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THE CURRENT READINESS OF THE JOINT FORCE

HEARING

BEFORE THE

SUBCOMMITTEE ON READINESS AND MANAGEMENT SUPPORT

OF THE

COMMITTEE ON ARMED SERVICES
UNITED STATES SENATE

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FIRST SESSION

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WEDNESDAY, MARCH 12, 2025

UNITED STATES SENATE,
SUBCOMMITTEE ON READINESS AND
MANAGEMENT SUPPORT,
COMMITTEE ON ARMED SERVICES,
Washington, DC.

The Subcommittee met, pursuant to notice, at 9:31 a.m. in room SD–G50, Dirksen Senate Office Building, Senator Dan Sullivan (Chairman of the Subcommittee) presiding.

Committee Members present: Senators Sullivan, Wicker, Scott, Schmitt, Sheehy, Hirono, and Kaine.

OPENING STATEMENT OF SENATOR DAN SULLIVAN

Senator SULLIVAN. This hearing will come to order.

The Readiness Subcommittee meets today to receive the testimony on the current readiness of the United States Armed Forces.

I deeply appreciate our witnesses, our esteemed witnesses from our military services. This is a impressive photo right here of all five services and our excellent work from the Government Accountability Office by Diana Maurer.

This is one of the most important hearings certainly this Committee undertakes all year. In my view, it is one of the most important hearings in the Senate for the year because there are very few other issues more important than the readiness of our United States military.

I look forward to the valuable testimony of the witnesses as it will pertain to their services' readiness. I hope we can have a really good, candid discussion.

We are living in a very dangerous world where our adversaries can and regularly do contest us across the globe and we must remain vigilant in our pursuit of balancing readiness, modernization, and training with our global commitments.

In my view, for the last 4 years we have taken a holiday from history with the Biden administration's focus on issues in the military that had nothing to do with readiness.

The list is long, climate change over ship building, transgender surgery for Active Duty troops, Diversity, Equity, Inclusion (DEI), a lack of focus on war fighting and lethality and defeating our enemies.

I appreciate Secretary Hegseth's three priorities: restoring the warrior ethos, rebuilding our military, and reestablishing our deterrence.

Many of you know, and I have talked to all of you about this, I am a big fan of the book by T. R. Fehrenbach "This Kind of War," which marines and soldiers all read, and it is about the Korean War and how in 1945 we had the most lethal military in world history and 5 years later in 1950 the United States military had a hard time stopping and defeating a peasant army from North Korea, and thousands of American troops died in the process because a lack of leadership from our civilian and uniformed military.

This must never happen again. There must never be another Task Force Smith that we saw in the Korean War.

My view is we have a moral obligation to prepare for any future conflict beginning with the realization that unlike any previous conflict our servicemembers will be at risk from threats well before they reach foreign soil, airspace, or waters.

The world has changed dramatically as it pertains to our Homeland as well. We can no longer consider ourselves safe based solely on the tyranny of distance from nations and actors that would do us harm.

One of the things that we are working on in this Congress and this Committee in conjunction with the President is his Iron Dome, now Golden Dome, legislation of mine with Senator Cramer we hope to make bipartisan in this Committee to bolstering our Homeland defense.

Suffice to say the world is a dangerous place and the facts demand a response from not just the uniformed personnel sitting before us and again, I respect the service, decades and decades of military service from all of you, but from Congress as well.

Let us look at a few facts. In the last 4 years have done to our militaries provided by the military services and GAO the Army has done an outstanding job working to increase recruiting but there remains significant operational demands and increasing pressures on an already under strength force with units being manned at less than 80 percent.

Sixteen of the Navy's 32 amphibious warfare ships are in unsatisfactory condition and the Air Force of today is very different from what we saw during the global war on terror.

Yes, we have more capable aircraft and yet the KC–46 and KC–135 tanker fleets sits at an aircraft availability rate of 52 percent and 57 percent respectively versus 66 percent during the entirety of the global war on terror.

While modernization will help improve these figures at what cost will that come in terms of readiness and training? These are the key issues that so many of you as our leaders in the military have been focused on.

There are many other issues that GAO has raised and our members here will be raising, but I want to thank the witnesses in advance again for their exceptional service to our country and for their testimony today.

I look forward to that testimony and now I would like to turn it over to Ranking Member Senator Hirono.

STATEMENT OF SENATOR MAZIE K. HIRONO

Senator HIRONO. Thank you, Senator Chairman, Senator Sullivan, rather. Well, you have new responsibilities. [Laughter.]

Gentlemen, thank you for your dedicated service to our Nation and I thank the servicemembers and each of your respective branches as well.

Ms. Maurer, it is always great to have you back and to see you. The tireless work that you and your team deliver to Congress every year is instrumental to each National Defense Authorization Act (NDAA).

In your opening statements I ask that each of you briefly describe what impacts to readiness a full year continuing resolution (CR) would have.

For example, billions in military construction and family housing projects would not occur in a full CR. So please, for all three of you, I would like you to briefly go over what the impacts of a full CR may be, a year's CR.

Even without a full CR readiness challenges range from retaining a skilled civilian workforce, balancing modernization with legacy platform maintenance, and training to core missions.

Yet, while Congress provides ample resources to the Department of Defense (DOD) every year we still see delays in ship maintenance, cost overruns in military construction projects, and avoidable problems with family housing and barracks.

Each of you are doing the best you can. Readiness requires the consumption of dedicated resources, time, training, and equipment. Which is why deployments to the Southwest border, which are all for show mind you, are stripping precious time, focus, and resources away from our servicemembers.

In its request for assistance from DOD for fiscal year 2025 the Department of Homeland Security (DHS) acknowledged that tasks at the Southwest border require no specific military training skill set or specialty to perform Customs and Border Protection (CBP) duties.

Some of the DHS requests include operator level maintenance of CBP civilian vehicles, which can be found in the owner's manual of a Support Utility Vehicle (SUV).

Other requests include changing tires, windshield wipers, light bulbs, oil changes, stocking warehouses, data entry, administrative support, et cetera.

In 2019 DOD discontinued support like this because they found units were not performing core military functions and continuing to do so would adversely impact readiness and morale.

Yet, here we are again. Perhaps having elite warfighters from the 101st Mountain Division change oil in Chevy Tahoe or mechanized infantry of a Stryker Brigade combat team overseeing the stocking of civilian warehouses and data entry on the CBP computers are what Secretary Hegseth envisions when he talks about lethality.

But those nonmilitary roles do not sound like they contribute to restoring the warrior ethics and they certainly do not rebuild readiness.

These are slogans that Secretary Hegseth likes to throw out but the reality is our troops are being deployed to the Southwest border to do things which does nothing to contribute to readiness.

DOD has written a blank check, moreover, to DHS for its time, personnel, and resources. As it stands now DOD is electing to do

all of this on a nonreimbursable basis in an open ended timeline. Incredible.

We are not even 2 months into this Administration, yet here are some of the opportunity costs to date. Marines are missing the chance to train in a bilateral exercise with our allies and partners.

Army soldiers will miss a combat training center rotation. Air Force aircraft from the immediate response force and the Space Force are using limited resources to perform tactical surveillance, reconnaissance, and tracking programs for DHS and CBP.

Where will the readiness of our forces be 60 days from now and beyond?

During the first Trump administration it took units from the 101st Airborne Division a year to regain their readiness after being deployed to the border. We should learn from that mistake.

DOD is slow to respond to the requests for information to this committee, yet publishes nearly daily photo ops of troops on the border.

In the meantime, Immigration and Customs Enforcement agents are dressing up like they are in the military. Soldiers are performing data entry in uniform in the same room as CBP agents are processing migrants, and airmen are removing their name tags and unit patches when they transport migrants on military aircraft.

All of these actions erase the distinction between civilian and military personnel. Removing active duty forces from their units and core missions to perform support functions of law enforcement agencies does not contribute to lethality or war fighting.

Where is Secretary Hegseth's meritocracy when DHS and CBP asks DOD to do their jobs for them and foot the bill no less?

Not only does this Administration prioritize these deployments but claims with a straight face that ordering U.S. servicemembers to cover the jobs of DHS civilians has no impact on military readiness and resources.

This is delusional, dishonest, unbelievable. The choice to burn readiness to score imagined political points is dangerously misguided. It is a massive waste of time, resources, and personnel when border crossings are at an all-time low.

In closing, again, I wanted to thank the vice chiefs and Ms. Maurer for their service, for being here, for your hard work, insights and leadership, and I would really appreciate a frank discussion with you today.

Thank you very much, Mr. Chairman.

Senator SULLIVAN. Thank you, Senator Hirono. I appreciate your renewed found focus on readiness. I am just thrilled about that.

By the way, we have been sending troops to the border for decades. My first deployment as a United States Marine I came back from a WestPac 31st Marine Expedition Unit (MEU) deployment under President Clinton after being in the Taiwan Strait, and half my battalion immediately got sent to the border. This has been going on for quite some time and it is nothing new. But I appreciate your focus on——

Senator HIRONO. Mr. Chairman, I do not think it serves our purposes because you and I have worked together——

Senator SULLIVAN. Well, we are going to get into the——

Senator HIRONO.—for you to personally insult me, okay.

Senator SULLIVAN. I am not insulting you at all.

Senator HIRONO. Thank you.

Senator SULLIVAN. I am not insulting you. I am just glad you are focused on readiness.

Senator HIRONO. That is what it felt like.

Senator SULLIVAN. My Democrat colleagues and the Biden administration have not always been so focused but it is great that you guys are.

So with that, I would like to begin our testimony and, gentlemen, I am going to have to step out for a minute but I will be here for the whole hearing.

So, General Mingus, if you can begin, sir. Thank you very much. You will have 5 minutes and your extended written testimony can be submitted for the record.

Thank you, General.

STATEMENT OF GENERAL JAMES J. MINGUS, USA, VICE CHIEF OF STAFF OF THE ARMY, DEPARTMENT OF THE ARMY

General MINGUS. Thank you.

Chairman Sullivan, Ranking Member Hirono, and distinguished Members of the Subcommittee, thank you for the opportunity to address you today.

The Army stands ready to defend our Nation. Right now over 109,000 soldiers are deployed or forward stationed across 140 countries, executing missions that deter, defend and provide immediate response options.

Still, our adversaries are moving faster than we are. That is why we are reorganizing our formations, refining how we fight, and modernizing faster than ever pushing new capabilities into the force in months, not years.

Under transformation in contact (TIC), which I will talk about throughout, we are enhancing our tactical networks, rapidly fueling Unmanned Aircraft Systems (UAS)/counter UAS electronic warfare systems and increasing mobility across our formations.

In the last 9 months TiC delivered 11 new capabilities and technologies to war fighters across the 101st, the 25th, 10th Mountain, and 34th Infantry Divisions.

In fiscal years 2025 and 2026 we will expand this to TIC 2.0 and it will encompass all units within the 101st, 25th, 82d, 4th Infantry Division, and additionally it will extend to include additional armored and Stryker Brigade combat teams.

We will also scale to integrate three multi-domain task forces and further integrate Army National Guard units. Central to the Army modernization are command and control, integrated air and missile defense and long-range precision fires.

Next generation command and control (Next-Gen C2), will provide resilient data sharing and real time situational awareness, enabling war fighters to synchronize combat power across all domains.

We are also improving our layered air defenses, expanding Patriot formations, increasing short-range air defense battalions, and adding directed energy systems capable of countering most or more sophisticated UAS threats.

Additionally, the Army's long-range hypersonic weapon will soon be operational by the end of this year, adding unprecedented speed and range to our arsenal both for us and the Navy.

At the heart of those efforts is the health and effectiveness of our organic industrial base. We continue to execute our $18 billion, 15-year plan to modernize 23 depots, arsenals, and ammunition plants.

Newly established facilities in Lake City, Missouri and Mesquite, Texas are expanding 6.8 millimeter and 155 munition productions while for the first time in 40 years Trinitrotoluene (TNT) production is being reestablished in the United States to reduce reliance on foreign suppliers.

However, weapons and equipment do not define readiness, soldiers do. The Army is making targeted investments to ensure that they can focus on their mission, new barracks and construction, modernizing efforts, and replacing outdated housing.

Dining facilities are being updated to provide more flexible, nutritious options and the holistic health and fitness program (H2F), embeds experts directly into our units to ensure peak human performance.

Recruiting remains a priority. The Army exceeded its goal in fiscal year 2024 with over 55,000 new soldiers and we are targeting 61,000 this year, and we are currently 72.7 percent of that goal for this year, 44,358 as of this morning, which is 50 percent ahead of where we were this time last year.

I will end on budget. With no budget increases to offset inflation and reducing buying power the continual growth and the cost of paying allowances is crowding out the Army's ability to modernize its force or maintain its infrastructure.

The Army essentially has three levers to address top line shortfalls. End strength, readiness, and modernization. Our end strength is approximately 25,000 personnel less than the improved structure, resulting in undermanned formations and overtaxed high demand units such as Patriot battalions.

Additionally, the Army has had to slash its modernization budget by billions over the last few years. As a result, procurement is reduced to minimum sustainable rates, delaying fielding of new material to formations and research and development has been cut, slowing technological advances.

Ultimately, the Army can afford a large, ready, or modern force but with the current budget it cannot afford all three. Either we provide soldiers the capabilities needed to win or accept greater risks in other areas.

But whatever risk we accept now we will likely pay for it later, not in delayed projects or budget adjustments but in real-world battlefield consequences.

We need to invest in the things in training our soldiers need for the next fight, not the last fight.

Thank you.

[The prepared statement of General James J. Mingus follows:]

PREPARED STATEMENT BY GENERAL JAMES J. MINGUS

INTRODUCTION

Chairman Sullivan, Ranking Member Hirono, and distinguished Members of the Subcommittee, thank you for the opportunity to testify on the readiness of our Nation's Army. On behalf of the Secretary of the Army, Honorable Daniel Driscoll, and the Chief of Staff of the Army, General Randy George, we appreciate this Subcommittee's work in ensuring that the Army is not just resourced but fully prepared for the demands of today's missions and the uncertainty of what comes next.

DELIVERING COMBAT READY FORCES TODAY

The Army remains engaged worldwide, responding to immediate security challenges while modernizing to ensure long-term readiness. More than 109,000 soldiers across 140 countries support global operations, strengthen alliances, and maintain deterrence. At the same time, the Army is transforming its force to increase lethality, survivability, mobility, and operational reach. Investments in training, force posture, and modernization ensure readiness for both immediate and future demands.

Combat Training Centers provide the toughest and most realistic training outside of combat. Over the past year, rotations at the National Training Center, Joint Readiness Training Center, and Joint Pacific Multinational Readiness Center demonstrated improvements in battlefield agility, joint integration, and rapid decision making. Units are advancing their ability to employ long-range fires, electronic warfare, and counter-drone capabilities while operating seamlessly with Joint and coalition partners.

Every Active Component Brigade Combat Team (BCT) in the Army, except three Infantry BCTs supporting the Immediate Response Force, is scheduled to deploy in support of Combatant Command requirements. The Army is operating at full capacity to meet today's operational priorities. We remain fully committed to global operations, including Operations SPARTAN SHIELD and INHERENT RESOLVE, which focus on building partner nation capacity and counter-ISIS efforts.

In the Indo-Pacific, the Army is expanding its presence through Operation PATHWAYS, bolstering deterrence and interoperability with Allies and partners. Participation in exercises such as TALISMAN SABRE, SUPER GARUDA SHIELD, and BALIKATAN reinforces the Army's critical role in the region. These investments improve force positioning, sustainment, and warfighting capabilities in key areas, including long-range fires, air defense, deep sensing, and contested logistics. Forces stationed west of the International Date Line now include a rotational Multi-Domain Task Force with Mid-Range Capability and precision strike missiles, a Watercraft Company in Japan, and additional air defense capabilities in Guam.

In Europe, the Army is currently advancing deterrence through force presence, joint exercises, and infrastructure improvements. For the Joint Force, prepositioned stocks provide a strategic advantage in rapid response. Six European sites house a division-sized set of equipment with corps-level enablers, including two Armored Brigade Combat Teams, fires, air defense, sustainment, and medical units.

Sustaining high readiness requires continuous modernization and investment in the industrial base. The Organic Industrial Base Modernization Implementation Plan is a 15-year, $18 billion initiative upgrading 23 depots, arsenals, and ammunition plants. Since October 2023, $1.5 billion has been directed toward modernizing critical infrastructure. The fiscal year 2025 budget includes another $1.5 billion for further improvements, including a 450,000-square-foot ammunition production facility at Lake City Army Ammunition Plant and the first domestic TNT production facility since the 1980's, set for construction in Graham, Kentucky.

CONTINUOUS TRANSFORMATION: FROM CONCEPT TO CAPABILITY

The Army is moving quickly to adapt, field new capabilities, and restructure its formations to outpace our adversaries. Transforming in Contact (TIC) delivers results in cycles as short as 12 to 18 months, ensuring that forces are always evolving. In the past 9 months, TIC introduced 11 new capabilities to brigade combat teams from the 101st Airborne Division, 25th Infantry Division, 10th Mountain Division, and 34th Infantry Division. These units tested mobile and light brigade designs across multiple combat training center rotations, refining tactics, techniques, and procedures, and employing next-generation technologies to shape future Army formations.

This effort is expanding. In fiscal year 2025, TIC 2.0 will scale to drive transformation across all brigade combat teams and enablers in the 25th Infantry Division and 101st Airborne Division, as well as select Armored BCTs from 1st Cavalry

Division and 3d Infantry Division as well as Stryker BCTs formations from 2d Cavalry Regiment and 7th Infantry Division. It will also extend to all three Multi-Domain Task Forces. TIC 2.0 further integrates Army National Guard units, including the 38th Infantry Division, 138th Field Artillery Brigade, 76th Mobile Brigade Combat Team, and the 116th Light Brigade Combat Team. These new capabilities include, counter-UAS Detect and Defeat systems, Silent Tactical Energy Enhanced Dismount (STEED) technology, Infantry Squad Vehicles (ISV), and the Low Altitude Stalking and Strike Ordnance (LASSO) weapon system.

The Army is fielding TiC divisions with specialized C-sUAS equipment to detect, jam, and neutralize aerial threats from fixed sites and mobile platforms. In the Middle East, the Army is also integrating directed energy into its layered defense design, through High Energy Laser prototypes operating as palletized systems and hosted on its neuver Short-Range Air Defense (M–SHORAD) Stryker vehicles.

The fight for dominance in the electromagnetic spectrum is intensifying. The spectrum is saturated with adversary, commercial, partner, and U.S. military systems. To integrate capabilities into training and operations, the Army is fielding Terrestrial Layered System Manpacks to multiple brigade combat teams, enabling them to detect, intercept, and disrupt enemy command and control networks critical to ground maneuver forces. The goal is an agile, responsive electronic warfare capability that operates seamlessly across ground, air, maritime, cyber, and space domains.

Additionally, the Army continues developing Launched Effects (LE), a family of operationally consumable Uncrewed Aircraft Systems that are launched from both air and ground platforms to enhance the overall range of lethal and non-lethal effects. In July 2024, the Army enhanced LE by increasing payload capacity and adding modularity.

Success in these efforts depends on training forces to operate, maintain, and integrate these capabilities. Combat Training Centers have incorporated UAS, counter-UAS, and electronic warfare into large-scale exercises, exposing units to realistic battlefield scenarios. Home-station training equips leaders to coordinate airspace, sustain systems, and train personnel. Army Cyber Command is also conducting a radio frequency effects pilot to identify gaps and update training, policy, and force structure requirements. Pre-deployment training programs continue to refine unit skills, and the Joint C–sUAS University at Fort Sill, Oklahoma, is providing advanced instruction tailored to emerging threats.

TRANSFORMING OUR CAPABILITIES

The Army continues prioritizing capabilities that will define the future fight, prioritizing command and control, integrated air and missile defense, long-range precision fires, mobility, protection, and contested logistics. We are accelerating modernization, combining cutting edge technologies, and rapidly fielding capabilities at scale.

Command and Control: For the past two decades, the Army's command and control (C2) architecture centered around counterinsurgency and brigade combat teams as the primary maneuver force. That structure does not hold up against modern adversaries with advanced electronic warfare, long-range precision fires, and within contested communications environments. To address these challenges, the Army is changing how it commands and fights by shifting to more agile, survivable, and data-driven C2 networks. In August 2024, the Army started with C2 Fix to streamline tactical networks, reduce complexity, and enhance mobility by minimizing electromagnetic signatures and improving on-the-move communication.

While C2 Fix addresses immediate operational needs, Next Generation Command and Control (NGC2) seeks to create a more adaptable and modular network for future operations. This integrated network allows commanders to make faster decisions, minimize risks from long-range fires by adversaries, and lessen vulnerability to electronic and cyberattacks. NGC2 adopts a competitive, open architecture model that allows multiple vendors to contribute technology, ensuring continuous updates as lessons are learned and threats evolve. Central to NGC2 and the unified network architecture is a robust data and cloud backbone. In March 2025, the Army will execute Project Convergence—Capstone 5 to test NGC2 in realistic battlefield conditions and prepare for full-scale implementation.

