions can adversely affect the BOG dwell deployment ratios for the military that is being used for military essential functions?

Response: The Department's policy requires that military personnel be used for military essential functions. There are a variety of functions and positions that are essential, and not all are necessarily operational. However, this variety provides DoD Components with the flexibility necessary to ensure that the preponderance of military personnel are aligned against operational capabilities, while also maintaining a fighting force that is robust, diverse, and supports non-operational needs, such as career growth opportunities and sea-to-shore rotation.

Do you understand how using limited military end strength for non-military essential functions that can be done by civilian employees or contractors can result in reduced lethality and readiness, as less military end strength is available for building up operational, deployable force structure?

Response: The Department is committed to maximizing the lethality and readiness of its forces, and Departmental policy, such as DoDI 1100.22, supports this commitment by directing that military personnel be used solely for military essential functions. The force design and force structure processes used by the Military Services continuously evaluate their operational capabilities with the goal of ensuring as many warfighters as possible are aligned to operational functions.

Question Four: "The Government Accountability Office recently documented that "[d]uring fiscal years 2016 through 2019, DoD increased term personnel by 40 percent, . . . [and] extended the duration limit for term appointments from 4 years to 8 years, with further extensions considered on a case-by-case basis," all done without "assess[ing] employee perceptions [of these practices] as required by statute." See GAO-20-532, "Defense Workforce: DoD Needs to Assess Its Use of Term and Temporary Appointments (Aug 6, 2020). The GAO documented the Army accounted for 72 percent of Term and Temporary appointments, primarily in the Tank and Automotive Command (and its depots) and the U.S. Army Corps of Engineers. How can there be any meaningful workforce development or strategic human capital planning at all when the Department is using term and temporary appointments on such an expanded basis for "enduring functions." This is treating employees no better than disposable wrenches or screws and nails. Equipment is treated better. What are you going to do to improve this situation?

Response: The Department utilizes a multitude of hiring authorities to assist Commanders and senior civilian leaders in curating talent and developing a diverse workforce in order to meet mission and strategic workforce needs. Term and temporary appointments provide for a more agile, mission-ready workforce, as well as a greater ability to dynamically shape the mix of skills and expertise in the workforce to meet mission needs in a cost-effective manner.

Specifically, the Army relies on temporary and term hiring authorities to provide precisely the flexibility and adaptability needed to manage its workforce across numerous funding streams and to meet short-term, unpredictable, or surge requirements. For example, in the U.S. Tank and Automotive Command, maintenance schedules and associated funding are both difficult to predict; therefore, it is important to have increased flexibility to employ personnel as workload and funding fluctuates over time. Similarly, the U.S. Army Corps

of Engineers frequently uses term and temporary personnel since its missions are project funded; for example, to respond to specific hurricane or flooding disasters and to support construction of military facilities for overseas contingency operations.

In 2017 and 2018, the Department modified its procedures for temporary and term appointment authorities, to include the authority to noncompetitively convert term personnel to permanent appointments under certain conditions. As awareness of, and familiarity with, these authorities increased throughout DoD, so did the number of term personnel employed within the Department. According to the GAO study mentioned (GAO-20-532), term personnel within DoD grew from 3.3 percent of the DoD civilian workforce in FY16 to 4.5 percent in FY19; temporary personnel decreased by 3 percent over the same time period. GAO also reported that approximately 35 percent of DoD term and temporary personnel appointed during FY16-19 were converted to a permanent civilian position within the federal government.

Department of the Navy uses temporary and term appointments as part of our plan to strategically address emergent issues, particularly in situations where the need is short-term. For example, we have used these type of hiring flexibilities to meet challenges associated with the COVID-19 pandemic. DON's use of term and temporary appointments is not depriving any meaningful workforce development or strategic human capital planning. In fact, use accomplishes both goals. Interns are term appointments while we develop them and then they are converted to permanent positions as part of our human capital planning.

Department of the Navy also uses hiring flexibilities, such as the Pathways Student Intern Program, as part of our succession planning. Under the statute these positions are time limited at the initial appointment and interns may be eligible to convert to a permanent position once their academic program is complete. Since Fiscal Year (FY) 2016 temporary and term appointments have encompassed 9-12% of our total hiring actions, and only about 2% of total civilian workforce currently serves on a temporary or term appointment.

DAF takes seriously our responsibility to perform effective strategic human capital planning that meaningfully supports our various missions. While time-limited appointments like term and temporary appointments are a part of our overall hiring and recruitment tool kit, they are not our primary tool for staffing a mission and it is not uncommon for these types of appointments to be converted to permanent positions where there is a demonstrated mission need, and available funding to support the conversion.

One way in which DAF works to achieve the appropriate mix of time-limited and permanent appointments is through the use of Civilian Corporate Boards at each DAF installation. This board has representatives from the installation civilian personnel office, manpower, and civilian pay experts who work in coordination to manage civilian pay dollars to validate authorizations. This concerted effort is required to fully execute civilian work year/civilian pay execution.

DAF also utilizes Human Capital Management Plans and Workforce Planning Guides that provide standard reports to identify mission critical/hard-to-fill positions, losses and gains, retirement projections etc. to forecast vacancies. Each term/temp hire is closely scrutinized by several levels on management to ensure mission success – including the requirement that all over-hires be approved at the Installation Commander level before utilization.

The Honorable C.A. Dutch Ruppersberger
Appropriations Committee, Subcommittee for Defense
Questions for the Record
Workforce Development and the Department of Defense – Panel II

Question One:

1. Background: Mr. Cisneros, we are honored to have you appear today. I wanted to call your attention to an issue that we have all been seeing play out across the country regarding supply chain shortages. One of the companies in my congressional district, Philips Corporation, is a family-owned Metal Machinery Supplier that supports the Department of Defense and other critical customers with highly specialized machine tools, servicing and workforce training needed for the U.S. to compete globally. Phillips's team has brought to my attention the impact that the microelectronics supply chain shortages will have on their and other U.S. small businesses' ability to supply critical DOD programs and weapons systems. We cannot allow the supply chain issues we see on the commercial market to also effect the readiness of DoD programs and possibly scores of high-skilled and technical workers who manufacture and maintain these systems.

Q: What issues have been brought to your attention within the Department, to what degree are you coordinating with other leaders at the Pentagon and other federal agencies and how do you believe we should prioritize national security programs that depend on components from the commercial market to maintain readiness? We must maintain our U.S. manufacturing base, and broader economic and national security interests.

Response: Machine tools are foundational to the production of nearly all defense and commercial hardware products, including computer chips. Nations that don't make their own machine tools are dependent upon other nations for this critical capability; some of the nations that would be relied upon are unlikely to have U.S. interests at heart.

The Department is aware of the issues reported by Philips Corporation and its machine tool supplier, which produces 95% of U.S.-made machine tools. The core issue centers on allocation decisions by chip distributors affecting 90 chips from several manufacturers. The chips are used to build machine tool industrial control systems using a proprietary design that cannot be replaced by commodity controllers. At risk are 5,000 jobs, loss of manufacturing capacity in multiple sectors of the U.S. economy, loss of machine tool market-share to foreign manufacturers with increased dependence on foreign supply, and military readiness.

This past summer, this firm became one of very few machine tool manufacturers to proactively increase its 'safety stock' of critical chips, centralized spare parts management, and curtailed support and training for existing DoD and commercial customers (129,000 machines at 50,000 facilities nationwide—20-30% are in the DoD supply chain) to meet production demands. While no DoD programs of record have yet

reported issues, production and sustainment of a host of DoD systems could be at risk in the long term.