Integrated Air and Missile Defense: Integrated Air and Missile Defense (IAMD) remains a critical priority for fiscal year 2025, and our investments reflect our commitment to developing a robust, layered defense system capable of addressing current and future challenges. Our air and missile defense forces are the most heavily deployed, with ongoing demand across multiple Combatant Commands. To enhance readiness, the Army plans to increase its air and missile defense capacity by adding

one M–SHORAD Battalion and three Division Air Defense Battalions by 4th quarter fiscal year 2025. Additionally, in line with TAA 25–29, the Army is implementing a series of force structure changes aimed at improving our ability to project power, protect critical assets, and maintain overmatch against potential adversaries. These changes include the establishment of nine Integrated Fire Protection Capability (IFPC) Battalions, a Patriot/IFPC Composite Battalion in Guam, and two additional Patriot Battalions.

Major modernization efforts within this portfolio focus on four critical systems: Integrated Air and Missile Defense Battle Command System (IBCS), Lower Tier Air and Missile Defense Sensor (LTAMDS), IFPC, and M–SHORAD. In fiscal year 2025, the Army is fielding the Integrated Battle Command System (IBCS) to three Patriot Battalions in Fort Bliss, Texas, Germany, and the Republic of Korea. These efforts will significantly increase our overall air and missile defense capabilities and enable operators to optimize the best sensor-effector option for engagements in the Indo-Pacific and other theaters of operation. In keeping with POTUS and the Department's priorities, we will also be supporting the research and development of Golden Dome in partnership with our sister Services and agencies.

Fires: The Army delivers advanced long-range strike capabilities to strengthen deterrence, enhance readiness, and support Joint Force operations in key regions. In December 2024, we conducted an end-to-end flight test of the Long-Range Hypersonic Weapon, launching a hypersonic missile using the Transporter Erector Launcher and a Battery Operation Center. With the successful flight test, the first combat-capable units will be operational by the end of 2025. To enhance long-range strike capabilities, the Army developed the Precision Strike Missile (PrSM), a next-generation surface-to-surface ballistic missile intended to engage critical targets on the battlefield under all weather conditions. We increased the production capacity for PrSM with plans to procure 400 missiles in fiscal year 2025.

The Army invested $755 million from the 2024 Ukraine supplemental to surge production of the Patriot Advanced Capability–3 Missile Segment Enhanced. Annual missile output is set to increase from 550 to 650 by fiscal year 2027, with production on track to reach 550 by the end of 2nd quarter fiscal year 2025. Additionally, the Mid-Range Capability system features a road-mobile precision fire weapon that can target locations over 2,000 kilometers away. Recently, a second battery deployed to the Indo-Pacific to support rotational forces, with three more batteries currently in production.

Mobility: The Army is modernizing its combat vehicle and aviation fleets to enhance lethality, mobility, and protection while developing next-generation capabilities. The Infantry Squad Vehicle (ISV) improves tactical mobility for Infantry BCTs, enabling medium-distance insertion operations with greater freedom of movement and action. In the 1st quarter fiscal year 2025, the Army fielded 136 ISVs to BCTs in the 10th Mountain Division and 25th Infantry Division, increasing their ability to maneuver rapidly across complex terrain. The Armored Multi-Purpose Vehicle (AMPV) replaces the M113 in Armored BCTs, improving survivability, power, and cooling. In fiscal year 2025, the Army will field 240 AMPVs with funding from the base budget and the 2024 Ukraine supplemental.

Aviation proficiency and safety remain top priorities, and the Army is taking immediate steps to mitigate risk while working to build and retain experience levels over the long term. A shortage of mid-career warrant officers has led to lower aircrew experience, prompting the Army to offer Aviation Bonuses to retain skilled, retirement-eligible pilots. Furthermore, disruptions in executing the fiscal year 2024 Flying Hour Program due to unpredictable funding, hindered the ability of commanders to fully conduct training. Active Component aviation is currently flying 4.3 percent below fiscal year 2025 projections, affecting readiness.

Protection: Through informed, iterative developments, we are consistently advancing our protective equipment to best protect soldiers under a variety of operational conditions with options to scale the protective system to match the threat while minimizing the soldier load. A lighter protective vest means greater mobility, faster movement, and increased lethality without sacrificing survivability. As soldier gear evolves, the Army is developing the Lightweight Small Arms Protective Insert (LSAPI), which uses advanced materials to provide the same level of protection at 30 percent less weight than the current Enhanced Small Arms Protective Insert (ESAPI) GEN III. The LSAPI is expected to be approved by the second quarter of fiscal year 2025.

Sustainment: Future conflicts will target logistical networks, cyber infrastructure, and key deployment hubs. The Army's ability to move supplies quickly is critical to sustaining combat power, but with 70 percent of sustainment formations in the Reserve Component, mobilizing logistics at scale remains a challenge, particularly without early warning.

To enhance sustainment operations, the Army is exploring various innovative solutions to provide options for combatant commanders. We are leasing commercial watercraft to rapidly increase readiness while also exploring long-term investments in autonomous systems. Additionally, we are utilizing the expertise of Army Materiel Command to 3–D print parts, which helps reduce our logistical tail. Furthermore, the Army is implementing the Disconnected Operations initiative, which integrates Predictive Logistics (PL) and Enterprise Business System-Convergence (EBS–C). EBS–C will consolidate logistics data into a single, authoritative system, improving accuracy, transparency, and auditability while ensuring that our forces remain mission-ready.

RECRUITING AND RETENTION

The Army is bringing in the right people, investing in their potential, and preparing them for the challenges ahead. The success of the fiscal year 2024 recruiting mission reflects this strategy, as the Army surpassed its goal of 55,000 accessions by bringing in 55,150 soldiers and maintaining a delayed entry pool (DEP) of 11K. That momentum continues into fiscal year 2025 with an increased mission of 61,000 new accessions and a Delayed Entry Program (DEP) target of at least 10K. Achieving these goals requires sustained effort, but the Army is building on a solid foundation. The successes of fiscal year 2024 and expectations for fiscal year 2025 stem from transformative efforts within the Recruiting Enterprise, involving improved recruiting processes, training, leadership, marketing, medical support at MEPS, and improvement toward Recruiter quality of life. Notably, the Future Soldier Prep Course, established in 2022, has enabled 33,560 trainees to overcome academic and fitness barriers and progress to basic training.

QUALITY OF LIFE INVESTMENTS

As operational demands grow more complex, maintaining human performance must remain a priority. For generations, soldiers have pushed their bodies and minds to the limit without the tools needed to sustain peak performance. The focus remained on treating injuries instead of preventing them and expected resilience without the integrated support systems to develop it. Holistic Health and Fitness (H2F) is changing that by integrating strength coaches, athletic trainers, physical and occupational therapists, dietitians, and program coordinators directly into units. This approach ensures that soldiers recovering from injuries rebuild strength under expert guidance and that young soldiers receive proper training from the start. Science-backed methods are replacing outdated fitness habits, significantly enhancing performance in combat and promoting long-term health.

H2F currently supports 55 percent of the force, with 71 brigades fully resourced by the end of fiscal year 2025. While this is progress, too many soldiers remain without access to these resources. The next phase adds 91 H2F teams to the Active Component and launches a 2-year pilot at four Army National Guard and two Army Reserve locations. This pilot will refine how to implement H2F for part-time formations, ensuring that soldiers outside the Active Component receive the same level of expertise.

Health and well-being extend beyond fitness. The conditions where soldiers live impact their quality of life, performance, and ability to focus on the mission. Barracks improvements remain a key priority, with over $2.1 billion allocated annually for military construction, sustainment, restoration, and modernization from 2026–2030. Every barracks type will receive full sustainment funding. In fiscal year 2024 alone, $1.092 billion went toward new construction and upgrades, creating 1,910 new bed spaces and improving nearly 7,500 existing ones.

Moreover, between 2020 and 2024, privatized housing providers invested over $1.3 billion to build 439 new homes and renovate more than 14,000 existing ones. In fiscal year 2024, the Army contributed $50 million each to Fort Eisenhower, GA, and Fort Leonard Wood, MO, supporting the construction of 76 new homes and 22 major renovations at Fort Eisenhower. A contract awarded in 2024 will add 75 homes at U.S. Army Garrison-Miami by Summer 2027, while 26 homes at Tobyhanna Army Depot are scheduled for demolition and replacement.

Providing high-quality food options is another essential step in improving soldier well-being. Traditional dining facilities no longer meet the total needs of today's force. Soldiers require flexible, nutritious dining options that fit their schedules and fuel performance. Over the past year, the Army expanded access to food kiosks, food trucks, and meal prep programs. More than one million meals were purchased from kiosks in fiscal year 2024, demonstrating a clear demand for accessible, high-quality dining options. Today, 26 food trucks and 23 kiosks operate on installations, with five additional kiosks scheduled to open by September 2025.

To further modernize dining, the Army is launching the Campus-Style Dining Venue pilot at Fort Bragg, North Carolina; Fort Stewart, Georgia; Fort Cavazos, Texas; Fort Drum, New York; and Fort Carson, Colorado. This model creates a more contemporary food service experience similar to what is available on university campuses. Soldiers will benefit from a wider variety of meal choices, healthier options, and greater flexibility in their dining experience. This initiative will also help the Army gather information on what, when, and where soldiers are eating, allowing the Department to tailor each program to better support the needs of every installation. By expanding food access, the Army enhances performance, accelerates recovery, and ensures soldiers receive the nutrition they need to perform their best.

CLOSING

A modern, capable force is not built in a single budget cycle. It takes years of sustained investment, careful planning, and a commitment to keeping pace with an evolving adversary. The Army is making deliberate choices now to ensure that when conflict emerges, Soldiers have the weapons, training, and support they need to win. Hypersonic missiles, unmanned systems, and advanced air defense are being fielded on schedule. Formations are being reorganized to fight smarter and sustain longer. Investments in barracks, housing, fitness, and nutrition are strengthening the foundation of readiness.

For several years, the Army has stretched the same budget over a growing list of requirements. We can prioritize, we can tighten, and we can innovate, but at some point, tradeoffs become losses. These are not abstract choices. Every dollar we allocate to maintaining force structure is a dollar we cannot invest in new capabilities. Every investment in modernization pulls resources away from training the force we have today. Readiness, our ability to fight and win tonight, must be balanced against the need to prepare for future conflicts. There is no perfect answer, and every decision carries risk.

We are taking a hard look at where we can streamline, consolidate, or step away from specific infrastructure, capabilities, and programs. Some of these choices are clear-cut. Others are difficult. Scaling down in one area may free up resources, but it can also limit our ability to respond to crises, surge forces, or sustain operations.

Our adversaries are not waiting for us to catch up and they are not making the same compromises we are. Our soldiers will always give everything they have. They will push through resource constraints, make do with less, and find ways to succeed because that is who they are. But we should not put them in that position. The Army will always adapt and find ways to win, but it is our responsibility to ensure that it is never a fair fight. Our soldiers should always have the best training, the best equipment, and the advantage in every battle.

This is about what kind of Army we want to put in combat. One that is postured to win or one that is constantly closing gaps. That decision is being made right now, and the consequences will last far beyond this year or the next.

Senator SULLIVAN. Thank you, General.

Admiral?

STATEMENT OF ADMIRAL JAMES W. KILBY, USN, VICE CHIEF OF NAVAL OPERATIONS, DEPARTMENT OF THE NAVY

Admiral KILBY. Chairman Sullivan, Ranking Member Hirono, Subcommittee Members, thank you for the opportunity to testify——

[Technical issue.]

Admiral KILBY.—of the United States around the world. Your oversight and funding help us to be ready when the Nation calls.

In the past year alone American sailors have defeated hundreds of drones, missiles, and carried out dozens of offensive strikes in the Red Sea and the eastern Mediterranean.

They have strengthened alliances and deterred aggression in the Western Pacific and they have used unmanned systems to counter the flow of illegal narcotics across the southern border.

In short——

[Technical issue.]

Admiral KILBY.—remains posture——

[Technical issue.]

Admiral KILBY.—resting and neither will we——

[Technical issue.]

Admiral KILBY.—to improve with urgency. I have spoken to several of you about a sustained focus on adapting the mindset, skill set, and tool set to drive meaningful process improvement. Consistent and predictable funding is foundational to our improvement efforts.

The Navy will need to make hard choices this year if we are operating under a full year continuing resolution.

[Technical issue.]

Admiral KILBY.—in this——

[Technical issue.]

Admiral KILBY.—will slow our progress to get weapons and equipment we need to modernize our fleet and we will also slow ship building including our amphibious warships.

With the Navy exceeding recruiting and retention goals last year and on track to do so again we will need additional funding to sustain our momentum.

Our priority remains our readiness accounts which are most vulnerable under a CR or sequestration. We are optimistic that Congress will grant us the flexibility to allocate funds to our top priorities.

Despite these challenges, your Navy will maintain ready platforms, people, and infrastructure. We set a goal to make 80 percent of our ships, submarines, and aircraft combat surge ready by January 1st, 2027.

To do that we are reducing maintenance delays and improving manning, training, modernization, and sustainment. We are seeing progress in the last year. We increased our surface ship depot maintenance from 41 percent on time completion to 68 percent.

Unfortunately, this progress is not consistent across all platforms. I am not satisfied with amphibious ship maintenance. Our Navy and Marine Corps operate as a lethal integrative force and we have work to do here.

To improve we are procuring spare parts earlier, refining, partnering, planning with industry partners, acquiring diesel engine repair kits, and building steam plant expertise.

Our second goal is recruiting and retention. The Navy is committed to attracting and developing Americans who can innovate, solve hard problems, and dominate in combat.

Thanks to process improvements, our targeted investments, we contracted over 40,000 sailors last year, the most since 2003. We are currently on pace to exceed our recruiting goals in 2025.

We are committed to improving quality of service. We reduced the wait list for child development centers from 3,400 children in 2024 to 2,500 as of January 31st, 2025.

We have reduced poor unaccompanied housing. We have reduced our pool of unaccompanied housing rooms rated as poor from 25 percent to 21 percent and will continue to reduce this through focusing investments.

We are focusing on the investment of critical infrastructure in the Indo-Pacific, targeting it to where it has our most impact on our war fighters.

The shipyard infrastructure optimization program is a once in a century opportunity for us to improve the effectiveness of our public yards. Through Single Integrated Operational Plan (SIOP) we have completed over 40 projects and invested $1 billion in getting ship maintenance completed on time.

The budget you are reviewing today includes an additional $6.3 billion for the next 40 projects. I am proud of the Navy's accomplishments in the past year. We still have work to do to ensure that we remain the world's most premier Navy for another 250 years.

Your leadership and support are critical to Navy readiness. On behalf of our sailors, civilians and families around the world, thank you. I look forward to your questions.

[The prepared statement of Admiral James W. Kilby follows:]

PREPARED STATEMENT BY ADMIRAL JAMES W. KILBY

INTRODUCTION

Chairman Sullivan, Ranking Member Hirono, distinguished Members of the Subcommittee on Readiness and Management Support, thank you for the opportunity to appear before you today to discuss the readiness of your Navy.

STRATEGIC ENVIRONMENT

For 250 years, your Navy has promoted and protected America's interests worldwide by manning, training, and equipping our forces to perform a wide range of missions, from seabed to space. We are strategically positioned to provide a rapid response to emerging crises, serve as an enduring presence to defend American interests, and decisively win wars. Whether responding to Houthi attacks on maritime shipping or deterring an invasion of Taiwan, we are maximizing our contributions to the Joint Force. In the past year, your support of Navy readiness has delivered returns worldwide.

In the Red Sea and the eastern Mediterranean, our ships, aircraft, and submarines are in combat alongside our Allies and partners. Your Navy has successfully defeated over 400 drones, cruise missiles, and ballistic missiles, and carried out dozens of offensive strikes against Houthi aggressors in Yemen. During the past 17 months, over 20 Navy ships have deployed to the U.S. Central Command area of responsibility, including four carrier strike groups and an amphibious ready group.

In the Indian Ocean, sailors assigned to the submarine tender USS *Emory S. Land* (AS 39) worked alongside their Royal Australian Navy counterparts to perform routine and emergent maintenance on the attack submarine USS *Hawaii* (SSN 776). This marked the first time Australian personnel performed maintenance on a nuclear-powered attack submarine under the auspices of AUKUS, a necessary step toward establishing Submarine Rotational Force—West, from which we will employ attack submarines, our most capable strike asset, within the Western Pacific.

In the Western Pacific, the USNS city of Bismarck (T–EPF 9) conducted Operation Pacific Partnership, enhancing regional interoperability, strengthening military-to-military engagements, and countering the influence of China in the Indo-Pacific. The Pacific Partnership series is Navy's largest annual multinational humanitarian assistance and disaster relief preparedness mission. It is one example of our efforts in the Indo-Pacific, where we've deployed 44 ships over the past 12 months—in addition to our forward deployed naval forces.

Throughout these operations, Navy's fleet of ballistic missile submarines conducted uninterrupted strategic deterrence patrols, providing a powerful and ever-present deterrent to any who would do us harm.

Since I last testified before the Subcommittee, we updated the Navy's strategic guidance, setting seven targets to enhance lethality and readiness by 2027. For today's hearing, I will focus on five of those targets: readying our platforms, recruiting and retaining talent, delivering our sailors a quality of service commensurate with their sacrifice, investing in warfighter competency, and restoring our critical infrastructure.

READY OUR PLATFORMS

Navy unequivocally advocates for a larger fleet. However, current threats will not wait for new platforms to be delivered. We must therefore generate more available ships, submarines, and aircraft from the fleet we have today. To do so, we are increasing the combat-surge readiness of our platforms by reducing maintenance delays and embracing novel approaches to manning, training, modernization, and sustainment. Our goal is to achieve and sustain an 80 percent combat-surge ready (CSR) posture. We began these efforts with naval aviation in 2018, improving the operational availability of tactical aircraft. We are now scaling our efforts across all aviation platforms, as well as in the surface and submarine communities.

CSR is a certification for air, surface, and submarine platforms to execute combat missions. It is distinct from Global Force Management, which provides forces in response to Combatant Commander demand, balanced with available supply. CSR-certified units meet minimum requirements for material condition, training, manning, and armament. To increase our combat surge readiness, we are reducing the number of platforms in depot maintenance through improved business and maintenance practices, as well as certifying training earlier in the force-generation cycle. Type Commanders have been designated as the single accountable officers to ensure their respective forces achieve 80 percent CSR. This accountability, along with the above reforms, has already resulted in a fleet-wide cultural shift toward aggressively prioritizing readiness.

To sustain a high operational tempo, we must maintain a robust inventory of spare parts. We cannot wait until missiles are in the air to replenish our stockrooms. With this philosophy, Navy is moving from a "just in time" model to "just in case," so that our sailors have parts on hand to keep their systems operational, lethal, and ready. Navy's budget for spare parts has increased by over 350 percent since fiscal year 2020. This critical funding ensures that our ships, submarines, and aircraft are prepared to respond to commander tasking or adversary action and are not sidelined by equipment casualties. Navy appreciates congressional support to improve the parts inventories that keep our warfighting platforms operational.

AVIATION

Navy's 11 aircraft carriers and associated carrier strike groups provide unmatched options for national leadership, from peacetime missions to full-scale combat operations. They can conduct lethal strikes from international waters, without coordination or approval from other countries.

In the last 2 years alone, carrier strike groups have rapidly redeployed to deter aggression against Israel, support contingency operations in the Eastern Mediterranean, defend shipping in the Red Sea, and conduct strikes in Yemen and Somalia. This capability deters adversaries, enhances security, and supports the free flow of commerce.

Achieving 80 percent CSR in the aviation community requires improved maintenance and training for both aircraft carriers and carrier air wings, which certify independently. Navy has improved the number of mission capable tactical jets and is scaling proven methods across all aircraft. Aircraft carrier availability remains the primary constraint for reaching 80 percent CSR in the aviation community. We are improving aircraft carrier availability through performance improvement in our public shipyards. Conducting maintenance early, prior to her Planned Incremental Availability, contributed to George H. W. Bush (CVN 77) completing that availability on-time and on-budget. Recent investments in our naval shipyards have focused on workforce expansion, workforce training, optimizing maintenance schedules, and implementing advanced planning and logistics management practices.

MAINTENANCE OF NUCLEAR-POWERED SHIPS AND SUBMARINES

Attack submarines are our most lethal conventional strike asset, and ballistic missile submarines are the most survivable leg of the nuclear triad. Taken together, the submarine force and our undersea capabilities remain our military's primary strategic advantage over China.

Production and maintenance delays are keeping our submarines in the shipyard and driving up costs. Navy is working closely with all stakeholders to drive innovation and target investments where they will yield the greatest results in the shortest time. We are improving our production and maintenance processes by embracing industry best practices such as outsourcing certain work, increasing material on hand prior to work commencing, and pushing project management authority as close as possible to the worker on the shop floor.