In the broader market, other machine tool manufacturers worldwide, which typically buy commodity controllers from firms like Siemens, FANUC, and Rockwell Automation, are experiencing the following:

- Shortages of chips and other components, including machine tool bases, linear guides, bearings, and ball screws, which are produced almost entirely in Asia
- Labor shortages caused by the combination of COVID-19, vaccine mandates/reluctance, and employee resignations
- Customers requesting to delay/cancel shipment of orders due to their inability to access sufficient stocks of metal to conduct machining operations

In response to this issue, the Office of the Deputy Assistant Secretary of Defense for Industrial Policy, under the Office of the Under Secretary of Defense for Acquisition and Sustainment (A&S), held a series of virtual and in-person meetings with relevant corporate executives to help them assess its impacts on DoD programs, determine potential courses of action, and coordinate with DoD and Department of Commerce subject matter experts on authorities and processes available under the Defense Production Act. Our meetings with Philips highlighted the fact that prime contractors often fail to flow relevant DPA priority ratings (DX or DO) to all appropriate members of their (often very complicated) supply chains. This failure makes it difficult or impossible for companies like Philips and their machine tool supplier, both of whom may be viewed as 'indirect' members of the supply chain because they sell and service machines that enable other firms to make actual parts, to avail themselves of potential mitigations available under DPA.

Industrial Policy's DPA and IBAS offices will continue to monitor developments and provide consultative support until the crisis has abated.

Question Two:

1. Background: Ms. Berger, I'm sure you were expecting a question from me on our one of our nation's biggest treasures – our service academies. As the Chairman of the Naval Academy Board of Visitors, I wanted to tip my hat to you and let you know you really have an outstanding leadership team at the Academy – but I'm sure you know that. We were recently able to meet after the Secretary of Defense's Zero-Based Review came to an end and there were a couple areas that worry me, but in particular is our ability to be able to continue to recruit – and more importantly retain – professors at the service academies. The military academies are unique in that they are driven by forces central to building our great future military leaders and so they are less aligned with traditional academic career models – generally speaking, leaving more room for instructing and teaching than research and career advancement as is traditional in higher education.

Q: For this reason, I would ask that you and other Department leaders work with the Naval Academy to ensure there are policies and procedures in place to allow for both a diverse workforce and a clear path for career advancement for professors at the academies. Are there any authorities or resources the Navy needs from this subcommittee to ensure you are able to adequately maintain and grow the faculty and staff at the Naval Academy?

Response: At this time, it is unclear whether the Department of the Navy (DON) needs additional legislative authorities or resources; the DON continues to gather information and conduct analysis.

- Title 5 United States Code (U.S.C) § 5373 limits military academy civilian instructor pay and prohibits the military academies from implementing separate higher pay categories for exemplary faculty members, such Distinguished Professorships or Department Chairs. The military academies may provide incentives for recruiting and retaining faculty, pursuant to statutory annual aggregate compensation caps.
- Secretary of the Navy (SECNAV) determines policy for DON civilian faculty pay. SECNAV Instruction 12534.1 D, “Civilian Faculty Pay Schedule for the U.S. Naval Academy, the Naval War College, the Naval Post-Graduate School, and the Marine Corps University,” assigns responsibilities and delegates authority to the heads of the military schools for establishing all civilian faculty members’ pay levels at the USNA, Naval War College (NWC), Naval Postgraduate School (NPS), and Marine Corps University (MCU).
- Pursuant to Title 5, U.S.C., §§ 6303, 5303, 5304, and 5373, the DON Faculty Schedule caps civilian faculty pay at a level equal to that of SES Level IV (currently \$172,500). The statutory provisions limit the locality-based comparability payments in the DON Faculty Schedule to SES Level III (\$183,300).
- USNA civilian faculty members are under the Administratively Determined pay plan in the DON Faculty Schedule. Congress may authorize annual civilian faculty pay adjustments.
- Title 10, U.S.C provides SECNAV the authority to hire civilian employees at DON institutions and to determine their pay. SECNAV delegated this authority to DON education institution heads to determine individual employee salaries consistent with the DON Faculty Schedule capped at SES Level IV (or, with locality, SES Level III), and consistent with limitations in Title 5, U.S.C., § 5373. For calendar year 2021, the Level III cap is \$183,300; Level IV is \$172,500.
- Title 10, U.S.C., Chapters 853, 855, and 871 authorize SECNAV to employ civilians as professors, instructors, and lecturers at DON education institutions.
 - Title 10 U.S.C. § 8452 authorizes SECNAV to employ as many civilians as professors, instructors, and lecturers at USNA as he considers necessary, prescribe their compensation, hours, tours of duty, levels of premium pay, and compensatory time.
 - Title 10 U.S.C., § 8544 authorizes SECNAV to employ as many NPS civilians as necessary to serve under the direction of the NPS President as senior professors, professors, associate professors, assistant professors, and instructors, and to prescribe their compensation.
- Title 10 U.S.C., § 8748 authorizes SECNAV to employ as many NWC and MCU civilians as professors, instructors, and lecturers as necessary, and to prescribe their compensation. Changes to these statutes regarding USNA faculty pay may also affect other DON and Department of Defense education institutions.