As part of our broader investment in the maritime industrial base, Navy is focused on improving the submarine industrial base across six lines of effort: workforce development, supplier development, shipbuilder infrastructure, strategic outsourcing, manufacturing technology, and government oversight. Since fiscal year 2018, Navy has budgeted for over 725 supplier development projects with more than 300 suppliers across 33 states to add capability, capacity, and resiliency to the supply chain. Navy has also invested in *Virginia*-class spare parts and has ordered contingency material to have on hand for inspection-based work. Those efforts are yielding results: Pearl Harbor Naval Shipyard completed both USS *Hawaii* (SSN 776) and USS *Minnesota* (SSN 783) availabilities on time, returning both submarines to the fleet in July 2024. Navy will continue to focus on planning and material until this becomes the standard.

Our four public shipyards—Norfolk Naval Shipyard, Portsmouth Naval Shipyard, Puget Sound Naval Shipyard, and Pearl Harbor Naval Shipyard—are vital to our effort to achieve 80 percent CSR submarines. I have visited each shipyard and seen the work being done by the 37,500 engineers, tradespeople, and support personnel who serve there. The workforce of our public shipyards is committed to improving the readiness of these critical assets, and Navy is committed to supporting their efforts through improved compensation and work environments. At Navy's request, DOD conducted a wage survey in the Norfolk Tidewater region to achieve pay parity between Norfolk Naval Shipyard and the surrounding private shipyards. The survey showed that in the early 1980's, new wage-grade workers earned four times the minimum wage. Now, those same workers earn approximately one and a half times the minimum wage. Navy has used these studies to make wages more competitive beginning in fiscal year 2024. We must continue to invest in shipyard infrastructure, expand and enhance the submarine industrial base, increase productivity, shorten maintenance timelines, and reduce our maintenance backlog to stay ahead of our adversaries and prepare our submarine force for the threats of tomorrow.

SURFACE SHIP READINESS

Surface combatants deliver strategic advantage by combining in a single platform advanced multi-mission capabilities such as integrated air and missile defense, conventional strike, and surface and undersea warfare to assert maritime dominance and project power. The versatility of our surface force deters adversaries globally and enables rapid, coordinated responses to emerging threats. Our ships must be prepared to engage the full spectrum of threats, from existing capabilities to emerging ballistic and hypersonic missiles. To maintain the readiness of these capable and adaptable platforms, the surface force continuously balances investments in near-term readiness with modernization to introduce the latest capabilities.

Navy surface ship depot maintenance has improved significantly, from 41 percent on-time completion in fiscal year 2023 to 68 percent in fiscal year 2024. The surface Navy concurrently reduced maintenance backlog, the accumulated "debt" of deferred maintenance, from $2.3 billion in fiscal year 2022 to $1.9 billion in fiscal year 2024. Furthermore, Navy was able to extend the service life for 12 destroyers and three cruisers based on improved material condition, maintenance processes, and Life Cycle Health Assessments.

Navy is improving the readiness of our surface fleet while simultaneously modernizing fleet capabilities to ensure that our naval forces are lethal and effective against both current and future threats. Installation of the Conventional Prompt Strike (CPS) hypersonic weapons system on DDG 1000 to increase its long-range strike lethality is an example of modernization for long term advantage. To increase capability in the near-term, Navy installed SEWIP Blk III, a next-generation non-kinetic anti-ship missile defense system, on USS *Pinckney* (DDG 91) during a scheduled maintenance period.

Navy fully supports our Marine Corps brethren. We must continue to improve the material readiness of the amphibious fleet. To that end, the fiscal year 2025 Shipbuilding Plan maintains the legally mandated inventory of 31 amphibious ships. In 2024, the Chief of Naval Operations and Commandant of the Marine Corps tasked Navy and Marine Corps to develop a comprehensive plan to improve the readiness of our amphibious warfare ships, and Navy is implementing this plan.

MUNITIONS READINESS

The $2.3 billion of munitions expenditures in the war in Ukraine, the Israel-Hamas conflict, and combat operations in the Red Sea highlight the urgent need to increase weapons production capacity, expand magazine depth, and improve capability. Although the Navy does not procure SM–3, we have employed them to great effect in the eastern Mediterranean. Navy appreciates the contingency funding pro-

vided by Congress, but many of our munitions inventories remain below the Total Munition Requirement today. Navy has increased munitions investments to more than $6.6 billion in the past 2 years to prepare for potential conflict with an advanced adversary. We are now procuring weapons at or near maximum rates, but industry is challenged to meet this increase in demand.

Navy is investing in industrial base capacity and must continue to do so, with congressional support, while also investing in the next generation of munitions to prepare for future conflict. Beginning in fiscal year 2023, we have invested to increase the production rate of SM–6 missiles. Navy's Energetics Comprehensive Modernization Plan will also revitalize our organic energetics industrial base using authorities for a Center for Technical Excellence and by forming public-private partnerships with both legacy companies and startups. In addition to partnering with companies focused on accelerating solid rocket motor production capacity, Navy's plan will expand by twofold production of organic energetics at the Navy facility in Indian Head, MD.

I urge Congress to continue to support Navy as we leverage acquisition authorities such as multi-year procurement, advance procurement, and other transaction authorities to reduce procurement cost and provide a stable demand signal to industry. Increases in the cost of labor and material are driving cost growth in Navy's munitions and their components. The cost of an SM–6, for example, has risen 50 percent per unit over the past 5 years. To grow weapons inventory in the near-term, Navy is recertifying aging rounds. When combined with new production, recertification is a cost-effective means to build inventory and get as much capability into theater as possible, as fast as possible.

In parallel with these initiatives, Navy is preparing for the next generation of munitions: from improvements to current designs like SM–6 and LRASM, to the development of new options with greater reach and lethality, like CPS. Navy is also investing in munitions like the Coyote and Roadrunner systems which provide effective layers of defense against unmanned aerial systems and lower the cost-per-kill.

CONTESTED LOGISTICS

The current strategic environment demands a naval logistics enterprise capable of assuring readiness and sustainment at speed and scale for the Joint Force. Navy is modernizing our logistics enterprise to be more agile, resilient, and capable of sustaining combat effectiveness in contested environments against peer adversaries. To address the challenges of refueling, rearming, and resupplying inside weapons engagement zones, we are investing in next generation logistics ships to augment the current combat logistics force and in new capabilities such as rearming at sea.

RECRUIT AND RETAIN TALENT

Our Navy builds great people, great leaders, and great teams to innovate, solve hard problems, and dominate in combat. Our sailors stand ready as a lethal fighting force to deter or confront any adversary.

After missing our fiscal year 2023 recruiting goal by approximately 7,000 sailors, we raised our goal for fiscal year 2024—and exceeded that goal by contracting 40,978 future sailors, the most since 2003. We achieved this improvement by implementing data informed processes throughout the recruiting enterprise. Navy established a Recruiting Operations Center to monitor data in real time, implemented the Future Sailor Preparatory Course to improve accession success, streamlined medical waiver reviews, increased the quality and number of recruiters, adjusted recruiting goal incentives, improved marketing processes, and identified and removed barriers to recruiter productivity. These changes are sustainable. As a result, Navy is on pace to exceed our fiscal year 2025 recruiting goal of 40,600. This performance, coupled with improved retention, will make progress toward our primary manning goal of 100 percent enlisted rating fill by the end of 2026 and will translate directly to reducing our gaps at sea.

We continue to explore innovative strategies to attract qualified, motivated individuals. Navy is maximizing its pool of recruits with the physical and academic Future Sailor Preparatory Courses, as well as by expanding our reach through partnerships and traditional and mixed media marketing. Increasing access has not lowered the standard—every recruit must complete the same training at boot camp and meet all qualifications for his or her assigned rating.

Navy is dedicated to retaining our most capable sailors; retention is a critical component of achieving our end-strength goals. To that end, we leverage monetary and non-monetary incentives, including Selective Reenlistment Bonuses, suspension of High Year Tenure Length of Service gates, the Retention Excellence Award and Best in Class program, and enhanced exit and milestone surveys which focus our

retention efforts. As a result, enlisted retention remains healthy. We exceeded our fiscal year 2024 retention benchmark forecasts in zone A (0 to 6 years), zone B (6 to 10 years), and zone C (10 to 14 years). Navy continues to meet or exceed its retention benchmark forecast for fiscal year 2025.

These efforts are improving manning in critical billets at sea and ashore, ensuring we have the right people in the right places to maintain our operational readiness. We regularly review compensation packages to ensure we remain competitive in a tight labor market, positioning the Navy as an employer of choice. The latest Department of Defense Quadrennial Review of Military Compensation highlights that our compensation package is strongly competitive with the civilian employers.

While officer retention remains a challenge in specific career fields, we appreciate the continued support of Congress in enabling our monetary retention incentives in areas such as Aviation, Explosive Ordnance Disposal, Surface Warfare, Submarine Warfare, Naval Special Warfare, and Health Professions Officers.

Ship manning is an essential element of operational readiness, but it also impacts job satisfaction and retention. Since 2015, Navy has increased the number of authorized billets on at-sea units, but at-sea manning has not kept pace with that growth. At the beginning of fiscal year 2025, Navy had a shortfall of sailors relative to at-sea billets. Our recruiting and retention efforts will drive progress toward our primary manning goal of 100 percent enlisted rating fill by the end of 2026. Gaps at sea have fallen from 15 percent to 13 percent, although this metric trails recruiting successes by the length of time it takes for new accessions to complete training and report to the fleet.

DELIVER QUALITY OF SERVICE

Quality of service (QoS) improves force readiness. Navy is committed to providing the QoS that our sailors deserve. Childcare capacity and housing quality are crucial, as they contribute directly to positive work environments for our sailors and their families.

The Navy provides high-quality childcare programs but has insufficient capacity, particularly in fleet concentration areas. Improvement requires a comprehensive approach including strategic staffing, new facilities, and leverage of community resources.

Enrollment in Navy childcare centers is up from 76 percent of total capacity at the start of fiscal year 2023 to 88 percent today, and staffing has grown from 75 percent of demand at the start of fiscal year 2023 to 87 percent today. The waitlist for Navy Child Development Centers (CDCs) has shrunk from 3,400 at the start of fiscal year 2024 to 2,500 as of January 31, 2025. Navy has also expanded the Military Child Care in Your Neighborhood program, which provides fee assistance for families that are geographically dispersed or face long waitlists for on-base care, from 6,500 spaces at the start of fiscal year 2024 to over 9,000 today.

To improve CDC staffing, Navy deployed 150 supplemental staff across our child and youth programs through a contract with Utah Tech University. This resource fills staffing shortfalls during peak summer and Permanent Change of Station seasons at both domestic and overseas locations. In order to attract quality candidates, Navy also expanded the staff childcare discount for Direct Care employees. Employee use of the discount increased from 22 percent in fiscal year 2023 to 32 percent by the end of fiscal year 2024.

We also owe our sailors quality housing, and too many of our barracks are in poor condition. At the end of fiscal year 2023, 25 percent of Navy Permanent Party Unaccompanied Housing (UH) bedrooms had a Building Condition Index (BCI) of 'poor.' We have driven this pool down to 21 percent as of the end of fiscal year 2024, but still have work to do. Our long-term strategy will recapitalize our facilities to eliminate 'poor' housing through focused investments and divestitures. Navy has increased its Restoration and Modernization investments to repair inadequate UH and is conducting a comprehensive review of UH to guide future investments.

INVEST IN WARFIGHTER COMPETENCY

Live training is often constrained by range space, spectrum limitations, threat replication challenges, and operational security. In order to build tactical proficiency independent of geographical location, Navy is establishing a reliable, realistic, relevant, and recordable Live Virtual Constructive (LVC)-enabled architecture to train all of our warfighters, whether deployed or pier-side. LVC training is the most viable and cost-effective means to prepare for operations in contested environments against high-end threats. Navy virtual constructive capabilities are already facilitating safe, efficient, and practical high-value training events.

The Navy Continuous Training Environment (NCTE) further enhances our LVC training capability by realistically replicating complex operational scenarios in a common, distributed setting. NCTE integrates live platforms and ranges with synthetic ranges at requisite security levels. This integration is crucial for simulating realistic adversary tactics and enhancing our force readiness.

Recent operational successes underscore the importance of LVC capabilities in all phases of training. In response to the latest combat developments, Navy acquisition commands and Warfighting Development Centers created advanced tactics, techniques, and procedures for countering unmanned threats. The Warfighting Development Centers then developed LVC scenarios to train deployed and pre-deployment forces on the new threats presented by the Houthis in the Red Sea.

These combined capabilities are essential not only for preparing sailors to counter unmanned threats, but also for maintaining their proficiency in high-end combat scenarios. The continuous development and integration of LVC technologies ensures that our naval forces remain ready to face any challenge.

CRITICAL INFRASTRUCTURE

The Navy sustains and projects maritime operations from its shore installations. After decades of underinvestment, these platforms need targeted funding to restore capability and capacity. Restoration and Modernization funding is key to revitalizing our degraded critical infrastructure. Navy cannot address all degraded facilities concurrently and is targeting investment in the infrastructure that is most impactful for our warfighters including facilities that support Nuclear Deterrence, Naval Operational Architecture, Unaccompanied Housing, Fitness Centers, and Shipyards.

INFRASTRUCTURE OPTIMIZATION PROGRAMS

The Shipyard Infrastructure Optimization Program (SIOP) is crucial for eliminating maintenance delays and supporting construction of new nuclear submarines and aircraft carriers. SIOP has completed 40 projects across four shipyards, an investment of over $1B. We have six dry dock construction projects currently underway. In addition to recapitalization, SIOP optimizes physical shipyard layout for efficiency and to align construction with warfighting requirements. Notably, dry docks at Puget Sound and Pearl Harbor Naval Shipyards are being upgraded to meet seismic resiliency criteria.

An additional 40 SIOP projects worth $6.3 billion are under contract. The Navy is taking an integrated approach to installation resiliency by emphasizing initiatives in energy-, water-, and cyber-resilience. SIOP projects improve operational efficiency and strengthen adaptability to emerging threats.

For aviation maintenance, the Fleet Readiness Centers (FRC) Infrastructure Optimization and Modernization Program (FIOP) follows a holistic investment strategy to integrate all infrastructure and equipment investments. FIOP optimizes maintenance, manufacturing, modification, repair, and overhaul infrastructure at naval aviation depots to ensure equipment readiness and improve material availability as fast as possible. Full congressional support for FIOP will help the Navy maintain our momentum.

CLOSING

We must achieve and sustain our readiness goals to deliver a lethal Navy capable of defending American interests around the world. To maximize the availability of our ships, submarines, and aircraft, we will continue to improve our maintenance practices. We will continue to recruit and retain talented, dedicated Americans. We will deliver the quality of service that our sailors and their families deserve. We will invest in our warfighters through innovative training, and we will restore our aging infrastructure. Consistent and predictable funding is foundational to meeting our readiness objectives, and budgetary instability creates a cascade of challenges. I look forward to working with you to support our sailors, civilians, and families.

Senator SULLIVAN. Thank you, Admiral.

General?

STATEMENT OF GENERAL CHRISTOPHER J. MAHONEY, USMC, ASSISTANT COMMANDANT OF THE MARINE CORPS, DEPARTMENT OF THE NAVY

General MAHONEY. Good morning, Chairman Sullivan, Ranking Member Hirono, Senator Kaine. Thanks for the opportunity to appear this morning.

I am honored to represent the Marine Corps and discuss our current warfighting readiness. Since my testimony last year, your Marine Corps has continued to progress and refine our force design implementation through a campaign of learning.

We are modernizing our force to meet the challenges of the modern battlefield. As directed by our commandant, we balance that modernization with our ability to respond to crises.

This balance ensures that over 32,000 marines forward postured and deployed are trained and ready to support the combatant commanders' competition campaign, deter global threats, and when necessary fight our Nation's battles.

Whether acting as the forward eyes and ears in the southwest islands or expanding maritime domain awareness in a unified High North and across the Baltic Sea or the defense support of civil authorities by constructing obstacles in intel analysis on the southern border, your marines are ready to operate in any clime and place, as our song says.

There remain external challenges, though, to our warfighting readiness. The most acute readiness detractors are the lack of amphibious ship availability, which has been brought up already by my shipmate, and the absence of organic littoral mobility to marry up with our MLR capabilities.

The gap in these capabilities creates significant risk and degrade force readiness across the competition spectrum toward conflict.

Yet, despite these challenges your Marine Corps remains ready. Our personnel, our maintenance, supply and training readiness remain high, just as all of you would expect.

In both recruiting and retention the Marine Corps made mission and exceeded expectations in fiscal year 2024, and you heard it here first. We will make our numbers this year and, in fact, we will be able to push contracts on the order of a thousand into the next fiscal year.

I remain completely humbled by the quality of our recruits and the marines we make fleet wide. I cannot say enough about the excellence and discipline of our recruiting force and continue to do what others say is not possible, making mission without lowering standards, which is something we will never do.

That discipline together with consistent funding remain key ingredients for a high State of readiness. Our unprecedented second unmodified audit opinion is evidence of that discipline. Our books are clean. Our books are open.

The Marine Corps is appreciative of the continued support from Congress and support for the commandant's priorities, which are creating and enduring total force readiness.

With your advocacy we will sustain our current future force readiness to maintain the honor of being the first to fight when called.

With your support for additional resources, we will restore the State of our infrastructure readiness in a manner consistent with your expectations as well as the expectations of our commandant.

Thank you for the opportunity to speak, and I look forward to your questions. Semper Fidelis.

[The prepared statement of General Christopher J. Mahoney follows:]

PREPARED STATEMENT BY GENERAL CHRISTOPHER J. MAHONEY

Chair, Ranking Member, and distinguished Members of the Subcommittee, I am thankful for the opportunity to report on the State of Marine Corps Readiness. We have accomplished much over the last 5 years to modernize the Marine Corps and improve its warfighting readiness. We are moving in the right direction but cannot slow down. In fact, we must go faster. The work of this Subcommittee is crucial to the continued success and readiness of the Marine Corps—its warfighting forces, its individual marines, and its families. I look forward to working with each Member over the coming year to ensure the continued readiness of your Marine Corps.

CMC Priorities in Support of Readiness

The Marine Corps' readiness is maintained through clear guidance, engaged and accountable leadership at every echelon, a ruthless focus of readiness, and predictable and adequate funding. The Commandant provided that clear guidance upon assuming office, which remains unchanged. Those priorities are: 1) Balance Crisis Response with Modernization Efforts; 2) Naval Integration and Organic Mobility; 3) Quality of Life; 4) Recruit, Make and Retain Marines; and 5) Maximize the Potential of our Reserves. These priorities inform all Marine Corps planning, including our budget. More importantly, they give us clear guidance and intent on what is necessary to ensure maximum warfighting readiness. Finally, the Commandant's priorities account for readiness across the board, from force design and warfighting to individual and unit training, personnel readiness, and our back-to-back unmodified audit opinions.

WARFIGHTING READINESS

The character of warfare has changed in a few short years, and the four disparate threat State actors, China, Russia, Iran, and North Korea, are colluding into a single, complex, and adaptive global threat system. At the tactical level, we are witnessing the effects of the mass proliferation of drones and littoral sea denial in the Black Sea. This creates a twofold challenge of making maneuver increasingly challenging while demonstrating the criticality of winning the reconnaissance and counter-reconnaissance contest. We are also relearning past lessons regarding the need for robust offensive and defensive electronic warfare capabilities across all tactical formations. At the operational level, we are witnessing the importance of possessing and maintaining a depth of magazine sufficient for protracted operations, and the rise of space as a critical warfare domain.

Warfighting Readiness Assessment

Your Marine Corps possesses the trained and ready forces necessary for crisis or contingency as identified by Operational Plans. We are ready to fulfill our 10 USC § 8063 requirements; ready to support our allies and partners in the East and South China Seas; ready to support the Republic of Korea on the Korean Peninsula; ready to combat Iran or its proxies globally; ready to fulfill our commitments in the High North alongside Norway, Sweden, and Finland; ready with the operational reach necessary to strike violent extremists; ready to support sea denial efforts; ready to seize and defend key maritime terrain; ready to support civil authorities along the southern border; and, ready to respond to crises in this hemisphere or anywhere else.

The Marine Corps balances readiness with two primary and competing metrics: sourcing day-to-day missions and modernizing to meet the demands of the future operating environment. Through modernization, our units are equipped with more advanced equipment and supplies, receive more robust individualized training, and participate in more collective training—much of which is force-on-force.

Marine aviation continues to see improvements in readiness as we retire older airframes, accelerate the acquisition of the CH–53K and fifth-generation F–35B/C, and fully employ our unmanned MQ–9 surveillance aircraft. Improvements in aircraft readiness from fiscal year 2019 to fiscal year 2024 have been realized thanks to sup-

port provided by this Subcommittee and the herculean efforts of our marine aviation maintainers.

We are innovating and adapting from lessons learned from the modern battlefields of Ukraine, Gaza, Lebanon, Red Sea, and our own exercises. We are innovating through experimentation with autonomous, low-profile technology to help us maneuver and sustain in a distributed environment. We are also innovating through the integration of automation and artificial intelligence in our fires and sustainment systems to respond faster and more accurately to the demands of the modern battlefield. But while technology has changed, the foundational elements of warfighting and lethality have not. We remain the world's most elite fighting force with the most proficient combined arms teams and best small unit leaders. The extraordinary quality of our marines remains our principal advantage.