**The Honorable Derek Kilmer
Appropriations Committee, Subcommittee for Defense
Questions for the Record
Workforce Development and Department of Defense – Panel II**

Question One:

Background: Secretary Cisneros: In Seattle we have a dynamic ecosystem of testing, R&D and deployment of augmented reality technologies. Alternative Reality (AR) and Virtual Reality (VR) provide remarkable capabilities and offer users numerous advantages for training and workforce development. Workers, particularly front line and maintenance workers can use AR to test and hone their skills -- often hands free -- which is important.

Question: What are all the current uses for augmented reality for training within the DOD?

Response: The use of AR/VR by the Military Services is a rapidly emerging effort. There are a number of both fielded and prototyping AR/VR efforts ongoing to meet operational requirements and maximize warfighter impact.

A few of these efforts are worth highlighting. Two Army programs worth highlighting are the Integrated Visual Augmentation System and the Close Combat Tactical Trainer (CCTT), designed to train infantry, armor, and mechanized infantry crews. The Navy is using AR/VR to simulate flight deck operations inside the mobile Carrier-Advanced Reconfigurable Training System (C-ARTS). The Air Force is incorporating AR/VR in the Pilot Training Next program and experimenting with the technology in an aircraft maintenance program called Maintenance/Member Operations Training Augmented Reality. Both will provide valuable insight on this technology along with how best to incorporate AR/VR in the Air Forces' training. Finally, the Department is conducting 5G network AR/VR experimentation on company and light brigade force sizes to increase training realism through Live, Virtual and Constructive training enhancements.

Is there a full strategy to use these technologies for training? If so can you share a copy?

Response: The Department is implementing the Joint Operational Training Infrastructure (JOTI) Strategy, a 10-year plan to modernize and field a DoD-wide training capability providing realistic, high-end, interoperable, and multi-domain training. The unclassified strategy is attached.

Finally, how is AR technology being utilized to improve readiness – reduce training times and improve capability?

Response: The Department is currently using and will continue to develop AR/VR technology in training and readiness analysis. Additionally, AR/VR provides the training community the ability to conduct training in conditions not easily replicated in the live domain. The Army's CCTT, and the Navy's AR/VR C-ARTS are examples of systems that

are creating better trained forces. The future benefit of AR/VR is quickly preparing the training audience toward complex training tasks. Our work in AR/VR development in immersive training environments has demonstrated AR/VR significantly enhances small unit After Action Review.

The Honorable Tom Cole
Appropriations Committee, Subcommittee for Defense
Questions for the Record
Workforce Development and Department of Defense – Panel II

Panel 2:

Computer science/engineering and cybersecurity workforce

Witness(s) being Asked (if Multiple): Under Secretary Jones

Question One: I want to follow up my questions to panel one about the cyber and computer science workforce in particular.

I also serve as the Ranking Member of the Labor and Education Appropriations Subcommittee. At a hearing earlier this year, I asked Secretary Walsh about the cyber, computer science, and engineering workforce shortages and ways the Department of Labor might potentially be able to support DoD and/or the Air Force to meet these needs. As the department with primary responsibility for establishing and conducting federally-funded workforce training programs, it seems natural and efficient for the two departments to work together on this. DOL also receives billions of dollars to support targeted workforce training each year, some of which is held at the discretion of the Secretary to target for high-demand job training efforts or other important national training needs in the workforce.

Would you find it beneficial to work with the Department of Labor and/or the Department of Education to establish a pilot or demonstration training program to support and enhance cyber and computer science skills development particularly tailored to the specific needs of the Air Force or DoD at large?

Answer: DAF currently has a robust civilian entry-level training and development and scholarship for service programs designed to attract men and women to civilian careers with the Air Force and the Space Force. These formalized entry-level training and development programs recruit and select high-caliber candidates with management potential and train them to become competent, effective, and productive employees in approximately 20 career fields.

However, we do agree that there could be great benefit to inter-agency partnerships in development and training. To that end, please note that the Department of Defense (DoD) has been participating as a lead member of the President's re-established National Security Workforce Interagency Working Group. That working group consists of several Federal agencies with national security-related missions who that have been tasked to work collaboratively on a variety of goals in support of reinvigorating the National Security Workforce, to include development of strategies to recruit and retain technical and other specialized talent. Since the interagency working group's reestablishment, DAF has been actively engaged with supporting DoD's participation in that forum. The forum creates a unique opportunity for DAF to exchange information with other Federal agencies about

best practices, lessons learned and strategies for success for a variety of recruitment needs within the National Security Workforce – to include harder to fill positions in technology professions. DAF continues to participate in the effort, and we look forward to learning about and – where appropriate – leveraging the insights we learn from other Federal agencies.

Question Two: Can you share with us some of the potential benefits of such a dedicated, Air Force-guided training initiative; the interagency partnership approach itself; any potential challenges or administrative hurdles; and any special considerations that might be necessary to tailor a pilot program for this effort?

Answer: DAF has several ongoing programs and initiatives in the recruitment and hiring of new talent for science, technology, engineering, and mathematics (STEM); cyber; mission-critical specialties. For example, the DAF has Secretary of the Air Force (SECAF) Initiative - Premier College Intern Program (PCIP) that directed an increase in college summer interns to provide “ready to place” graduates with hands-on experience with cutting edge projects/technologies, improve hiring timeliness, increase diversity, and ultimately allow DAF to lead the way with prime college talent in our civilian workforce before our competitors. Workforce development and training programs would enhance the opportunities for the private sector to be competitive for federal employment. The agency may face challenges as some internships require a competitive process and the application of veteran’s preference. This may result in the inability for agencies to capture talent and be less competitive with the private industry.

Question Three: To what extent have (or could) workplace flexibilities like flexible work periods, remote work, etc., similar to those used by most employers during the COVID pandemic, been helpful in maintaining or attracting cyber and other computing specialists in your civilian workforces?

Answer: The COVID-19 pandemic required DAF to quickly adapt many of our on-site based missions to telework and remote-work based platforms. While the transition was unexpected, it proved to be a net positive for a variety of different reasons. First, it had the effect of geographically opening up our talent pools for a number of different career fields, including highly competitive fields like cyber and computing functions. Second, it has also allowed DAF to meaningfully offer current employees workplace flexibilities that afford better work-life balance. The intent is for these flexibilities to enhance our ability to retain the talent we need. Finally, it has allowed us to advance our use of workplace technologies and efficiency tools, and expanded the reach of our virtual learning and training environments.

Aging Machinist Workforce:

Question Four: I have been very proud of the Air Force through the COVID period as depot maintenance activities continued successfully with hardly a blip. That’s a testament to the leadership at every level and certainly to the many men and women who serve as maintainers,

machinists, and related specialties. This is another area that had struggled with workforce shortages in the last several years. In talking with folks at Tinker, I know significant challenges remain as machinists and many very highly-skilled and very experienced touch labor specialists are collectively aging.

As increasingly large waves of these valuable employees approach retirement, how can the Air Force mitigate these losses?

Enhanced technology is very important and makes a difference, but there will always be a need for high-skilled human engagement and know-how. How can we support you in preparing for the challenge of filling all these coming holes?