Marine Forces Reserve

As the Marine Corps modernizes and operational tempo increases, the Marine Corps Reserve Component remains an integral part of the total Force. Marine Forces Reserve (MARFORRES) has increasingly activated units to provide operational relief to the Active Component (AC). In fiscal year 2024, support to the AC nearly doubled over fiscal year 2023 with 600 activations supporting Joint Force commanders in Southwest Asia, South America, Africa, Europe, and the Pacific. In fiscal year 2025, activations will more than double fiscal year 2024 levels, with nearly 1,500 Reserve marines, approximately 4 percent of the Reserve Component (RC), activating to support global force management commitments. Looking beyond fiscal year 2024 and fiscal year 2025, MARFORRES expects to continue to activate large combat formations such as infantry battalions, artillery batteries, and aviation squadrons, while simultaneously providing critical enabler support such as civil affairs experts, foreign advisors, and countless other specialty skill sets unique to the RC.

FORCE DESIGN

Force Design is the Marine Corps' enduring strategic initiative for pursuing new capabilities and concepts to ensure we remain the premier force. The Marine Corps has made significant progress in our formations, equipment, and concepts through the pillars of modernization, talent management, training and education, and logistics.

Marine Littoral Regiment: The foundation of our Force Design progress is our Marine Littoral Regiments (MLRs). MLRs are specialized units designed to fight and win in a modern peer fight with dispersed, task-organized operations that integrate advanced command, control, communications, computers, combat systems, intelligence, surveillance, and reconnaissance capabilities. These regiments enhance the ability to rapidly find, fix, track, target, engage, and assess threats, and are capable of maritime domain awareness and sea denial operations in support of maritime, joint, and combined operations.

The first MLR to stand up, 3d MLR, has achieved Initial Operational Capability with the activation of all its subordinate units. They are equipped with modern capabilities—both for sensing and lethality—including our first six Navy-Marine Corps Expeditionary Ship Interdiction System launchers. In 2024, the 3d MLR participated in exercises such as BALIKATAN, Archipelagic Coastal Defense, and Marine Aviation Support Activity in the Philippines, validating its capacity to operate in dispersed maritime environments alongside allies. Similarly, 12th MLR, based in Okinawa, Japan, has activated its Littoral Logistics Battalion and plans to establish its Littoral Anti-Air Battalion and Littoral Combat Team by the end of fiscal year 2025. 12th MLR has engaged in joint and bilateral exercises, bolstering deterrence and readiness in the Indo-Pacific region as it develops interoperability with the Japanese Ground Self-Defense Force.

Joint / Coalition Kill Webs and Combined Joint All Domain Command and Control (CJADC2): To support CJADC2, the Marine Corps is investing in advanced sensors to contribute to joint kill webs. Key examples of this include investments in electronic sensing capabilities provided by Electronic Remote Sensors, TPS–80 radar enhancements.

The service utilizes joint programs and initiatives that support decision advantage. Those unique emerging Marine Corps systems are "born joint" at the outset to ensure that the service is integrated at the Joint Force level. This includes electronic warfare systems feeding Spectrum Services Framework to provide electronic sensing to the joint community to support decision advantage; the use of Maven Smart System to Find, Fix and Track targets; and the fielding and integration of the Family of Integrated Targeting Cells in conjunction with the Navy and Army to support fusion and a target quality Common Operational Picture.

Talent Management

Commandant's Retention Program (CRP): The Commandant's Retention Program identifies the most competitive marines and offers them an opportunity to stay a marine via a pre-approved reenlistment. The fiscal year 2025 CRP cohort yielded over 1,450 reenlistments, accounting for nearly 20 percent of the overall First Term Alignment Plan mission for fiscal year 2025. We secured over 7,950 FTAP reenlistments for the Active Component, achieving 114 percent of our goal. For the inaugural year of the Reserve Component CRP, we secured 248 reenlistments and drilling obligations from the first-year cohort, reaching 103 percent of our goal. The CRP remains critical in incentivizing the reenlistment of our highest-performing marines.

Talent Marketplace: This year, we released the Talent Management Engagement Platform (TMEP), an internally developed digital prototype to arm marines with more accessible and transparent information. Since May 2024, TMEP has been tested by approximately 12,000 enlisted marines across 10 MOSs. The platform has been released to Active component marines in the ranks of second lieutenant through colonel, consisting of approximately 16,000 marines.

Training and Education

Enhanced Infantry Training / Infantry Marine Course (IMC): The Marine Corps continues to improve initial training through Enhanced Infantry Training / IMC. More than 15,000 marines have attended IMC since it was expanded in October 2021. We anticipate another 4,000 marines to complete the training in 2025. Unlike those who went before, these marines will join their initial units with skills commensurate with those who have been in the unit for years and, as a result, these IMC graduates will be more easily integrated into our infantry battalions and more ready for the rigors of combat on any future battlefield.

Close Combat Lethality: In addition to producing more combat-capable marines, and based upon lessons learned from ongoing conflicts, we overhauled our Marine Corps Combat Marksmanship Program to include our Annual Rifle Qualification (ARQ). The new ARQ incorporates shooting positions that are more realistic in combat into an efficient course of fire that provides for engagements at ranges between 15 and 500 yards and based on lethality zones. As a result, the ARQ target and course of fire reinforce the importance of marksmanship lethality.

We have also expanded our data and modeling-enhanced Infantry Marksmanship Training Program (IMTP) across the fleet. IMTP has been developed and validated to increase lethality by analyzing speed, precision, executive control, adaptability, and risk exposure metrics. IMTP has increased lethality across these metrics by 99 percent compared to traditional marksmanship training.

Project Tripoli: Project Tripoli is the Marine Corps' initiative to provide a Live, Virtual, and Constructive Training Environment (LVC–TE) that is persistent, globally available, all-domain, and all-echelon. We are currently in the execution phase and have fielded Force-on-Force Training System Next which enables live force-on-force training with after action assessment support in a virtual and constructive domain, enhancing our formations all-domain training readiness. These LVC–TE capabilities recently supported the 3d MLR Certification Exercise and are planned for use during fiscal year 2025 exercises STEEL KNIGHT, Balikatan, and Service Level Training Exercise 2–25.

Project Triumph: Project Triumph is the Marine Corps effort to transform training and education to an outcomes-based, student-centric, information age learning model to generate cognitively agile marines who can make bold and consequential decisions in challenging environments. This transformation will take place through three lines of effort: 1) Policy Development and Outcomes-Based Learning; 2) Instructors as Learning Leaders; and 3) Technological Integration of all aggregate Marine Corps learning systems. These LOEs have influenced the IMC to implement active, student-centered experimental learning techniques with emphasis on problem solving and the reinforcement of sound decisionmaking skills with a bias for action.

Project Trident: Project Trident is the Marine Corps effort to enable the combat readiness of warfighting organizations by providing individual and unit-level training to build and close kill webs in a contested maritime environment at all echelons and in all domains. We are doing this through two lines of effort: 1) enhanced courseware, and 2) practical application in training exercises. Courseware initiatives include littoral targeting and fires, naval expeditionary operations planning, and advanced fires and effects. Practical application non-kinetic effects in a peer threat environment include the integration of marine space, cyber, and air components to Service Level Training Exercise 2–24 to provide realistic and real-time non-kinetic effects through signals intelligence, electronic warfare, and cyber security threats.

Marine Corps Attack Drone Team: The Marine Corps recently created a Marine Corps Attack Drone Team (MCADT), whose mission is to support the rapid accelera-

tion and scaling of the lessons learned from armed first-person view drone use in modern combat. This initiative will ensure our Corps continues to enhance our readiness and lethality to hunt down and destroy our Nation's adversaries. The MCADT's first competition is this July in Florida, where the marines will battle in the first ever US Military Drone Crucible Championship. After July, the MCADT will next focus on lessons learned from that competition and develop efforts to provide intermediate and advanced armed FPV drone skills to the Fleet Marine Force and Total Force via the Competition-in-Arms Program.

Logistics Modernization

Contested Logistics: The ability to move personnel, equipment, and supplies in a contested environment is just as critical as the ability to find, fix, and destroy adversary formations. To ensure persistence in such environments, the Marine Corps is shifting from traditional supply chains to a more resilient sustainment web. Marine Forces Pacific's operational concept—designed to deter conflict and, if necessary, fight and win—is reliant upon the integration of key warfighting functions: maneuver, mobility, and sustainment. This integration will be accomplished through the Global Positioning Network, which includes the establishment of terrestrial supply points in strategic locations and already established maritime prepositioning forces. Initiatives are also underway to enhance base resiliency, ensuring the ability to operate under attack, and rapidly recover as a warfighting platform.

Supply and Distribution Modernization: Experimentation and modernization of multi-domain distribution capabilities are progressing rapidly. Across the Fleet Marine Force, 58 Tactical Resupply Unmanned Aircraft Systems and Unmanned Logistics Systems—Air have been fielded for testing. Additionally, 504 Ultra-Light Tactical Vehicles have been delivered to infantry battalions and MARSOC. The Marine Corps is also collaborating with the Navy, Army, and allied and partner nations to integrate stern landing vessels and autonomous low-profile vessels to enhance littoral distribution. Additive manufacturing initiatives are also advancing, including the deployment of the portable expeditionary fabrication lab and Tactical Fabrication, both of which are now fielded to Combat Logistics Battalions and Maintenance Battalions.

Medical Modernization: Medical support is also evolving to meet expeditionary requirements, with a focus on smaller, more mobile Damage Control (initial stabilization of critically injured patients), Resuscitation, and Surgical teams, as well as Patient Holding and long-range enroute care capabilities.

TRAINING READINESS

In support of generating greater warfighting readiness in our Marine Air Ground Task Forces (MAGTFs), the Marine Corps has executed an annual series of force-on-force training exercises for several years. The training objectives of those warfighting exercises are: 1) employ the principles of maneuver warfare; 2) apply adaptive decisionmaking; 3) conduct assured command and control; 4) execute the targeting cycle; 5) conduct logistics in a contested and austere environment; and 6) win in a multidomain operational environment. These are accomplished via an operational environment that seeks to approximate combat operations' friction, disorder, and uncertainty, and test decisionmaking against a live, thinking, adaptive enemy.

Training Exercises and Readiness

Our mission is as clear as it is vital: we forge marines into organizations and units designed to fight across all domains. Marines have been multi-domain since there were only two—land and sea. We have adapted to the changes that technology has brought to warfare. We test the mettle of our marines by forcing them to fight at a disadvantage across domains we have historically maintained the advantage—especially the air.

Throughout the last year, the Marine Corps continued to execute bilateral and multi-lateral exercises throughout the globe to build and maintain the readiness of our formations. Nowhere is our commitment to working with allies and partners to more apparent than in the priority theater of Indo-Pacom. I Marine Expeditionary Force (MEF) and III MEF forces operate from Darwin, through the Pacific Islands, to Southeast Asia and into Northeast Asia. They continue to conduct coordinated rehearsals, operations, and activities that demonstrate deterrence to would be aggressors trying to disrupt the status quo while we provide assurance to friends, allies, and partners who have stood with us for decades. We have practiced full naval integration in our exercises and experimentation through Task Force 76/3, a joint task force with 3d Marine Expeditionary Brigade and Expeditionary Strike Group SEVEN. We have also enhanced joint and combined partnerships and interoperability through exercises like Yama Sakura 87, a trilateral exercise involving III

MEF the U.S. Army, Australian Defence Force, and Japan Ground Self Defense Force. The exercise spanned three nations, six locations, and over 7,000 servicemembers, demonstrating the value of the Marine Corps' permanent presence in Japan and our ability to effectively integrate with joint, Australian, and Japanese forces. Our presence and partnerships translate into a rapid response capability that has proven invaluable to our partners in the Pacific during times of crisis. Our ability to respond quickly and decisively to natural disasters ranging from devastating typhoons in the Philippines to volcanic eruptions in Papua New Guinea remind the region that the United States is the partner of choice. Projecting power responsibly and constructively in the Indo-Pacific has allowed this vibrant region to thrive and has made the United States safer, stronger, and more prosperous.

Reserve Training Readiness

The Marine Forces Reserve maintains individual readiness through monthly and annual drill periods, and unit readiness through participation in Service Level Training Exercises such as the Integrated Training Exercise (ITX) at Marine Corps Air Ground Combat Center in Twentynine Palms. ITX is an annual capstone training event for our Reserve Forces. ITX builds readiness by providing Selected Marine Corps Reserve units an opportunity to focus exclusively on offensive and defensive operations, their core mission essential tasks. At ITX, MARFORRES employs an entire MAGTF, over 4,500 marines and sailors. It also prepares the MARFORRES Staff for the complexities of a mass mobilization scenario.

MARFORRES has also participated in Exercise UNITAS for the last 3 years. UNITAS offers a large-scale training venue for our Reserve units to form and train as a MAGTF alongside their AC counterparts from I and II MEF. Through Exercise UNITAS, our Reserve Forces gain experience operating under a combatant commander and integrating with our partner nations' amphibious forces. This year, MARFORRES will also participate in joint and multilateral exercises, Arctic Edge 25, and Red Flag Alaska 25–2 and 25–3. These exercises, conducted in Alaska, will provide critical all-domain C2, fires, and air control training while exercising homeland defense tasks and preparing marines to operate in the arctic environment.

Safety

Improving the safety of our marines is critical to maintaining Marine Corps readiness. As such, the Commandant of the Marine Corps has implemented several key initiatives designed to enhance safety and readiness across the fleet. Included in these initiatives are the establishment of a Force Preservation Directorate and a Local Area Assessment program. The Force Preservation Directorate is led by a General Officer. The goal of the program is to align and optimize current behavioral assessment programs to better serve the marines and their commands. The Local Area Assessment is a program in partnership with the Naval Safety Command and tailored for Marine Corps aviation. Its purpose is to identify potential safety hazards, facilitate their prompt recognition, and ensure that necessary support and resources are allocated. In addition to these initiatives, we are using data to improve the safety of our tactical vehicle operators to assist commanders in reducing risk by enhancing driver proficiency across all levels of tactical vehicle operations. These efforts and our continuous assessment of our safety programs will ensure our weapon systems, equipment, and units are safe-to-operate and operated-safely—making your Marine Corps inherently more lethal.

PERSONNEL READINESS

The cornerstone of Marine Corps readiness is the individual marine—how we recruit them, invest in them, and retain them.

Recruiting

Our success in maintaining an elite force begins with recruiting young Americans with the values, character, mental aptitude, physical and psychological fitness, and desire to earn the title "Marine." We must collectively ensure the health of our All-Volunteer Force and the strategic advantage it provides—talent, capability, and warfighting excellence. The Marine Corps remains committed to providing resources and sending only our best marines to be recruiters. Our refusal to lower standards sustains our brand as tough and smart professionals to the American public and continues to attract those who aspire to prove themselves worthy of earning the title. The Marine Corps once again made its Total Force recruiting mission in fiscal year 2024 and remains on track to obtain an even larger mission this fiscal year while growing the start pool and maintaining quality standards.

The quality of marine recruits remains exceptionally high and exceeds every measurable Department of Defense metric. Last fiscal year, we achieved over 64

percent CAT I–IIIAs mental group, the top scoring candidates, compared to the DOD standard of 60 percent. We assessed no CAT IV individuals. In addition, the Marine Corps saw marked improvement in overall military occupational specialty alignment. Last, we have almost tripled the previous year's prior service accessions, which brought experienced marines with critical skills directly back to the operating forces.

Regardless of our success, we must remain mindful of the long game: these impressive gains face constant headwinds and are susceptible to disruption. Recruiting will continue to be a challenge into the future. Reinforcing and realigning the recruiting force has helped; however, to exploit success, we will continue to require robust resourcing for advertising and continued reinforcement of the Military Entrance Processing Command. Additionally, we thank Congress for its continued focus on and support for recruiter access to high schools and colleges. The fiscal year 2024 National Defense Authorization Act provided additional timeliness guidelines for recruiter access to directory lists. The single biggest reason we hear from young people for not joining the Corps is that they simply were not aware of the potential opportunities we offer. Maintaining reliable and expanded access to high schools and student directories remains a top priority.

Suicide Prevention

Suicide rates in the U.S. have reached their highest levels since 1941. The Marine Corps rates have remained flat, but any loss from suicide is unacceptable. Efforts to prevent these tragic deaths include implementing recommendations from the Suicide Prevention and Response Independent Review Committee and investments in the Marine Corps Training and Total Fitness (MCTF) program. MCTF is a holistic approach to integrating physical, mental, social, and spiritual fitness programs to promote the combat readiness of our marines. These programs employ a leadership out-front approach along four preventative lines of efforts: 1) prevention and skill-building (e.g., leadership and ethics courses with the Lejeune Leadership Institute); 2) feedback from the force via application of data and research (e.g., lethal means survey); 3) small unit leader communication (e.g., Warfighter Mental Readiness Playbook); and 4) collaboration with key support resources (e.g., preventative and proactive medical care; body and mind physical and mental training and education; and financial management counseling/guidance.)

Marine and Family Readiness—Childcare

Providing quality childcare for marines and their families remains an important readiness enabler, with 16 Marine Corps installations having Child Development Centers (CDCs). At MCB Camp Pendleton, a $44.1 million CDC is under construction to add 250 childcare spaces, expected to eliminate waitlists for Category 1 personnel. A $105.2 million CDC was awarded at NSA Andersen AFB, Guam, to support 276 children amid the Corps' buildup. Additionally, a $37.7 million CDC was completed in November 2023, adding 412 new childcare spaces. These efforts aim to reduce childcare shortages and support Marine Corps families while improving servicemember readiness. Still waitlist remain. Lengthy waitlists are primarily due to shortage of qualified workers, high turnover, less competitive pay, lengthy hiring process, and seasonal PCS fluctuations.

INFRASTRUCTURE READINESS

Barracks 2030

The Commandant and I are committed to providing the marines with barracks they deserve and can be proud of. However, the obstacles to overcome are enormous—and decades in the making. As the Commandant often says—we became marines to do hard things, and remediating nearly two decades of under-investments and deferred maintenance in a fraction of the time is one of those hard things.

The Barracks 2030 initiative is focused on three specific lines of effort: Management, Materiel, and Modernization. The initiative improves management of the barracks with professional barracks and building managers in the facilities and dedicated service teams to provide 24-hour maintenance support. The Marine Corps will modernize its barracks with in-stride room repairs, consolidation of marines into its best facilities, demolition of poor-quality ones, renovations to modernize existing building, and construction of new facilities. Finally, the service will modernize by replacing furniture on regular intervals and providing upgraded locks in the barracks. Since its inception, the Marine Corps has conducted wall—to-wall inspections to first and foremost ensure marines are living in environmentally safe conditions, and to inform necessary corrective actions.

Right-Sizing Inventory: While it may appear counterintuitive to identify increased demolition (physical destruction) as a requirement for improved quality of life, it is

necessary to both generate resources and improve the living conditions of our marines. Our current inventory of 658 barracks includes approximately 69 that need to be demolished. Doing so would free the service from the costs associated with heating, cooling, cleaning, and repairing old, poor-quality facilities and would generate approximately $50 million per year in savings and cost avoidances.

CLEAN AUDIT OPINION

Every investment and expenditure that has been discussed in this statement has been guaranteed by our achievement of an unmodified audit for two straight years. As we invest in new platforms, barracks, and training, it is our responsibility as good stewards of taxpayer funds to continue to prove that when the Corps is provided a taxpayer dollar, we can show exactly where and how it has been invested. For an unprecedented second year in a row, the Marine Corps achieved an unmodified—or "clean"—audit option. We have been comprehensively tested by Independent Public Accountants to validate budgetary balances and records and account for physical assets at installations and bases across the globe. This process included counting military equipment, buildings, structures, supplies, and ammunition held by the Marine Corps and our DOD partners. The audit's favorable opinion was only possible through the support and hard work of dedicated marines and our civilian marines.

By better leveraging technology—by automating our system interfaces and streamlining the functionality of our systems and related business processes—we believe that we can get to a place where we more efficiently and effectively maintain our clean opinion. These clean audits also provide evidence of what we have believed for a long time—when Congress provides the Marine Corps a dollar—we invest it wisely, with transparency and accountability, and in a manner that allows us to tell you how those investments generate readiness. With that in mind, we request this subcommittee's support in addressing the service readiness degraders listed below.

READINESS DEGRADERS

Amphibious Warship Availability

Reduced Amphibious Warship (AWS) availability has significantly impacted the Marine Corps' ability to achieve or sustain proficiency in core amphibious skills. In 2023 and 2024, AWS operational availability delayed or limited the service's ability to train to amphibious standards and deploy Marine Expeditionary Units embarked on Amphibious Readiness Groups in all three marine MEFs.

Since June 2024, AWS has averaged 48.7 percent available for Navy and Marine Corps training and operations (fully mission capable / mission capable / partially mission capable). Our LHA/LHD in-reporting average (ships not in a planned maintenance availability) is 55 percent, and the LPD/LSD average is 47 percent. If AWS availability shortfalls are not resolved, each element of the MAGTF will experience further degradation in its ability to train to and meet operational requirements in support of Combatant Commanders. Further, the atrophy of amphibious operations experience at all ranks could jeopardize safety in future training and increase risk in the event of conflict.

We recognize that increasing current AWS availability will not be accomplished overnight; however, addressing this issue will require a mix of timely and predictable funding and maintenance planning and strategies to replace aging AWS platforms with new construction. Sustaining select mid-life upgrades, service life extensions, along with the recently signed multi-ship procurement contract for four amphibious ships signal industry to invest in its workforce and create stability in public and private shipyards for maintenance periods. It will also save the government billions of dollars. For example, recent multi-ship procurement of one LHA and three LPDs is projected to save the taxpayers $901 million dollars compared to buying the ships individually.

Organic Littoral Mobility

Mobility is critical to enable the dispersion and persistence of stand-in forces. MLRs' littoral mobility will be essential to maneuver through the Indo-Pacific's complex geography. We recognized this capability gap early as we developed concepts for the Indo-Pacific and designed a purpose-built Medium Landing Ship (LSM) as a critical element of Force Design. Separate and complementary to AWS, the LSM is a maneuver asset and, as a shore-to-shore vessel, is unique and vital to expeditionary littoral mobility. LSMs facilitate campaigning and can support diverse missions. Key missions include operational intra-theater mobility, tactical maneuvers in archipelagic environments, logistics support, and maritime domain awareness. The Fiscal Year 2025 President's Budget request includes funding for the first LSM.

However, contract award in fiscal year 2025 estimates delivery of first LSM no earlier than fiscal year 2029. Any delays past fiscal year 2025 shifts delivery beyond fiscal year 2029.

Procurement of LSM is late to need. The LSM procurement timeline introduces a significant gap in maneuver capabilities for the priority theater. To address this gap, in October 2023, a naval resources and requirements review board (R3B) endorsed an initial littoral maneuver bridging solution (LMBS) for experimentation and operational use until the LSM becomes available to support a minimum of one MLR in fiscal year 2034. This initial LMBS was deemed inexecutable due to Military Sealift Command (MSC) shortfalls in their civilian mariners. The Department of the Navy is exploring options to mitigate the gap. These options include commercially available roll-on and roll-off chartered vessels, six LCU 2000's available for purchase or charter, and funding additional steaming days for Maritime Prepositioning Force (MPF) ships. Without a timely LMBS solution, critical experimentation and operational capabilities of our MLRs are significantly impacted in the priority theater.

Maritime Prepositioning Force (MPF)

Since 2012, the Navy's MPF has been reduced from 16 Maritime Prepositioning Ships (MPS) across three Maritime Prepositioning Squadrons to just seven Full Operating Status MPS across two MPSRONs, with two additional ships in Reduced Operating Status. This reduction has had a direct and negative impact on the Marine Corps' strategic mobility and sustainment capabilities. The Marine Corps requires 2.1 million square feet of MPS lift to meet operational needs. The current fleet provides only 1.3 million square feet. This shortfall limits the ability to rapidly deploy and sustain forces in a crisis and removes critical redundancy and depth. As adversaries expand their capabilities and the geopolitical landscape grows more volatile, reducing MPF capacity weakens the Marine Corps' ability to rapidly project power and respond to emerging threats.

Presidential Drawdown Authority (PDA) Training Readiness

The Marine Corps has provided over $2 billion (replacement cost about $5 billion) in equipment and munitions to the Armed Forces of Ukraine via PDA. Replacement and reimbursement for these inventory losses are needed to rebuild the depth of magazine needed to gain and maintain lost proficiency. Though some funds have been reimbursed through PDA replenishment funds, the defense industrial base (DIB) faces significant challenges in meeting production demands for replenishment. New procurement lead times delay replenishment, as existing programmed deliveries take priority. To mitigate impacts, the Marine Corps has adjusted training allocations and inventory management. However, continued high-demand support may require the service to accept further risks to either training readiness or strategic readiness.

MV–22B

The MV–22 fleet has been seriously impacted by fleet groundings. As the backbone of Marine Corps combat assault transport capability, MV–22B squadrons have conducted 109 operational deployments and flown over 630,000 flight hours since 2007. The MV–22B flies approximately twice as many flight hours per year as any other Marine Corps rotary-wing aircraft. The MV–22 maintains a safety record on par with other Marine Aviation assets. From fiscal year 2020 to the present, there were a total of six Class A MV–22 mishaps within 212,114.5 total flight hours with the Class A mishap rate is 2.82 per 100,000 flight hours. The MV–22 10-year (2015–2025) Class A mishap rate is 3.04. Both are lower than the Marine Corps 10-year average of 3.17.

We remain committed to enhancing both the safety and performance of the aircraft by improving the proprotor gearbox (PRGB). Improvements in critical gears and bearings are being addressed with a more refined Triple-Melt steel. Additional sensors are also being installed in critical areas to provide better data to forecast necessary maintenance to prevent part failure. Finally, a redesigned PRGB Input Quill Assembly (IQA) will reduce the incidence of the wear-out mode observed in previous IQA failures that led to aircraft Hard Clutch Engagement occurrences.

While solutions to material challenges are in place, pilot and aircrew production and training challenges induced by the groundings are also impacting the fleet. To mitigate the impacts of the groundings on pilot and crew chief production and to prioritize contract utilization (fleet health) over time to train, the Marine Corps worked with Chief of Naval Air Training to pause intermediate tiltrotor and advanced tiltrotor pipelines from February through August 2024. Marine Medium Tiltrotor Training Squadron 204 (VMMT–204) tiltrotor pilot production deliveries are not projected to return to steady State pre-grounding levels until quarter 1 fiscal

year 2026. VMMT–204 can surge MV–22 crew chief production through fiscal year 2025 based on available aircraft. This capability will deplete the backlog of 42 crew chief students that developed during the grounding with a return to steady State crew chief production in quarter 1 fiscal year 2026.

Flight Hours

While the material readiness of our aircraft routinely receives the most attention, sustaining individual pilot readiness is equally important. In fiscal year 2019, we executed 218,299 total flight hours in support of the FMF as part of our overall flight hours program. Those hours cost a total of $2.44 billion and supported the readiness of 3,161 total pilots. In fiscal year 2024, we executed 200,647 in total flight hours. Those hours cost $3.7 billion and supported the readiness of 3,312 total pilots. Active Component pilots averaged 14.1 Hours per month in fiscal year 2024. This is a decrease from fiscal year 2019 when pilots averaged 17.2 Hours per month. The major driver in the reduction was the prolonged MV–22 grounding. Sustaining and increasing individual pilot readiness at current levels while remediating readiness lost within the MV–22 community will require topline relief.

TACAIR Pilot Training

Low readiness of the T–6 trainer aircraft is the primary challenge in tactical aviation production, with material readiness consistently hovering at 75 percent. The primary issue is the lack of parts in the supply system, requiring additional attention from the DOD, as the T–6 serves as the foundational trainer for all fixed-wing and rotary-wing aviators. Naval Air Systems Command and the Chief of Naval Air Training (CNATRA), in coordination with the U.S. Air Force Joint Program Office, are working to address these challenges by improving the supply chain and enhancing contractor performance under the Contractor Operated and Maintained Base Supply contract. Additional funding through CNATRA 1A2A is also critical, as the issue remains on CNATRA's fiscal year 2025 Unfunded Priorities List.

CONCLUSION

The investments we make today in support of our marines, sailors, and their collective warfighting readiness will reverberate through the rest of this decisive decade. There is only one thing that our Nation cannot give to our military—more time. We must make critical resourcing decisions now so that we have the warfighting readiness needed for tomorrow. I am perpetually grateful for the support that this body has provided our Corps' Force Design initiatives. Every dollar invested allows us to realize our modernization strategy and build a more ready force—one capable of satisfying the demands of the Joint Warfighting Concept and the expectations of our Combatant Commanders.

The Marine Corps will be ready to respond to any crisis or contingency in the future, just as we have in the past. However, we must use the time we have remaining to ensure that we have the right capabilities at the right time and in the right place. The Marine Corps will continue to do its part by continuing to maximize every dollar invested so that legislators can be confident that we are deliberate with the finite resources that are provided to us. We will also remain the best stewards of the taxpayers' funds through transparency, accountability, and discipline—all evident in our second consecutive successful audit opinion. Through the audit's success, we demonstrated that the funds provided to us by Congress will be used effectively to support our core mission: organize, train, and equip marines.

The Commandant and I remain committed to ensuring that the Marine Corps remains our Nation's force-in-readiness. With your help, we will ensure your marines are provided world-class training, improved quality of life, and enabled with the capabilities required to fight our Nation's battles anywhere, anytime. I thank the Subcommittee for your continued advocacy and support of the Naval Services and the Marine Corps. Semper Fidelis.

Senator HIRONO. [Presiding.] Thank you, General.

I call on General Guetlein. Please proceed.

STATEMENT OF GENERAL MICHAEL A. GUETLEIN, USSF, VICE CHIEF OF SPACE OPERATIONS, DEPARTMENT OF THE AIR FORCE

General GUETLEIN. Thank you, Chairman Sullivan, Ranking Member Hirono, and the distinguished Members of this Sub-

committee for allowing me the opportunity to discuss the United States Space Force with you and with the American people today.

The Space Force underpins our Nation's capabilities within the Joint Force, within our economy, and within the society as a whole.

In our first 5 years of existence we validated the importance of the Space Force as a service and made remarkable progress in building an agile mission-focused organization that grasped the magnitude of the space threat.

We delivered critical capabilities, developed doctrine, and took significant steps to integrate space power into joint operations.

We are now comprised of approximately 15,000 guardians, including officers, enlisted, and civilian personnel. We are integrated into other DOD components, the intelligence community, our allies, and commercial partners, maintaining maximum readiness and securing our advantages in space.

Our military is faster, better connected, more informed, precise and lethal based on our ability to harness space. The world's use of space is growing at an accelerating rate demonstrated by a significant growth in space launches and an increase in active spacecraft in orbit.

As access to and the use of space grows the strategic landscape in space is becoming increasingly complex and perilous. What were once theoretical threats are now daily occurrences.

I have observed our adversaries' actions and they are employing new capabilities to counter our advantages. Our competitors are jamming Global Positioning System (GPS) signals, spoofing and disrupting satellite communications, and developing advanced anti-satellite weapons.

Unfortunately, this behavior has become the norm rather than the exception, creating an increasingly hostile environment and putting at risk our continued freedom in the space domain.

To meet these challenges, the Space Force is accelerating our transformation as a warfighting service through our theory of success called competitive endurance. Competitive endurance is the bedrock of our ability to deter and, if necessary, defeat our adversaries.

It deters them from extending conflict into the space domain and enables the Joint Force to achieve space superiority while preserving the long-term safety, security, and sustainability of space.

This approach ensures we avoid operational surprise, deny first mover advantage, and engage in responsible counter space campaigning, all of which result in deterring aggression and, if necessary, decisively defeating challenges to our way of life.

An essential requirement supporting competitive endurance is guardian development. We are focused on purpose built training to meet the unique needs of the Space Force.

Our guardians are dedicated war fighters who understand the gravity of the threats that we face. We must ensure that they have the necessary training, resources and unwavering commitment to continue to face these threats head on.

Also essential is our continued integration as a critical component of the Joint Force in fostering enduring partnerships with the commercial sector and our allies around the world. Which will

allow us to overcome resource constraints and build a resilient hybrid space architecture forging the Space Force we need.

At only 3 percent of the DOD budget the Space Force offers an immense value proposition for the Joint Force and for our Nation.

However, it is woefully under resourced to meet the Nation's demand for space capabilities. We must increase investment to deter the threat and if necessary to decisively defeat challenges to U.S. space superiority.

The strategic choices we make today will determine whether space remains a domain for peace and progress or becomes a contested battleground for future conflict.

The Space Force is committed to ensuring a future where space remains a source of American strength and a foundation for global security.

Achieving this vision requires a shared commitment to providing the Space Force with the resources, the authorities, and the support necessary to meet the growing challenges of the space warfighting domain.

On behalf of all guardians and their families, thank you for your support and commitment to ensuring the United States Space Force remains a cornerstone of the Joint Force in protecting the American way of life.

I look forward to working with all of you and I look forward to taking your questions. Thank you.

[The prepared statement of General Guetlein follows:]

PREPARED STATEMENT BY GENERAL MICHAEL A. GUETLEIN

INTRODUCTION

The United States Space Force underpins our Nation's strength within the Joint Force, economy, and society. In our first 5 years, we have validated the importance of the Space Force as a stand-alone service and made remarkable progress in building an agile, mission-focused organization that grasps the magnitude of the threat. We have established our identity, developed doctrine, and taken significant steps to integrate space power into joint operations. We are now comprised of more than 15,000 officers, enlisted, and civilian personnel and are integrated with other components, the Intelligence Community (IC), allies, and commercial partners, maintaining maximum readiness and securing our advantage in space.

The world's use of space is growing at a phenomenal rate, demonstrated by a 488 percent growth of spacecraft launches and 400 percent increase of active spacecraft in orbit since the establishment of the service in 2019. As the access to and use of space grows, the strategic landscape in space is becoming increasingly complex and perilous, even compared to other warfighting domains.

Unfortunately, what were once theoretical threats are now daily occurrences. I have observed various actors in space maneuvering satellites on orbit to monitor our assets, engaging in testing orbital warfare capabilities, and employing new tactics to counter our advantage. Our competitors are jamming GPS signals, spoofing satellite communications, and developing advanced anti-satellite weapons. These actions create an increasingly hostile environment for the space capabilities essential to our security and prosperity and put at risk the continued superiority to which we have become accustomed.

To meet these challenges, the Space Force must accelerate our transformation by embracing a culture of "Competitive Endurance." This theory of success drives the ability to deter adversaries from extending conflict into the space domain, and should deterrence fail, enables the Joint Force to achieve space superiority while preserving the long-term safety, security, and sustainability of space for operational use. This approach prioritizes: 1) deterring attacks against U.S. interests; 2) preventing the use of space to attack our Homeland or the Joint Force; and 3) avoiding operational surprise. Destruction of assets in space can create harmful and long-lasting debris that significantly reduce the effectiveness of the Joint Force to prevail in conflict and degrades civilian and commercial use of the space domain for genera-

tions to come. For this reason, the Space Force's concept of space superiority seeks to protect U.S. interests without jeopardizing the future of the space domain.

The demand for our capabilities far exceeds our current force structure. Achieving our mission will require a focused warrior ethos, enhancing deterrence by acquiring the necessary resources and latest technology to match our threat and building stronger partnerships with the IC, commercial sector, and our allies worldwide.

Despite being responsible for the largest warfighting domain while providing critical capabilities to enhance warfighting in all other domains, the Space Force provides this warfighting capability at only 3 percent of the Department of Defense's budget. We have the smallest budget and the smallest force. With the committee's and our partners' leadership, we can overcome emerging challenges by leveraging the latest technology, acquiring what we need, and developing only what we must.

EVOLVING THREAT LANDSCAPE

The U.S. faces a rapidly evolving and increasingly complex threat landscape in space. Across the globe, nations are aggressively pursuing advanced military capabilities, seeking to challenge the established balance of power and exploit the space domain for strategic advantage. These advancements, coupled with a growing convergence of capabilities and intent among potential adversaries, present a significant challenge to U.S. interests.

We are witnessing a proliferation of new technologies and operational concepts designed to disrupt, degrade, and deny access to our space-based capabilities. Adversary forces are increasingly integrating space-enabled capabilities into their operations, recognizing the strategic importance of the space domain for command and control, intelligence gathering, navigation, and precision strike. Alarmingly, the development and deployment of counterspace weapons, including a new satellite designed to potentially carry a nuclear weapon with that could create long-lasting debris fields, poses an unprecedented threat to the safety, security, and sustainability of the space environment, society, economy, and the stability of peace.

Adding to this complexity is the growing convergence of capabilities and intent among nations and non-State actors. Strategic partnerships, technology transfer, and shared operational concepts are creating a more challenging and unpredictable security environment. The Space Force must adapt its strategies, policies, and capabilities to address this evolving threat landscape and ensure the continued safety, security, and sustainability of the space domain for all.

PERSONNEL

The Space Force is committed to building the most agile and capable force necessary to meet the evolving demands of the space domain. We will remain ahead of strategic competitors by developing guardians with a strong warrior ethos, intently focused on the threat. This requires a sustained commitment to preparing our force by developing a talent management system that optimizes the skills and expertise of our guardians. Over the next 5 to 15 years, the Space Force will require continued resources to meet the Joint Force's evolving needs.

Recently enacted legislation with the Space Force Personnel Management Act is a critical enabler for growth, allowing the Space Force to transfer space missions currently residing in the Air Force Reserve. This will result in approximately 300 full-time Reserve space professionals transferring into the Space Force in fiscal year 2025, with part-time Reserve professionals beginning to transfer in fiscal year 2026. As our Service grows, we must also ensure our training pipeline can accommodate increased throughput, providing our guardians in and out of uniform with the skills and expertise necessary to operate in a highly contested and dynamic space environment.

Additionally, the Space Force is actively building Service Components to provide dedicated space capabilities and expertise to the Combatant Commands, further increasing our operational footprint.

The Space Force is committed to optimizing its workforce through innovative development programs for officer, enlisted, and civilian guardians. We have established clear delineations of roles, responsibilities, and duties for each personnel category, ensuring a cohesive and efficient force. We have implemented a new integrated Officer Training Course (OTC) for officer accessions, focusing on space, intelligence, and cyber operations. We are also developing Space Force-specific enlisted development programs, incorporating fully qualified promotions and codifying our foundational warfighting capabilities into our functional career fields. For our civilian guardians, we have launched the Guardian Civilian Optimization for Space (GCO-S) course, providing a foundational understanding of our mission, values, and operations.

The Space Force is currently exceeding its fiscal year 2025 recruiting goal and has proudly met its goals every year since inception. This success is the product of effectively conveying a strong value proposition to young people ready to serve their country. Our recruits have continued to boast high Armed Services Vocational Aptitude Battery (ASVAB) scores over the last 5 years, a testament to our uncompromising standards.

ASSURED ACCESS TO SPACE

In an era of rapid technological advancement and evolving security threats, the Space Force needs an agile space architecture to appropriately address the unpredictable challenges we face. The launch complex remains the foundation of our assured access to space. However, this access is not a static concept but rather a dynamic and evolving necessity. While the Space Force currently utilizes a robust and innovative commercial launch market to provide a full spectrum of launch services, we recognize the need to continuously adapt our approach to address the complexities of an increasingly contested space environment.

To foster innovation and reduce cost, the National Security Space Launch (NSSL) program established a dual-lane approach that assures access to space for missions that require the highest reliability and provides opportunities for emerging launch providers to compete for more risk-tolerant missions. The Space Force must continue to diversify launch providers, increase launch sites, and invest in range facilities, including payload processing capacity, all while actively monitoring the launch supply chain.

Expanding options for launch locations ensures that in the event of natural or man-made disasters, access to space is never compromised. Creating a more resilient space architecture through proliferation, disaggregation, and orbital diversity is a national security imperative. By expanding options for Launch Service Providers, we reduce our vulnerability to any single point of failure. Further, actively fostering a vibrant commercial space sector enhances our Nation's economic competitiveness and technological edge, ensuring we maintain a robust industrial base capable of supporting our national security needs.

COMMERCIAL AND ALLIED SPACE STRATEGY

The Space Force recognizes that partnerships are essential to maintaining the competitive edge in space. Therefore, the commercial space sector and our allies are not merely an adjunct to national security space activities but are fundamental drivers of innovation, capability, and capacity. The rapid growth of this sector presents a unique opportunity to seamlessly integrate commercial and allied capabilities, establishing a hybrid space architecture. A hybrid architecture enables military and commercial systems to operate in concert, which significantly increases resiliency through added capacity, redundancy, and proliferation. This integration is foundational to our ability to meet the growing demand for capability at a cost we can afford and at the speed required as well as reduce vulnerabilities and deny potential adversaries the benefits of attacking U.S., allied, and partner space systems. The U.S. Space Force Commercial Space Strategy published on 8 April 2024 guides the integration of commercial space solutions to leverage American business and industrial strength to counter threats to our advantages in space and ensure American's get the most of their tax dollars.

By incorporating commercial solutions, we enhance our existing capabilities, such as Satellite Communications (SATCOM) and Satellite Operations (SATOPS). We can deploy cutting-edge capabilities faster and maintain an advantage over our adversaries by utilizing an approach that takes advantage of the private sector's ability to deliver advanced technology and services more quickly than traditional government programs. For example, The VICTUS NOX program demonstrated the remarkable agility of the commercial space sector. A satellite was transported to the launch site in just 58 hours and was ready for launch a mere 27 hours later—fully tested, fueled, and prepared to fly. The industry's responsiveness was so swift that they were ready to launch even before favorable conditions on Earth allowed.

The commercial sector offers solutions to enhance our capacity, resilience, and responsiveness in each area. We will prioritize the integration of commercial solutions in key mission areas such as SATCOM, Space Domain Awareness (SDA), Space Access, Mobility and Logistics (SAML), Tactical Surveillance, Reconnaissance, and Tracking (TacSRT), and Space-Based Environmental Monitoring (SBEM), to name a few. The Space Force is committed to fostering a strong and enduring relationship with the commercial space sector. We will prioritize transparency, streamline our acquisition processes, and work collaboratively with industry to ensure their success is inextricably linked to ours.