Answer: DAF has developed candidate pools in the various Federal Wage System series to maintain manning levels. Partnerships have been established with Career Technology Centers to establish pipelines for Airframe and Power plant mechanics as well as sheet metal workers. For example, DAF Civilian Personnel Offices at various installations are mitigating employee losses by coordinating and collaborating with local educational institutions (Vocational/Technical Schools, Community Colleges, Colleges, and Universities) to develop training programs that will assist in recruiting, retaining, and re-training civilian employees serving as maintainers, machinists, and other related specialists. Outreach has included:

- Increasing awareness of the installation's current and anticipated available positions and the application process among students, counselors, and educational staff;
- Identifying professional staff to come to the installation to train/re-train civilian employees;
- Collaborating with educational staff to develop a curriculum for new training that can be taught either on the installation, as one course or a series of courses at the educational institution, virtually or as a blended virtual/in-person training, or as a train-the-trainer course that would allow selected civilian employees to be trained at or by the educational institution and then return to the installation to train the civilian workforce;
- Identifying computer-based training that the DAF has already contracted for use by the civilian workforce; and/or
- Arranging for civilians to participate in the appropriate military training when both are doing the same job(s).

These recruiting efforts help keep manning levels on track; however, experience levels do continue to drop with each retirement. Training methods have proven successful to ensure quick transition times, although nothing replaces experience except time on the job. These current methods must stay in place to consistently recruit and hire quality individuals to replace the aging workforce over the course of time.

While the challenge of retaining the experienced journeyman needed in the competitive Aerospace industry remains, DAF is preparing to expand the Direct Hiring Authority for both the Defense Industrial Base and Major Range and Test Facilities Base. The NDAA

FY2021 provided DoD the temporary authority to immediately appoint retired members of the Armed Forces to positions in the DoD. DAF policy for both of these actions should be implemented by the end of the calendar year and will speed hiring at the Defense Industrial Bases. This temporary authority to immediately appoint retired military will greatly benefit several Federal Work System series as we seek these critical skillsets from our retired Airman.

Impacts of COVID vaccine mandates

Witness(s) being Asked (if Multiple): Under Secretary Cisneros

Question One: Under Secretary Cisneros, I also want to ask about another serious pending issue stemming from COVID, the impact of the vaccine mandate on government employees and on industry suppliers. While I believe vaccination is effective, protects individual and collective health, and is important for our national economic well-being, I worry about how well thought out the Administration's employee termination plans are and about collateral damage. I have been hearing anecdotally that some suppliers expect to lose up to an eighth or even a quarter of their program workforces as a direct result of the federal mandate. What projections does DoD have about the expected number of workers to resign or be terminated under this mandate? Do you have insights on total numbers, on disproportionately-affected geographic areas or job sectors within DoD, and so forth? Please share the information available and upon which you calculated the impact of the mandate.

Response: The number of workers who may resign or may be terminated as a result of noncompliance with the vaccination mandate is unknown at this time. However, the Department anticipates that individuals will choose vaccination in lieu of exiting the civilian and contractor workforce when provided factual information about the benefits of the COVID-19 vaccines. We anticipate that data regarding compliance with the vaccination mandate will be available for assessment in early calendar year 2022.

Question two: How will those additional workforce reductions affect readiness?

Response: The number of workers who may resign or may be terminated as a result of noncompliance with the vaccination mandate is unknown at this time. However, the Department anticipates that individuals will choose vaccination in lieu of exiting the civilian and contractor workforce when provided factual information about the benefits of the COVID-19 vaccines. We anticipate that data regarding compliance with the vaccination mandate will be available for assessment in early calendar year 2022.

Question three: Of course not only national security will be impacted. I am deeply concerned about the welfare of these potentially up to thousands of workers and their families. At what point is the treatment worse than the disease so to speak? Is there a point at which the impact on people and on national security is worse through losing valuable employees than the risk of a COVID outbreak within a workplace where a high percentage of employees is fully vaccinated and all are wearing face coverings?

Response: Vaccination against coronavirus disease 2019 (COVID-19) is necessary to protect the health and safety of DoD civilian employees and those with whom they interact. There is a risk to national security due to illness or death of the unvaccinated employees themselves. The Centers for Disease Control and Prevention data indicates that the unvaccinated are 12 times more likely to be hospitalized than the vaccinated. Moreover, the unvaccinated serve as a potential source of disease propagation within the workplace, including to vaccinated employees through breakthrough infections.