The Space Force is also committed to become "allied by design," leveraging the strengths of our allies and coalition partners. This commitment extends to all phases of our organize, train, and equip (OT&E) activities, fostering collaboration from the earliest stages of concept development to the execution of combined operations. This new approach prioritizes burden and cost sharing, opening up options to fight more effectively today and fight differently in the future.

We will move beyond outdated paradigms and embrace a new era of partnership, characterized by cooperative capability development, enhanced interoperability, and expanded operational cooperation. This means actively pursuing joint capability development initiatives, sharing expertise, pooling resources, and accelerating the fielding of critical space capabilities. We will review data sharing agreements and security paradigms, prioritizing the development of scalable architectures and open standards that enable seamless integration of allied and partner systems while ensuring compliance with statute and policy.

Furthermore, we will deepen operational coordination and liaison with our allies, conducting joint exercises, sharing space situational awareness data, and ensuring a unified response to threats in space. We will actively support the development of our allies' space capabilities through professional education and training programs, technology transfer initiatives, and collaborative research and development efforts. Transitioning to a hybrid space architecture including commercial and allied partners enables us to leverage a more resilient and robust space enterprise.

OPERATIONAL TEST AND TRAINING INFRASTRUCTURE

To ensure our continued superiority in space, our guardians must be the best-trained, best-equipped, and the most prepared space warfighters on the planet. Achieving this goal necessitates the use of realistic and challenging training environments that authentically mirror the complexities of modern battlespaces. Our Operational Test and Training Infrastructure (OTTI) has been meticulously crafted to fulfill this vital mission.

OTTI is more than a single program or facility; it is an extensive, enterprise-wide framework integrating live and synthetic training systems and processes. It includes dynamic live training ranges, sophisticated modeling and simulation tools, simulated adversary forces, and secure networks. Each component synergistically combines to forge a holistic and immersive training environment that effectively spans the entire spectrum of potential conflict.

Central to the OTTI is the National Space Test and Training Complex (NSTTC). This state-of-the-art facility will endow our guardians with unparalleled training capabilities across a myriad of domains, such as orbital, electromagnetic, cyber, and digital environments. This sophisticated complex will enable us to realistically simulate the myriad of threats our guardians might face, preparing the Joint Force for the current and future complexities of warfare.

MISSILE WARNING AND MISSILE DEFENSE

The Space Force is steadfastly committed to safeguarding our Homeland and allies against increasingly sophisticated missile threats through a comprehensive and integrated missile defense strategy. Avoiding operational surprise requires the Space Force to maintain constant awareness of the battlespace, supplemented by a robust capability to produce indications and warnings accurately. This foundational principle recognizes that the initial step in missile warning and defense is the ability to detect and track threats; effectively, one cannot neutralize an undetectable threat. We are leveraging our existing space-based assets while simultaneously developing new capabilities to adapt to the evolving threat landscape.

Therefore, we must deploy advanced maneuverable satellites with state-of-the-art sensors. This technology combines optics and electronics to detect, track, and identify targets. This emphasis aligns with USSPACECOM's urgent operational needs to enable agile space operations and establish sophisticated space systems capable of sustained maneuverability.

When Iran launched over 300 missiles and drones at Israel in April and October 2024, it was the Space Force that provided the first line of defense. guardians, operating missile warning systems, detected the launches in real-time, providing critical early warning data that enabled United States, Israeli, and allied forces to intercept many of the incoming threats. Crews of guardians worked tirelessly, analyzing data, validating tracks, and relaying information to those in harm's way—all within a matter of minutes. Their efforts were instrumental in minimizing casualties and damage.

Iran's recent missile attacks against Israel underscore the critical importance of space-based missile warning and the need for continued investment in advanced de-

tection capabilities. The Space Force's ability to provide timely and accurate warning data is essential not only for Homeland Defense but also for enabling the Joint Force's ability to effectively respond to threats. Investing in maneuverable satellites equipped with state-of-the-art sensors will enhance our ability to detect and track emerging threats, ensuring we can maintain constant awareness of the battlespace, provide timely warnings, and ultimately, deny our adversaries the element of surprise. These capabilities assist to deliver on the Presidents Golden Dome for America Initiative and highlight the central role space-based capabilities will play in bringing that effort to fruition.

SERVICE COMPONENT ACTIVATION

The Space Force has activated seven Service Components within Combatant Commands (CCMDs) to seamlessly integrate space power into joint military operations. These component field commands (C–FLDCOMs), led by a Commander, Space Forces (COMSPACEFOR), serve as the primary mechanism for providing combatant commanders (CCDRs) with dedicated space expertise, ensuring space effects are fully integrated into joint plans and operations.

These Service Components are fundamental building blocks of the Joint Force, serving as the CCMD's dedicated subordinate command focused solely on the space domain. COMSPACEFOR provides the CCDR with direct access to space expertise, ensuring they are fully informed of all Space Force issues, activities, and capabilities relevant to their warfighting priorities, requirements, and resources.

GROUND-BASED INFRASTRUCTURE

The Space Force relies heavily on its facilities and infrastructure to execute its missions. FSRM priorities include essential upgrades to power systems, electrical systems, heating and cooling, water systems, fire suppression, roofs, and dormitories. MILCON priorities focus on increasing capacity and reducing risk to the mission, with an emphasis on mission beddown, energy resilience, assured access to space, security improvements, and supporting Combatant Command requirements in the Indo-Pacific and in defense of the Homeland.

However, the MILCON and FSRM portfolio faces significant repair backlog and deferred maintenance challenges, posing a growing risk to our operational readiness. We remain committed to sustaining existing infrastructure and improving the quality of life for our guardians, airmen, and their families.

CONCLUSION

The Space Force has proven vital to safeguarding our Nation in its first 5 years. We deliver effects that increase Joint Force lethality and effectiveness; as well as forces designed to protect the Joint Force from space-enabled attack. Space Superiority is an indispensable prerequisite to the success of the Joint Force. However, the Space Force must grow to continue to contest and win against our adversaries.

We must continue investing in transforming our force from our current posture to a dominant warfighting force capable of deterring and, if necessary, defeating our adversaries. We must prioritize essential modernization and timely and predictable funding is crucial to avoid delays in fielding critical capabilities.

Competitive Endurance is the bedrock for the ability to deter, and if necessary, defeat adversaries, preventing them from extending conflict into the space domain and enabling the Joint Force to achieve space superiority while preserving the long-term safety, security, and sustainability of space for continued operational use and freedom of maneuver. Continued integration into the Joint Force and establishing enduring partnerships with the commercial sector and our allies around the world will allow us to overcome resource constraints and build a resilient, hybrid space architecture forging the Competitive Endurance we need.

Guardian development is an essential requirement for Competitive Endurance and our culture must be purpose-built to meet the unique needs of the Space Force. Our guardians are dedicated professionals who understand the gravity of the threats we face. We must ensure they have the training, resources, and unwavering commitment necessary to continue to serve and face these threats head-on.

The strategic choices we make today may shape whether space remains a safe for peaceful use and progress or becomes a battleground for future conflict. The Space Force is committed to ensuring a future where space remains a source of American strength and a foundation for global security. However, achieving this vision requires a shared commitment to providing the Space Force with the resources and support necessary to meet the growing challenges of the space domain.

Senator SULLIVAN. [Presiding.] Thank you, General.

Lieutenant General Spain?

STATEMENT OF LIEUTENANT GENERAL ADRIAN SPAIN, AIR FORCE DCS OPERATIONS

Lieutenant General SPAIN. Chairman Sullivan, Ranking Member Hirono, and Members of the Subcommittee, thank you for the opportunity this hearing provides to talk about the elements of readiness for the Air Force. The four primary pillars being parts and supply, people, flying and training, and current infrastructure.

To these I would add elements for future readiness, rebuilding acquisitions, long-term sustainment, and recruiting and retention at a relevant pace and scale, all in a way that reflects our shared purpose.

Senators, I can confidently State that your United States Air Force stands ready and able to defend America's Homeland, ensure a robust nuclear deterrent via our two legs of the triad, and project power around the world to deter and win as the Nation requires.

It is our solemn duty and your airmen are ready. It is also a fact that today's airmen will do so with the oldest airplanes, the smallest force, and with fewer monthly flying hours than at any point in our history.

Airmen have and always will get the job done but today they do so at elevated risk. Meanwhile, China's military forces are expanding and modernizing. Their nuclear modernization, long-range missile proliferation, and recent test flights of two six-gen aircraft is simply further evidence of the elevated threat in this strategic environment.

Conflict is certainly not desirable nor is it inevitable. It is our responsibility to be prepared should diplomacy or deterrence fail.

Often, we have focused on the individual elements of readiness and not how they must be synchronized to create a warfighting capability over time. Even in this hearing, we will likely talk about individual programs and individual projects, all of which are very important.

But the previous strategic environment, mostly permissive and without a significant challenger, allowed us the luxury of segmented attention, priority, and risk. Today's strategic environment does not.

Today's readiness requires a synchronized approach. The right parts and the right maintainers and the right support infrastructure and the right qualified air crew and all in the right balance and, not or.

Many of our past decisions were appropriate given the previous strategic environment but no longer. So we have taken deliberate steps to see this for what it is and do something about it.

We have specifically prioritized parts and supply in applying our program. We have also reconnected our manpower and infrastructure priorities directly to our core readiness outcomes in both our processes and our data.

It is our intent to maintain focus and priority on these pillars to strengthen our readiness and improve our lethality and we are moving out.

I am grateful for this Committee and the broader Congress' support and look forward to working with you to deliberately improve

our current and future readiness posture and undeniably retain our position as the world's greatest Air Force.

With respect to the CR, without anomalies the CR clearly has impact on our readiness up to the tune of about $4 billion.

Anomalies, without anomalies and with the Fiscal Responsibility Act kicking in, it is closer to $14 billion which we cannot afford.

However, we expect and look forward to the final version of this CR if it were to pass with flexibility and agility and anomalies to spend as required to retain readiness to the maximum possible level.

Thank you, and look forward to your questions.

[The prepared statement of Lieutenant General Adrian Spain follows:]

PREPARED STATEMENT BY LIEUTENANT GENERAL ADRIAN SPAIN

INTRODUCTION

Today's Air Force is the oldest and smallest it has ever been. However, some go further to State that today's Air Force is the "least ready" it has ever been. This last statement is far from the truth. While we still face serious challenges across our force, I can confidently State that your United States Air Force stands ready to defend our Nation and its interests, at home and abroad. If called to fight, we will do so effectively alongside our joint and coalition partners, and we will win.

Any discussion of readiness must begin by considering the variables of assets, requirements, and risk within the context of the strategic environment. These variables act like the sides of a triangle in constant tension with each other; when one side is manipulated, the other sides are inevitably affected. We optimize readiness when we adequately support our forces to accomplish their required missions within an acceptable level of risk while considering the threats we face. In a permissive environment, under-resourcing immediate readiness is tolerable because the overall risk is comparatively low. However, in today's strategic environment, shortcomings in immediate readiness reduces our ability to deter our adversaries, increasing the possibility of a damaging and costly conflict. Today, our Nation finds itself in a strategic competition with China. The People's Liberation Army is expanding, modernizing, and diversifying its entire military—including cyber, space, and nuclear forces—at a rapid pace to support revisionist goals and objectives. These developments pose unique and fundamentally new challenges for deterrence, and while conflict is certainly not inevitable, the risk of military confrontation is increased in this environment.

In light of this reality, the Nation faces a decision about what kind of Air Force it wants. We are, and have been, built to fight the conflicts of the past, yet the new strategic environment demands that we rebuild the lethal and ready force we need to compete and win. The readiness challenge confronting us lies in creating the force we need for tomorrow while not neglecting deterrence and readiness today. While generating readiness for today and modernization for tomorrow will be an ongoing challenge, it will be much more difficult to fight a war with a peer because deterrence failed.

The following pages will detail the U.S. Air Force's efforts to bridge this gap—remaining ready to answer its nation's call today while preparing for future conflicts. This statement focuses on three broad categories of readiness. First, the foundational accounts that drive immediate-term readiness—being prepared to fight today. Next, the near to medium-term modernization efforts and their impacts on the Air Force's readiness for sustained competition against our pacing challenge—being prepared to fight tomorrow. Finally, the infrastructure and other long-term readiness concerns we must fund now to create sustained readiness over time—being prepared to fight well into the future.

FOUNDATIONAL ACCOUNTS: IMMEDIATE-TERM READINESS

The foundation for readiness in the U.S. Air Force is realistic training to prepare airmen for wartime operations. To do this, we need the right number of people with the right skills, the right amount of equipment in the right condition, and the right amount of non-deployed time at home station. These "readiness levers"—people, equipment, training, and operations—are used simultaneously to influence our im-

mediate-term readiness. They must be manipulated in concert with each other, with consideration to how each factor influences the others and the time delays inherent in each. The spin-up time to bring in and train additional personnel can take years, and Weapons System Sustainment improvements often take months to years to bear fruit. If training is increased without prior development of people and Weapons System Sustainment, that increase is less productive than hoped, as too few people attempt to fly too many sorties on systems that are too old and too poorly supported. Similarly, if these cycles are disrupted, the process loses momentum, and years of gains can be squandered. Therefore, the goal of foundational readiness is to support our people, equipment, and training at consistently adequate levels to sustain required operations over time. Today's Air Force maintains a high level of core tactical readiness, but a gap has opened between our requirements and our ability to meet those requirements. Decades of overtasking have put these readiness levers out of balance and threatened the viability of our force. Decreased manning and experience levels coupled with sustained high workloads have created a negative feedback loop on both our people and equipment. We must break that cycle.

The Air Force's lethality is grounded in the proficiency, capacity, and skill of its airmen. The Air Force's recruiting and retention efforts are sufficient to meet our congressionally mandated end strength. Recruitment for the Air Force remains strong, with the Active component meeting its accession goals for four of the past 5 years. Though there was a dip in recruiting in fiscal year 2023, the Air Force successfully closed the gap in fiscal year 2024 due to increased recruiter manning, changes to training processes, and an increase in the Delayed Entry Program to its highest level in 10 years. Retention has been similarly on target, enabling the Air Force to maintain its mandated end strength. Critical pockets of the force, however, are less healthy. Maintenance manpower has emerged as an acute issue in the last several years. A shortfall of over 9,700 maintainers has opened across the total force—ten percent of the total maintenance manpower requirement. The manpower shortfall both reduces current aircraft availability and creates retention problems as the remaining workforce must put in extra hours to account for the missing maintainers. Likewise, aircrew shortfalls remain a persistent issue. While many of our initiatives to reverse the decline in aircrew manning are beginning to take effect, we expect manning to continue to decline until approximately the end of fiscal year 2026. After that point, we expect capacity increases in our pilot training pipeline to take effect and begin to reduce the shortfall.

Beyond accessions and retention, however, there is a more pernicious personnel issue facing the Air Force: the misallocation of personnel, particularly when planned Air Force divestments are later prohibited or limited. When the Air Force programs force structure divestments—often two or more years ahead of time—it also re-programs the end strength associated with those divestments. That does not mean that the Air Force separates the maintainers, pilots, or flight engineers associated with the divested platform; rather, the Air Force re-allocates those personnel to a different requirement. For example, A–10 pilots may be retrained to fly the F–35, and F–22 maintainers may be trained to work on the F–35. When those force structure divestments are canceled late in the process, the manpower requirement is disrupted. Therefore, when an F–22 squadron's divestment is canceled, it may well cause an F–35 maintenance unit to suffer personnel shortfalls. The Air Force is a large enterprise and can absorb many of these shocks, but compounding divestment restrictions over many years have added up and contributed to significant personnel shortfalls. Predictable force structure changes over time are critical for ensuring maximum utilization of our airmen and readiness of our capabilities.

While we invest in our people, we must simultaneously invest in our equipment, creating a holistic approach to increasing weapon systems and parts availability. Many ingredients come together to generate aircraft—trained and ready maintainers, mission-capable aircraft, adequate spare parts, and serviceable repair facilities are some of the most significant. The Air Force constantly manages these elements, but since 2020, they have been knocked out of balance, pushing aircraft availability rates steadily downward. First, inflation and labor shortages have deeply cut into the purchasing power of all aspects of sustainment. Second, aging aircraft have begun to systematically fail in an expensive, difficult-to-predict, and difficult-to-repair manner. These two factors combine to push Weapons System Sustainment requirements steadily higher, with a nearly 20 percent increase in Weapons System Sustainment requirements in the last 5 years. Despite that increased requirement, an undermined industrial base has led to curtailing parts supply and driving costs even higher for what remains. The 50 percent increase in the non-mission capable rate for supply since 2019 (from 11 to 17 percent, on average) indicates the severity of the issue. That increase translates to roughly 340 additional aircraft—equivalent

in number to all the fighter and attack aircraft assigned to Pacific Air Forces—sitting on the ramp every day, waiting for spare parts.

Our training faces similarly significant challenges. Training takes many different shapes throughout our Air Force, but flight training funded by the Flying Hour Program (FHP) is one of the most meaningful indicators, especially since many functional training areas ultimately support flying missions. By assessing the health of flight training, we gain insight into the overall State of Air Force immediate readiness. For this reason, it is alarming to see a negative trend in the health of our flight training. Since 2020, aircrew have flown less than the required number of hours to properly build experience, and the gap between required and flown is forecasted to grow in the coming years. For the last several years, the FHP has been set to executable levels rather than the levels needed for aircrew seasoning and combat readiness. As our ability to execute programmed flying hours decreases, we set the bar lower and lower every year. Ultimately, the FHP does not provide all the inputs required to conduct flying training, and many have become increasingly out of balance in recent years. Those inputs include aircrew manning, maintainer manning and skill levels, spares availability, aircraft age, and a continually and increasingly high operational requirement from the combatant commanders. Inflation also eats away at the buying power of the FHP over time. Closing the flying hour gap will require a rebalance of these inputs holistically—not just an increase to the FHP. In particular, the Air Force needs the right trained personnel and spares availability sustained over time. Proper training is the result of matching the right people with the right equipment, and each lever of readiness must be properly sequenced to ultimately boost readiness.

MODERNIZATION: NEAR-TO-MEDIUM-TERM READINESS

During the Global War on Terror, the Nation consistently prioritized extending the lives of older systems because it was the most cost-effective way to meet the needs of the combatant commanders at the time. We preferred systems with long endurance and high availability over more exquisite systems. The MQ–9, MC–12, A–10, and KC–135 fleets, among others, were all sustained or expanded despite significant budgetary pressures. Recapitalization was often curtailed or elongated as a cost-saving measure to pay for decades of heavy demand in Southwest Asia. To sustain readiness across the near to medium term, we must break from this mindset. We must build an Air Force specifically designed to counter our most pressing threats today and in the future, not the threats of the past.

Moving forward, our modernization construct seeks to adapt to the rapidly changing character of war. We must divest legacy systems that are ineffective against high-end threats and inefficient against low-end threats. For 20 years in Afghanistan, the total cost of the stack of aircraft above troops in contact would often exceed $150,000 per flying hour, far more than any individual modern platform. Those same aircraft, each designed with niche capabilities often dating to the last years of the cold war, would stand little chance of prevailing against a Chinese threat in the Western Pacific. Instead of relying on these expensive older capabilities, the Air Force must continue its modernization push and realize both the cost and effectiveness gains from new mixes of equipment. This modernization imperative goes beyond the procurement of platforms. Though Collaborative Combat Aircraft, B–21s, or F–35s will allow us unparalleled access, connectivity, and survivability, platforms are only one link in the long-range kill chain. Other critical links include advanced munitions, intelligence, surveillance, and reconnaissance capabilities, cyber forces, communication platforms, battle management, electromagnetic warfare platforms, tankers, resiliency, and other elements of a family of systems that support a weapon getting to its target. Each of these links extends the kill chain and increases its resilience to enemy action. Development and procurement of munitions and other supporting systems must be a top priority to ensure conventional lethality. Finally, the Air Force remains fully committed to a robust and credible nuclear deterrent. The Air Force's full-scope nuclear modernization program—to include the E–4C Survivable Air Operations Center, Sentinel intercontinental ballistic missile, the B–21 Raider family of systems, the Long Range Stand Off cruise missile, and a modernized B–52—recapitalizes all current systems and supporting infrastructure whose life cannot be extended to deliver modern and credible deterrence capabilities. This is particularly true of the ballistic missile leg of the nuclear triad. Despite the restructuring of the Sentinel program following the recent Nunn-McCurdy breach, it remains the best path forward to ensure the United States maintains the most responsive leg of the nuclear triad.

The Air Force must, however, balance modernization against foundational readiness accounts to optimally distribute risk over time. Investing too heavily in readi-

ness today risks disrupting or eliminating necessary modernization—eating the seed corn of tomorrow. On the other hand, too heavy an investment in modernization starves foundational readiness accounts, reducing the deterrent value of the current force and risking a readiness tailspin that would be difficult to recover from. Over the last few years, we have prioritized modernization at the cost of immediate readiness. In the coming years, we will need to constantly evaluate the balance between immediate and near-to-medium-term readiness as the strategic environment continues to evolve.

INFRASTRUCTURE: LONG-TERM READINESS

As the Air Force continues to focus balancing available resources against the current strategic environment and across the different time horizons, our infrastructure requires careful re-examination to ensure it is both resilient and efficient. Years of competing priorities have eroded the Air Force's ability to maintain its infrastructure across the globe. Simultaneously, air bases are threatened in ways not seen in modern history. the Air Force's Installation Infrastructure Action Plan, released in November 2024, details actions we intend to take to resolve some of these issues,

Air base resiliency has proven to be increasingly important as adversary long-range precision attack capabilities have rapidly improved. Particularly in the Indo-Pacific, China has spent decades building a deep magazine of advanced cruise and ballistic missiles specifically to threaten U.S. force presence in the region. In response, the Air Force has spent considerable time, energy, and resources to develop an Agile Combat Employment (ACE) scheme of maneuver, emphasizing rapid mobility and force dispersal in the region. ACE complicates the adversary's wartime calculus and denies them the lucrative targeting opportunities that known, fixed, and thinly protected locations provide. Additionally, the Air Force, in collaboration with our Joint partners, is actively seeking measures to improve air base air defense capabilities. The successful defense of Israel against several Iranian missile and UAS attacks in 2024 and the Houthi attacks on merchant shipping in the Red Sea paint a stark picture of the need for robust defense against airborne threats as well as increased capacity to restore our bases after attack. Those incidents also emphasize the level of resources required for an effective defense, with airborne, space-based, ground-based, maritime-based, and international assets all participating in defense activity. Air Force defensive capabilities must also include additional capabilities to counter small drones. In recent congressional testimony, the NORTHCOM commander noted the continued incursions of civilian drones into controlled airspace at several Air Force bases in 2024, highlighting the problem's pervasiveness. The capability to detect and intercept unmanned aerial systems in peacetime equates directly to our readiness and ability to respond to enemy aerial incursions in wartime.

The Air Force currently carries significant excess infrastructure across the board, along with a $49.5 billion maintenance backlog that continues to grow. Since 1990, the Air Force has reduced in size considerably, including a 40 percent reduction in end strength and a 60 percent reduction in fighter squadrons, but it has only reduced its CONUS footprint by 15 percent. Moreover, today, roughly half of all infrastructure across the Air Force is in a moderate or high-risk condition. While the Air Force has been able to prioritize its resources to keep critical mission generation infrastructure (e.g., runways) in good working order, such prioritization has come at the expense of our supporting infrastructure. For example, over 70 percent of utility infrastructure on Air Force bases in the Indo-Pacific are in a high-risk condition, a problem made acute by the highly corrosive tropical or arctic environments of many facilities and by limited skilled local labor. Meanwhile, our buying power has eroded, with construction costs rising roughly 50 percent in the last 10 years. The Air Force acknowledges the Fiscal Year 2025 NDAA section 2680 requirement to fund infrastructure investment at 4 percent of plant replacement value by fiscal year 2030 and is moving out with a number of initiatives outlined in our Installation Infrastructure Action Plan. However, we will struggle to meet this requirement in full without support for reductions in inventory.

CONCLUSION

We are in a race to maintain our position as the world's preeminent Air Force. The United States faces a competitor whose national purchasing power exceeds our own and is actively developing a force to counter America's air and maritime competitive advantages. Conflict is not inevitable—we must seek to prevent it through readiness. We must ensure that readiness is optimized across time, with proper consideration to both immediate-term foundational readiness, but also to medium-term modernization, and long-term infrastructure concerns. Only by solving the readiness equation across all three time horizons can we underwrite the Nation's security and

prosperity in the decades ahead. The Air Force appreciates the continued support of our Congress, and I look forward to working with the Members of this Committee to create the momentum needed to address these challenges.

Senator SULLIVAN. Thank you, General, for your very frank testimony. I very much appreciate that.

Finally, Ms. Maurer from the Government Accountability Office (GAO), thank you for your great work on many issues.

STATEMENT OF DIANA C. MAURER, DIRECTOR, DEFENSE CAPABILITIES AND MANAGEMENT, GOVERNMENT ACCOUNTABILITY OFFICE

Ms. MAURER. All right. Well, good morning, Chairman Sullivan, Ranking Member Hirono, and other Members.

[Technical issue.]

Ms. MAURER.—here today to discuss GAO's recommendations to help the military address long-standing readiness challenges that span several Administrations.

I would like to in particular highlight three cross cutting challenges that we continue to find across the services.

First, DOD faces growing gaps between mission and resources. In many areas the services assume risk because of imbalances between what they have been tasked to do and the people, parts, and facilities they have——

[Technical issue.]

Ms. MAURER.—Pentagon needs to focus more on sustainment. Buying new systems is just the beginning. Ensuring combat-ready units can operate and sustain those systems is the hard part, and all too often a host of sustainment problems means planes, ships, and vehicles are not available when needed.

And third, DOD's ability to move and support forces lags behind operational needs. The services face potential adversaries who will contest the movement of people, material and information.

DOD needs to adapt its decades-long reliance on uncontested logistics, just in time distribution——

[Technical issue.]

Ms. MAURER. My written statement summarizes reports with over 100 recommendations to help address these challenges.

So, for example, the Navy needs an industrial based strategy to help get better results from the private companies that repair and build ships. The Army should ensure units have the necessary training, facilities, and support before fielding new equipment.

The Space Force needs to refine its plans for training and exercising its squadrons. The Navy should coordinate with the Marine Corps to fix amphibious ships and reach agreement on what it means for a ship to be available.

DOD should decide when and how various services will assume sustainment responsibilities for missile defense systems. For the F–35 program DOD needs to reassess the balance of sustainment responsibilities between contractors, services, and ensure maintainers have access to the technical data they need to meet operational mission needs.

GAO's recommendations will help improve military readiness and that is the heart of what we do at GAO. We help improve the Government.

Now, we are currently in the midst of a vigorous national debate about improving the effectiveness and efficiency of the Federal Government.

GAO's independent nonpartisan role in the legislative branch is as important now as it has ever been. We will continue to provide facts, analyses, and recommendations to this Committee and to all 535 Members so you can execute your congressional oversight of executive branch programs and activities.

Thank you for the opportunity to testify this morning and I look forward to your questions.

[The prepared statement of Ms. Diana C. Maurer follows:]

United States Government Accountability Office

Testimony

Before the Subcommittee on Readiness and Management Support, Committee on Armed Services, U.S. Senate

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MILITARY READINESS

Implementing GAO's Recommendations Can Help DOD Address Persistent Challenges across Air, Sea, Ground, and Space Domains

Statement of Diana Maurer, Director, Defense Capabilities and Management

GAO-25-108104

GAO Highlights

Highlights of GAO-25-108104, a testimony before the Subcommittee on Readiness and Management Support, Committee on Armed Services, U.S. Senate

March 12, 2025

MILITARY READINESS

Implementing GAO's Recommendations Can Help DOD Address Persistent Challenges across Air, Sea, Ground, and Space Domains

Why GAO Did This Study

DOD's readiness rebuilding efforts are occurring in a challenging context that requires it to make difficult decisions on how to meet continuing operational demands while preparing for future challenges. DOD has taken steps to address persistent and long-standing readiness challenges, but significant work remains.

This statement provides information on readiness challenges across the air, sea, ground, and space warfighting domains.

This statement is based primarily on published GAO reports since 2020 that have examined aspects of military readiness, operations, and sustainment in the air, sea, ground, and space domains. This statement also includes information on related ongoing work. We expect to report on those results in March 2025. To perform all this work, GAO analyzed Army, Navy, Air Force, Marine Corps, and Space Force readiness, maintenance, personnel, and training data and interviewed cognizant officials.

What GAO Recommends

Across the reports summarized in this statement, GAO has made over 100 recommendations to help improve readiness across and in each of the domains. DOD needs to take additional actions to implement most of these recommendations, as discussed in this statement.

For more information, contact Diana Maurer at (202) 512-9627 or maurerd@gao.gov.

What GAO Found

The United States' military superiority depends on its ability to project strength across all warfighting domains. GAO's body of work has shown that U.S. military readiness has been degraded over the last 2 decades due to a variety of challenges, including maintaining existing systems while acquiring news ones that can overcome rapidly evolving threats. Implementing GAO's open recommendations will help the Department of Defense (DOD) address these challenges and enhance readiness. The figure below shows selected GAO recommendations that DOD has not yet implemented.

Selected Open GAO Recommendations to Address Persistent Military Readiness Challenges

Source: GAO analysis of Department of Defense information; GAO (icons). | GAO-25-108104

Chairman Sullivan, Ranking Member Hirono, and Members of the Subcommittee:

Thank you for the opportunity to be here today to discuss Department of Defense (DOD) readiness.

The United States remains the dominant military force worldwide, capable of defending its interests and preserving peace through strength in all warfighting domains—air, sea, ground, space, and cyberspace. During the past quarter century, conflicts have taken a toll on U.S. military readiness. At the same, competition and threats posed by China, Russia, and other adversaries have increased.

To maintain the U.S. military's advantage across all domains in a new security environment characterized by great-power competition, DOD has taken steps to evaluate and enhance the readiness of its forces while also modernizing them. However, DOD has faced challenges both in maintaining its current readiness while also investing resources to develop and acquire new capabilities to meet emerging threats. The military services' current force structure—the ships, vehicles and aircraft, and the personnel required to operate and maintain them—generally has not met availability goals. Additionally, DOD's efforts to acquire new weapon systems that can adapt to and overcome rapidly advancing future threats have lagged—often costing more than expected and taking too long to deliver innovative capability to the warfighter. Service members have also reported on-the-job challenges like fatigue and the need for more training, which affect their ability to do their jobs.

We recognize that DOD's readiness rebuilding efforts are occurring in a challenging context. It requires the department to make difficult decisions regarding how best to address continuing operational demands while preparing for future challenges. DOD has taken steps to address persistent and longstanding readiness challenges, but significant work remains. The 119th Congress and new presidential administration present an opportunity to make further progress to improve miliary readiness. We have made more than 100 recommendations in the reports summarized in this statement. They are all intended to help DOD improve military readiness, but DOD still needs to take actions to address most of them. Many of these recommendations warrant priority attention from the department because their implementation could improve congressional

and executive branch decision-making on major issues and substantially improve defense programs, among other benefits.[1]

This statement provides information on readiness challenges that exist across the air, sea, ground, space domains, as well as cross-cutting challenges that span the force. It is based primarily on our prior reports, which we cite throughout this statement. Most of these were issued from May 2020 through February 2025 and examined aspects of military readiness, operations, and sustainment in the air, sea, ground, and space domains. We also include prior reports examining readiness issues across these domains. To perform our prior work, we analyzed Army, Air Force, Navy, Marine Corps, and Space Force readiness; maintenance, personnel, and training information; and interviewed cognizant officials.[2]

This statement also includes information on related ongoing work. We expect to report on those results in March 2025. To perform these ongoing reviews, we analyzed relevant documentation and interviewed cognizant officials.

More detailed information on the objectives, scope, and methodology for that work can be found in the issued reports listed in Related GAO Products at the conclusion of this statement. We conducted the work on which this statement is based in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

[1]GAO, *Priority Open Recommendations: Department of Defense*, GAO-24-107327 (Washington, D.C.: June 28, 2024).

[2]We have also issued several classified reports concerning readiness issues since May 2021. We cite these reports where appropriate and discuss information that DOD has deemed publicly releasable.

Implementing GAO's Recommendations Can Help DOD Address Persistent Readiness Challenges across the Air, Sea, Ground, and Space Domains

Cross-domain

Each military service operates across multiple domains. For example, each service uses cyberspace. All conduct or depend on space operations. Army and Marine Corps forces operate from the air, Navy forces can influence land battles, and Air Force operations routinely affect multiple domains. DOD recognizes, and we have previously reported on, the importance of military operations working across multiple domains. In our prior work, we have found a variety of readiness challenges such as the shortage of sufficiently trained personnel, and opportunities to enhance safety and prevent accidents that cut across multiple domains and military services.

Shortage of Sufficiently Trained Personnel Hinders Readiness

Insufficient numbers of adequately trained military personnel can negatively affect the military services' ability to perform their missions. Our prior reports have found that the military services face challenges providing an adequate number of aircraft maintainers, sailors aboard Navy ships, and air and missile defense soldiers that are needed to meet mission requirements.

Aircraft Maintenance Personnel

Shortages in trained maintenance personnel have contributed to challenges the Departments of the Army, Navy, and Air Force face in

meeting mission capable rate goals for their aircraft that support combat-related missions.[3] For example:

- The Navy EA-18G Growler—an aircraft with advanced electronic warfare capabilities—has experienced depot and field maintenance personnel shortages and inadequate training for maintenance personnel, according to program officials. The officials stated that the program has experienced a shortage of trained depot and field maintenance personnel due to attrition caused by the overall high demand for these employees in the private and public sectors, including elsewhere in DOD. The EA-18G Growler did not meet its mission capable rate goal in any year from fiscal year 2015 through fiscal year 2024.
- The Army CH-47F Chinook—the Army's only heavy-lift cargo rotary wing aircraft—has experienced maintainer shortages that have affected the availability of the aircraft. Specifically, Army National Guard units do not have the necessary number of full-time maintainers, according to program officials. The CH-47F Chinook did not meet its mission capable rate goal in any year from fiscal year 2015 through fiscal year 2024.
- The Air Force C-130H Hercules and C-130J Super Hercules—performing airlift support and aeromedical missions—faced maintenance personnel challenges. In particular, scheduled maintenance being performed at a number of Air Reserve Component bases are not staffed to support multiple shift operations per day. As a result, maintenance actions can take 1.5 to 3 times as long to complete at these locations than at active-duty bases. This reduces the availability of aircraft to fly missions. The C-130H Hercules did not meet its mission capable rate goal in any year across fiscal years 2015-2024 and the C-130J Super Hercules met mission capable rate goals 1 out of 10 years from fiscal year 2015 through fiscal year 2024.
- The Air Force B-2 Spirit—the Air Force' multirole low observable, or stealth bomber that can deliver both conventional and nuclear munitions by penetrating an enemy's defenses—experienced shortages of trained maintenance personnel. For example, many of the B-2 Spirit bomber commercial and organic depot repair facilities have only one person available who is trained to perform a specific

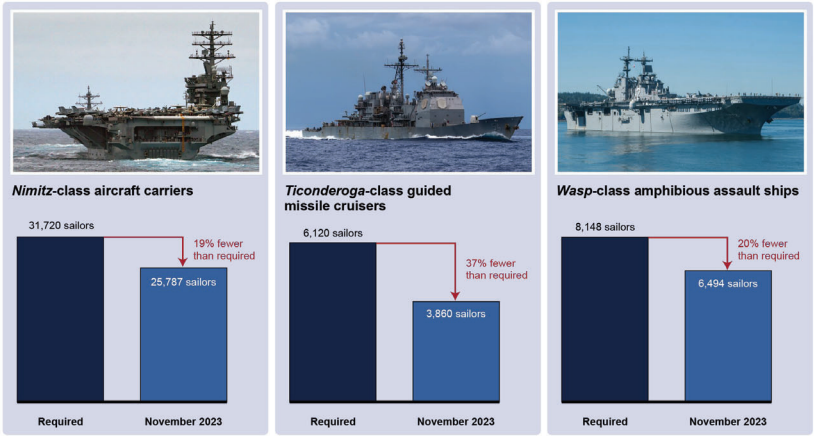
[3]The mission-capable rate—the percentage of total time when the aircraft can fly and perform at least one mission—is used to assess the health and readiness of an aircraft fleet. See GAO, *Weapon System Sustainment: Aircraft Mission Capable Goals Were Generally Not Met and Sustainment Costs Varied by Aircraft*, GAO-23-106217 (Washington, D.C.: Nov. 10, 2022).

type of B-2 maintenance, according to B-2 program officials. The B-2 Spirit met mission capable rate goals 4 of 10 years from fiscal year 2015 through fiscal year 2024.

Navy Sailors

The Navy faces several interrelated personnel and training challenges that inhibit sailors' ability to complete required ship maintenance. In September 2024, we found that the Navy does not fill all required ship positions, and that sailors assigned to a ship are sometimes unavailable for duty (for example, temporarily assigned to another ship) or may have inadequate training or preparation for their positions, as shown in figure 1.[4]

Figure 1: Sailors Required and Assigned for Selected Ship Classes



Source: GAO analysis of U.S. Navy data; U.S. Navy/Mass Communication Specialist 3rd Class A. Langholf (Nimitz); U.S. Navy/Mass Communication Specialist 2nd Class N. Bauer (Ticonderoga); U.S. Navy/Mass Communication Specialist 2nd Class J. A. Willadsen (Wasp). | GAO-25-108104

[4]GAO, *Navy Readiness: Actions Needed to Improve Support for Sailor-Led Maintenance*, GAO-24-106525 (Washington, D.C.: Sept. 9, 2024).

Sailor shortages hinder sailors' ability to complete required maintenance, according to ship executive officers we surveyed, sailors from our visits to 25 ships, and our review of Navy data. For example, 63 percent of executive officers completing our survey said it was moderately to extremely difficult to complete repairs while underway with the number of sailors assigned to their ships. Our work found that the total sailor-led maintenance backlog declined for aircraft carriers and surface ships but increased for submarines. For a subset of maintenance actions classified as "mission-limiting" based on their priority and impact, the backlog worsened in fiscal year 2023, increasing by about 8 percent, according to our analysis.

Sailors who are assigned to a specific ship are sometimes unavailable to perform sailor-led maintenance, due to illness or temporary duty on another ship, among other reasons. However, we found the Navy did not track and report data on the number of sailors assigned to a ship, but not available for duty, according to officials. We previously raised questions about the reliability of data the Navy uses to monitor the personnel readiness of the fleet.[5] Specifically, the Navy applies some business rules to this data that result in counting some junior enlisted sailors as filling positions that require more senior-level sailors. These practices did not provide the Navy with an accurate understanding of the true extent of personnel skill and experience gaps.

We made seven recommendations, including that the Navy improve the quality of information on the number of ship's crew available for duty and ensure that maintenance guidelines reflect specific conditions affecting the needed amount of time, personnel, and training specific to ships or ship classes. The Navy agreed with our recommendations and has taken action, but has not fully implemented our recommendations.

Air and Missile Defense

In our non-public report, we identified challenges the Army faced meeting service goals and requirements for active-duty Army enlisted air and missile defense personnel levels.[6] Factors contributing to these challenges include air and missile defense soldiers experiencing high

[5]GAO, *Navy Readiness: Actions Needed to Improve the Reliability and Management of Ship Crewing Data*, GAO-24-105811 (Washington, D.C.: Apr. 29, 2024).

[6]GAO, *Army Personnel: Improvements Needed to Address Recruitment, Training, and Retention Challenges in Air and Missile Defense*, GAO-24-106722SU (Washington, D.C.: Sept. 6, 2024).

rates of unit activity, unpredictable deployment schedules, a lack of an implementation plan to achieve recruitment goals for this particular specialty, and a personnel management data system that oftentimes provided inaccurate or incomplete data.

We made recommendations to address these challenges, including that the Army improve its personnel data system, develop a plan to recruit air and missile defense personnel, enhance coordination among training stakeholders, and evaluate its retention incentive program. The Army agreed with all our recommendations and is taking action to address them, but has not fully implemented them.

Actions Could Help Improve Safety and Prevent Accidents

Accidents involving U.S. military personnel during training and other non-combat events have resulted in deaths and hundreds of millions of dollars in damage to ships, vehicles, and aircraft. Inattention, lapses in supervision, and not following procedures were key factors that contributed to reported non-combat accidents, according to our analysis.[7] Fatigue caused by inadequate sleep also negatively affected service members' performance and contributed to serious accidents.[8]

Non-Combat Accidents

DOD has stated that it cannot afford to maintain the status quo to reach a goal of zero fatalities from preventable accidents, emphasizing the health and safety of personnel and care for military equipment and assets.[9] It intends to target specific areas for action using data to make informed

[7]GAO, *Special Operations Forces: Additional Oversight Could Help Mitigate High-Risk Training Accidents*, GAO-25-106321 (Washington, D.C.: Nov. 21, 2024); *National Guard Helicopters: Additional Actions Needed to Prevent Accidents and Improve Safety*, GAO-23-105219 (Washington, D.C.: Mar. 14, 2023); and *Military Vehicles: Army and Marine Corps Should Take Additional Actions to Mitigate and Prevent Training Accidents*, GAO-21-361 (Washington, D.C.: July 7, 2021).

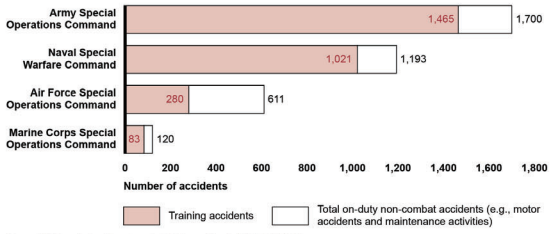
[8]We reported on the extent of sailor fatigue and made four recommendations for the Navy to more effectively manage fatigue. See GAO, *Navy Readiness: Additional Efforts Are Needed to Manage Fatigue, Reduce Crewing Shortfalls, and Implement Training*, GAO-21-366 (Washington, D.C.: May 27, 2021). In October 2023, we found that the Navy had not taken actions to fully implement three of the four recommendations. See GAO, *Navy Readiness: Challenges to Addressing Sailor Fatigue in the Surface Fleet Continue*, GAO-24-106819 (Washington, D.C.: Oct. 11, 2023). Also, see National Commission on Military Aviation Safety, *Report to the President and Congress of the United States* (Dec. 1, 2020).