Question four: What information does DoD have on the number of government facilities and the number of manufacturing plants in the defense supply chain that have suffered significant COVID outbreaks in 2021? How many employees were affected?

Response: Like other manufacturing and industrial operations, the Department's Organic Industrial Base (OIB) had to confront and adapt to the effects of the COVID-19 pandemic. Throughout the pandemic, the Department has been tracking the operational status of its OIB facilities. Despite the impacts of COVID-19, the Department was able to mitigate effects to the production schedule by surging workforce through overtime, adding additional shifts, and augmenting of workforce through the Military Services' Reserve components. These actions have allowed the OIB to keep the workforce safe while maintaining a high level of operation to help support warfighter readiness.

Question five: What outcomes are expected with respect to liability? Some workers are already quitting in response to the mandate, but, upon the deadline, others will have to be fired. Will liability protection be extended to private employers that are forced to enforce the mandate by terminating employees once the deadlines arrive?

Response: The contractor is responsible for meeting the terms of the contract, to include the COVID-19 vaccination requirements. When the contractor accepts the vaccination requirement for inclusion in their contract, they should also identify any implementation challenges that they foresee. The contractor can then propose, and the contracting officer can consider, changes to contract price or schedule, if warranted. However, as noted in Section 1 of Executive Order 14042, Ensuring Adequate COVID Safety Protocols for Federal Contractors, the vaccine mandate will decrease the spread of COVID-19, which will decrease worker absence, reduce labor costs, and improve the efficiency of contractors and subcontractors. These benefits are expected to, at least partially, offset any negative effects of enforcing the requirement that contractor employees be vaccinated.

Question six: Can you tell us about your expectations with respect to other impacts on the industrial base? What programmatic cost growth is projected due to delays and disruptions and further impacts to national security supply chains? Was this analyzed before issuing the mandate?

Response: DoD recognizes that Executive Order 14042 and its COVID-19 vaccination requirements for contractor personnel can incentivize vaccinations, which will reduce the spread of COVID-19 and save lives.

DoD continues to monitor EO 14042's impact on the Defense Industrial Base and, in situations where a DIB company may need additional time to comply with the Executive Order, Agency Heads have the authority to approve a 60-day extension to the January 18, 2022 vaccination deadline. DoD Components will judiciously use 60-day extension to the COVID-19 vaccination requirement, in accordance with Safer Federal Workforce Task Force guidance, as deemed appropriate.

Small-scale protest demonstrations and walkouts have been observed, but there have been no major disruptions to production at this time. DoD will continue to keep the Office of Management and Budget apprised of challenges to implementing the vaccine requirement; specifically, those that the Department assess will or could impact national security.

Question seven: What mitigating measures will be taken by the Department? If the mandate is a non-negotiable provision being inserted into contracts with industry, will the government compensate industry for the employee losses or for the increased supply costs and shortages and the high costs of seeking and retraining new employees?

Response: The Department has directed our contracting officers to add the vaccination requirement to existing contracts bilaterally. As part of the bi-lateral process, contracting officers may consider granting equitable adjustments based on the cost of implementation of the vaccine requirements. Contracting officers will consider each request for equitable adjustment on its merits and resolve the request in accordance with existing regulatory and policy requirements.

Question eight: Is the Department firmly settled on mass employee termination as the best course of action, given the broad range of additional workforce challenges we have discussed in today's hearing?

Response: While the Department is aware of the possibility that employees may choose to leave the Federal workforce in lieu of becoming vaccinated, our primary concern revolves around the health and safety of all DoD personnel and the public whom they serve. The Department will provide counseling and education on the benefits of vaccination to those employees who may be vaccine hesitant. We will comply with federal policy that is intended to provide a safe and healthy work environment in which our employees can perform their national security responsibilities without fear.

Question nine: What advice can you give for those individual employees pursuing exemptions due to personal health circumstances, faith stipulations, or other designated circumstances? My office is receiving many calls and questions about this issue and the lack of articulated, specific processes to pursue mandate exemptions for their particular places of work. Some feel they do not have specific instructions and worry about how they will know if or when their exemption is formally accepted. How and how soon will employees know they have qualified for exemptions? Will it be in time to react accordingly before the deadline? Will their terminations be processed as "reductions in force" or as terminations with cause, which will impact their qualification for unemployment compensation?

Response: On October 29, 2021, the Department published Force Health Protection Guidance (Supplement 23) Revision 2, Department of Defense Guidance for Coronavirus Disease 2019 Vaccination Attestation, Screening Testing, and Vaccination Verification, which includes specific instructions on requesting exemptions. DoD civilian employees may request an exemption on the basis of a medical condition or circumstance or a sincerely held religious belief, practice or observance. Exemptions will be granted in limited circumstances and only where legally required.

DoD civilian employees who refuse to be vaccinated, or to provide proof of vaccination, are subject to disciplinary measures, up to and including removal from Federal service, unless the DoD civilian employee has received an exemption or the DoD civilian employee's timely request for an exemption is pending a decision. Discipline for failure to meet the COVID-19 vaccination requirement will not be initiated against a DoD civilian employee while a timely request for a medical or religious exemption from the COVID-19 vaccination requirement is pending determination.

In general, progressive disciplinary/enforcement actions include, but are not limited to, a 5-calendar-day period of counseling and education; a short suspension without pay, generally 14 calendar days or less (except for Senior Excepted Service members), with an appropriate notice period; and removal from Federal service for failing to follow a direct order.

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Dec 28, 2021

Department of Defense
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The Honorable Robert B. Aderholt
Appropriations Committee, Subcommittee for Defense
Questions for the Record
Workforce Development and the Department of Defense – Panel II

Panel 2:

Question One: Secretary Cisneros, in your opening statement, you said in summary, that no matter what is next in the modernization effort, it will all begin with how we recruit. I think a lot of my colleagues are concerned with the shrinking pool of citizens who can qualify for military service and have found the picture of future recruitment is drawn differently depending on who we ask.

(1) Considering 71% of Americans cannot qualify for military service, what does the future of recruitment look like?

Response: We expect the recruiting environment to remain challenging for the foreseeable future. Today, the majority of youth and their influencers are disconnected from our military. The declining veteran population and shrinking military footprint has contributed to a market that is unfamiliar with military service, resulting in an overreliance on military stereotypes. Over the last decade we have seen a sharp decline in positive perceptions of military service and we must work harder to get out the correct information. To overcome these recruiting challenges, we must continue to inform and educate both prospective recruits, and also those who have influence on their life decisions. We believe if we are able to get out the right message, and are able to explain the opportunities and benefits of military service, that we will see more high-quality youth interested in serving.

(2) Do you see a smaller active-duty force and a larger civilian workforce within the DOD?

Response: Military force structure is determined by the Military Departments and Military Services pursuant to overarching guidance, such as the National Defense Strategy, and their operational planning requirements. The Military Services are constantly exploring methods to continue to project power and meet operational needs while maintaining an efficient and effective force. Increasingly, maintaining the lethality and readiness of the military requires realigning military personnel to perform different or expanded operational capabilities and shifting support functions to the civilian workforce. Any such force structure decisions, however, are informed by a continuous, iterative process at the Military Service level that is intended to maximize readiness and lethality while maintaining efficiency and effectiveness.

(3) What is the DOD doing now to compete for talent that might be drawn to the larger corporations that pay more?

Response: The Department and its Military Services use a myriad of tailored retention bonuses and non-monetary incentives as tools to incentivize the retention of Service

members who possess the skills that are attractive to the larger corporations which can offer more pay for these skills. Examples of these incentives include: Special and incentive (S&I) pay, Critical Skills Retention Bonus / Selective Reenlistment Bonus, One Year Early Reenlistment (U.S. Marine Corps), Meritorious Advancement Program and Advancement-to-Position Program (U.S. Navy), Career Intermission Program (CIP), Assignment stabilizations and High Year of Tenure (HYT) adjustments. In addition, the Department continuously evaluates the adequacy of military pay and benefits to ensure we are attracting and retaining the best of our country's talent for our Armed Forces.

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