[9]DOD, *DOD Strategic Management Plan, Fiscal Years 2022-2026* (Mar. 6, 2023).

decisions. We made several recommendations to DOD that will help the department ensure the safety of service members.

- **Special Operations Forces (SOF).** SOF individuals experienced serious accidents during high-risk training, which U.S. Special Operations Command (SOCOM) defines as a set of activities that expose the individual to the potential risk of serious injury, permanent disability, or death. In November 2024, we found about 80 percent of the over 3,600 reported on-duty, non-combat accidents involving SOF personnel occurred during training activities in fiscal years 2012 through 2022, according to military service safety center data (see fig. 2).[10] About 40 percent of the total reported training accidents occurred in two high-risk training areas, parachute training, and combat dive training.

Figure 2: Reported Number of On-Duty, Non-Combat and Training Accidents involving Special Operations Forces Personnel, Fiscal Years 2012–2022



Source: GAO analysis of Department of Defense data. | GAO-25-108104

We found that SOCOM had not analyzed accident trends to improve safety in these areas or others that may be high-risk. We also found that none of the military services' SOF commands addressed all of SOCOM's oversight requirements in their respective high-risk training and related policies. As a result, SOCOM did not have reasonable assurance that it had an effective approach to safety with standardized oversight across the military services' SOF commands to mitigate training risks.

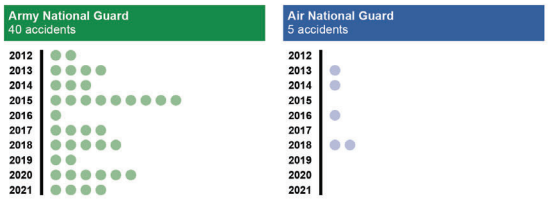
In our November 2024 report, we made six recommendations to DOD including that SOCOM analyze safety data to identify high-risk training

[10]GAO-25-106321.

areas and ensure that the Military Services' four SOF commands complete updates to their policies that include SOCOM's high-risk training oversight requirements. DOD agreed with the recommendations.

- **Army and Air National Guard helicopters.** In March 2023, we found that the Army and Air Force National Guard reported 298 accidents during non-combat flights between fiscal years 2012 through 2021.[11] We found that these accidents were mostly due to human error. Approximately 45 of those were considered serious helicopter accidents in that they involved death, permanent disability, extensive hospitalization, property damages of $500,000 or more, or a destroyed helicopter (see fig. 3).

Figure 3: Reported Army and Air National Guard Serious Helicopter Accidents, Fiscal Years 2012 through 2021



Source: GAO analysis of Department of Defense data. | GAO-25-108104

Note: Serious helicopter accidents include those that involved death, permanent disability, extensive hospitalization, property damages of $500,000 or more, or a destroyed helicopter.

We made eight recommendations to the Army and Air Force, including that they take steps to ensure that their respective National Guard helicopter units continuously evaluate and update risk management practices and develop comprehensive strategies to address challenges that have hindered National Guard helicopter pilot training. The department generally agreed with our recommendations and has taken action to address three of them but needs to take further actions to fully implement the other five.

- **Ground combat vehicles.** In July 2021, we reported that the Army and Marine Corps did not consistently use practices established to

[11]GAO-23-105219.

mitigate and prevent tactical vehicle accidents (e.g., tanks, trucks).[12] For 10-years of data we reviewed (fiscal years 2010 through 2019), the Army and Marine Corps reported 342 serious accidents, which have the most serious injuries and financial costs, including 123 military deaths. We also found that the Army and Marine Corps had taken steps to improve driver training, but advanced training experiences (e.g., driving in varied conditions) differed across units, leading to uneven driver skills.

We made nine recommendations to DOD to help prevent these accidents. DOD agreed and has taken action to address two of them but needs to take further actions to fully implement the other seven recommendations.

We have a related ongoing review evaluating trends in Osprey tiltrotor aircraft accidents and factors that have contributed to Osprey safety concerns. We plan to report on the results of that work in 2025.

Service Member Fatigue

When service members do not get enough sleep, it can affect their performance. DOD is aware that impairment from fatigue can be equivalent to the effects of alcohol intoxication and significantly increases the risk of physical injury. The department's overarching guidance about fatigue emphasizes the importance of service members obtaining at least 7 hours of sleep for optimal performance and readiness.[13] For over a decade, DOD surveys have found that most service members reported sleeping 6 or fewer hours per night.

We found in March 2024 that many service members were not getting the DOD-recommended 7 or more hours of sleep each day.[14] In a nongeneralizable survey that we conducted for our March 2024 report, respondents cited similar issues with inadequate sleep. Our survey focused on six general military occupations with the potential to be affected by fatigue: fixed-wing pilots, rotary-wing pilots, remote pilots, aviation maintainers, on-alert operations, and motor vehicle operators. We found that many respondents are sleeping too little, and roughly half

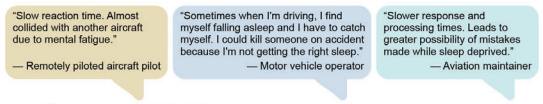
[12]GAO-21-361.

[13]DOD Instruction 1010.10, *Health Promotion and Disease Prevention* (Apr. 28, 2014) (incorporating change 3, effective May 16, 2022).

[14]GAO, *Military Readiness: Comprehensive Approach Needed to Address Service Member Fatigue and Manage Related Efforts*, GAO-24-105917 (Washington, D.C.: Mar. 26, 2024).

of respondents have poor sleep quality regardless of quantity. Survey respondents provided examples of how sleep deprivation had affected their work—from nearly colliding with another aircraft to falling asleep on the job (see fig. 4).

Figure 4: Examples of Service Members' Statements Regarding How Sleep Deprivation Has Affected Their Work



Source: GAO survey responses. | GAO-25-108104

We made nine recommendations in this area in our March 2024 report, including that DOD assess its fatigue-related oversight structure, assign DOD and service-level leadership to oversee fatigue-related efforts, and create and maintain a list of all relevant research projects. DOD generally agreed with our recommendations but needs to take further actions to implement them.

Challenges Affecting Readiness in Specific Regions

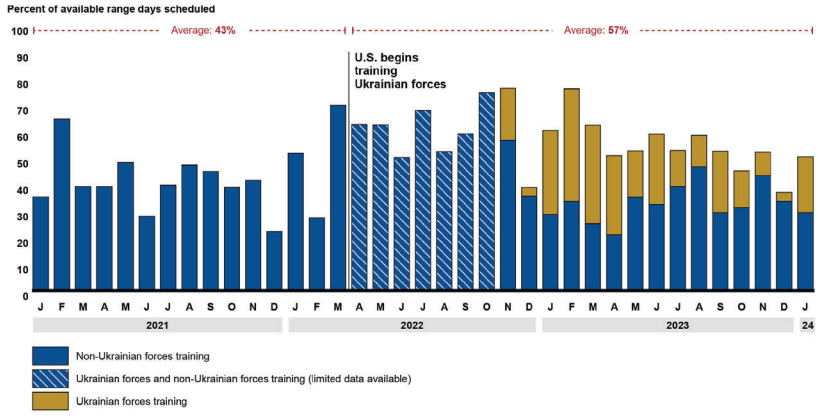
Ukraine Security Assistance

Our work in January 2025 found that training Ukrainian forces increased range use and had varied effects on U.S. force readiness (see fig 5).[15] As we reported, as part of the U.S. response to Russia's invasion of Ukraine, DOD has trained Ukrainian personnel on specific weapons, group operations, and leadership—mainly at U.S. training ranges in Germany.[16]

[15]GAO, *Ukraine: DOD Can Take Additional Steps to Improve Its Security Assistance Training*, GAO-25-107923 (Washington, D.C., Jan. 28, 2025).

[16]As we reported in January 2025, since Russia's invasion in February 2022, the U.S. European Command and its Army component—U.S. Army Europe and Africa—have provided most of the U.S. training for Ukrainian forces at Grafenwoehr in Germany.

Figure 5: Percentage of Training Range Days Scheduled at Grafenwoehr, Germany, Training Area, by Month, January 2021–January 2024



Source: GAO analysis of Army range scheduling data. | GAO-25-108104

U.S. military personnel experienced some positive and negative readiness effects because of the security assistance training for Ukrainian forces. For example, units that frequently served as trainers described some benefits to general readiness that may not be captured in a unit's readiness reporting, including morale and retention, repetition of training tasks, and knowledge sharing. In other cases, some U.S. Army units had to cancel, reschedule, or divert training to alternative locations because certain training ranges were being used for training Ukrainian forces at Grafenwoehr, Germany, and because training Ukrainian forces created a less predictable training schedule, according to officials. These alternative locations did not always have some equipment available to gather data and measurements during training.

However, we also found that DOD components, including the U.S. Army had not consistently recorded observations from training Ukrainian forces in the Joint Lessons Learned Information System as required by DOD

policy, which could contribute to a missed opportunity to learn from this experience.[17]

We made three recommendations in our January 2025 report, including that DOD ensure that organizations capture and share relevant training observations through the Joint Lessons Learned Information System. DOD agreed with the recommendation and stated that it would take action to address it.

We have additional ongoing work reviewing the effect of Ukraine assistance on U.S. military readiness. DOD has ordered over $20 billion in military assistance from DOD stockpiles through presidential drawdowns, from artillery rounds and missiles to tanks and body armor.[18] In a classified draft report, we identified both benefits and challenges to DOD's readiness from these drawdowns. DOD has taken actions to address these challenges such as investing billions of dollars for replacement equipment and increasing production capacity for munitions, such as for 155mm artillery rounds. We expect to report on the results of that work in March 2025.

European Deterrence Initiative

In July 2023, we reported that DOD should establish performance goals and measures to improve oversight of the European Deterrence Initiative (EDI).[19] The EDI was established in 2015 to help boost military readiness of European allies and deter Russian aggression. Its activities have enhanced U.S. military posture in Europe by supporting the deployment of additional U.S. rotational forces and expanding the number of locations

[17]DOD develops lessons learned through a five-phase process that is facilitated by its Joint Lessons Learned Information System, among other tools. The process involves recording and validating observations, developing the lessons for further analysis, and disseminating the lessons across the department. The primary objective of the process is to enhance force readiness and effectiveness by contributing to improvements in shorter-term operations and planning as well as longer term doctrine, organization, training, materiel, leadership and education, personnel, facilities, and policy, according to DOD. Chairman of the Joint Chiefs of Staff Instruction 3150.25H, *Joint Lessons Learned Program* (Dec. 30, 2021).

[18]Presidential drawdown authority is considered security assistance which authorizes the President to transfer articles, such as munitions and weapon systems, from DOD stocks to other countries in the event of an unforeseen emergency requiring military assistance, among other purposes.

[19]GAO, *European Deterrence Initiative: DOD Should Establish Performance Goals and Measures to Improve Oversight*, GAO-23-105619 (Washington, D.C.: July 10, 2023).

where U.S. forces operate. From fiscal year 2015 through fiscal year 2023, DOD spent $35.1 billion on EDI activities. This funding has supported a variety of military activities in Europe, including troop rotations, intelligence activities, and construction of projects such as airfields, ranges, and other military facilities. Currently, DOD organizes EDI activities under five lines of effort, as shown in table 1.

Table 1: The Department of Defense's European Deterrence Initiative Lines of Effort

Line of effort	Description
Increased Presence	Increasing U.S. military forces in Europe through rotations of ground, air, and maritime units
Exercises and Training	Participating in exercises and training with allies and partner countries to improve the readiness of U.S. forces and U.S. forces' ability to work with allies and partners
Enhanced Prepositioning	Prepositioning stocks of equipment, munitions, and fuel in Europe
Improved Infrastructure	Subject to final agreement with host nations, selective infrastructure improvements that expand the ability to operate from key locations and support military activities, operations, and readiness
Building Partner Capacity	Providing partner countries with the capability and capacity to defend themselves and enabling their participation as full operational partners against threatening actors

Source: GAO analysis of Department of Defense budget materials. | GAO-25-108104

In July 2023, we reported some shortcomings in how DOD assesses the return on its EDI investments. The military services have collected information from monitoring and assessing some initiative activities, including construction projects and military exercises. However, DOD has not established performance goals and measures for the initiative, so we recommended that it do so. DOD disagreed with our recommendation, stating that it would be inappropriate to develop distinct performance measures for EDI alone, apart from other European posture investments. We believe implementing our recommendation is important, as DOD would be in a better position to assess EDI activities, support budget requests, and justify resource expenditures. In addition, both DOD and Congress would better understand the return on investments, which would improve oversight.

We have related ongoing work reviewing cross-domain challenges in the European region. Specifically, we are reviewing DOD's ability to receive, stage, move forward, and integrate into the battlespace forces, materiel, and personnel coming from outside Europe in coordination with North Atlantic Treaty Organization allies and partners in the event of conflict with Russia in Europe. We expect to report on the results of that work later in 2025.

Guam Missile Defense

In February 2025, we reported that DOD's plans to defend Guam from missile attack faced a variety of planning challenges.[20] DOD has taken steps to establish an organizational structure for overseeing and sustaining an enhanced missile defense system known as the Guam Defense System. However, we found that DOD has neither established when and how the military services will take responsibility for operating and sustaining the Guam missile defense system, nor has it identified the number of personnel that the services will need to deploy to Guam.

We also reported that the Army does not have sufficient installation support for its forces currently defending Guam from missile attack. The Army has deployed a missile defense battery in Guam for over 10 years. However, the Army's forces are not well integrated into the joint base structure on Guam, which includes installations managed by the Navy, Air Force, and Marine Corps. As a result, the Army missile defense forces are experiencing austere living conditions, have limited space to store equipment and spare parts, and lack dedicated maintenance facilities.

We made four recommendations in our February 2025 report, including that DOD identify personnel requirements and develop strategies for transferring responsibilities to lead organizations for sustaining and operating the Guam missile defense system, and that the Army take steps to provide better access to installation support for its forces on Guam. DOD agreed with our recommendations.

Marine Corps Posture in the Indo-Pacific

We found in May 2023 that the Marine Corps did not meet all military training needs, such as different types of live-fire training, at training ranges within the U.S. Indo-Pacific Command (INDOPACOM).[21] In March 2020, the Marine Corps issued Force Design 2030, which describes the Marine Corps' intent to modernize to address threats in the INDOPACOM area of responsibility including long-range strike capabilities, gray zones, and maritime-centric warfare. Specifically, the Marine Corps plans to increase the number of rocket artillery batteries and unmanned aerial

[20]GAO, *Missile Defense: DOD Faces Support and Coordination Challenges for the Defense of Guam,* GAO-25-107116C (Washington, D.C.: Feb. 28, 2025).

[21]GAO, *Marine Corps Indo-Pacific Posture: Actions Needed to Address Training Challenges,* GAO-23-105783C (Washington, D.C.: May 5, 2023).

vehicles and to integrate training more fully with the Navy. Additionally, the Marine Corps has called for divestments in equipment such as tanks and heavy helicopter squadrons and reductions in the total number of active Marines to enable littoral maneuver and support smaller, more expeditionary operations.

To mitigate the challenges in meeting military training needs in INDOPACOM, we found the Marine Corps uses alternatives to meet these requirements, such as returning forces to the continental U.S. to train and using rotational forces, exercises, and virtual training. The Marine Corps has been unable to meet its training requirements at training ranges in INDOPACOM for almost a decade. We recommended in our May 2023 report that the Marine Corps complete an analysis of unmet training requirements and develop a plan to identify and remediate these unmet requirements at ranges within INDOPACOM. DOD partially agreed with our recommendation but has not yet fully implemented it.

We have ongoing reviews of cross-domain challenges in the Indo-Pacific region. Specifically, we have ongoing work on (1) fuel logistics in a contested environment; (2) prepositioned assets; (3) the Pacific Deterrence Initiative; (4) Pacific weapon systems repair; and (5) Air Force bomber operations and sustainment. We expect to report on the results of that work in 2025.

Air Domain

DOD Generally Has Not Met Aircraft Mission Capable Goals

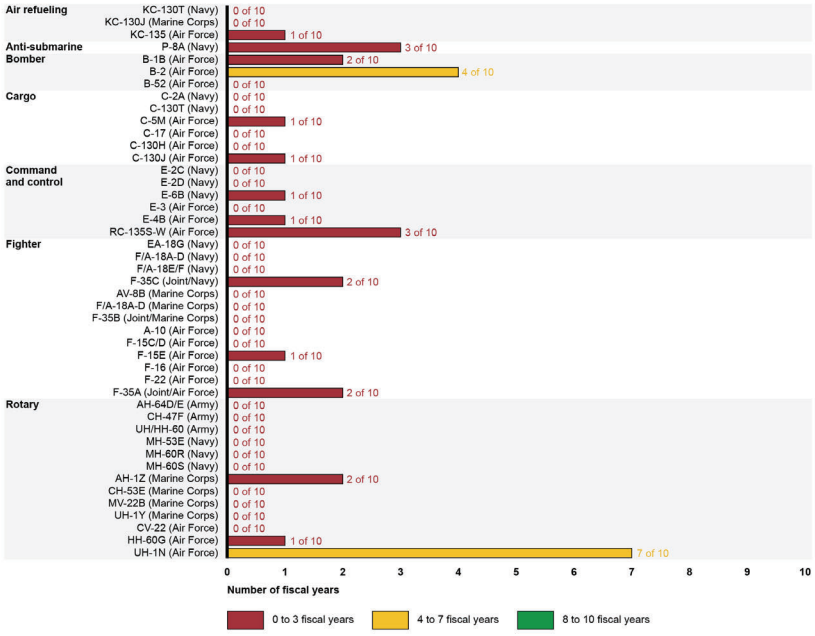
DOD did not meet its mission capable rate goals for fiscal year 2024 for 42 of the 45 DOD aircraft that support military-related missions, based on updated analysis from November 2022.[22] Additionally, for fiscal year 2024

- 27 aircraft were more than 10 percentage points below the mission capable rate goal in fiscal year 2024; and
- 15 aircraft were 10 percentage points or less below the mission capable rate goal in fiscal year 2024.

[22]GAO-23-106217. We reported separately on the Army's combat helicopters—the AH-64 Apache, CH-47 Chinook, and UH/HH-60 Black Hawk—examining materiel readiness goals, maintenance challenges, and sustainment plans. See GAO, *Combat Helicopters: Actions Needed to Fully Review Readiness Goals and Address Long-Standing Maintenance Challenges*, GAO-22-104607SU (Washington, D.C.: Feb. 15, 2022).

As shown in figure 6, only one aircraft—the Air Force's UH-1N—met its annual mission capable rate goal in a majority of years from fiscal years 2015 through 2024.

Figure 6: Number of Years Selected Aircraft Met Their Annual Mission Capable Rate Goal, Fiscal Years 2015 through 2024

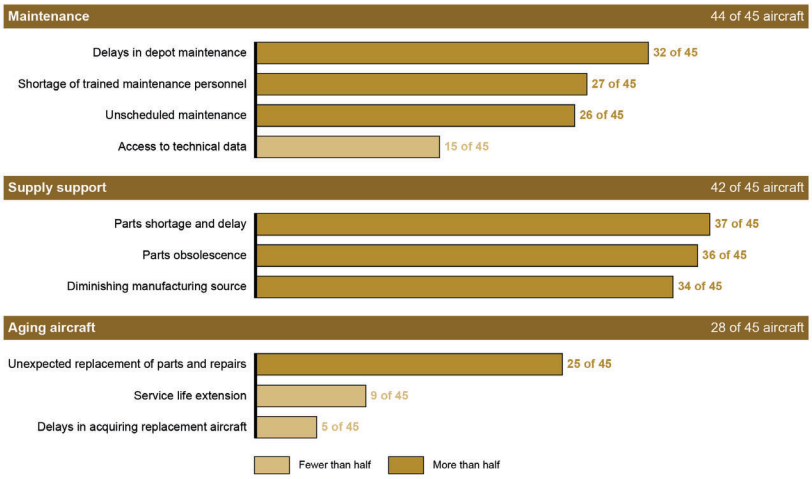


Source: GAO analysis of Army, Navy, and Air Force data. | GAO-25-108104

Many of the aircraft we reviewed in November 2022 faced one or more sustainment challenges related to the age of the aircraft, maintenance

constraints, and supply support (see fig. 7).[23] According to program officials, these challenges influence mission capable rates. One challenge—access to intellectual property or technical data such as user manuals, engineering design data, models, and computer software—has been a long-standing issue negatively affecting the ability of maintainers to conduct maintenance on aircraft. Acquiring and licensing technical data is critical for ensuring weapon systems and equipment remain functional, sustainable, upgradable, and affordable.[24]

Figure 7: Sustainment Challenges Affecting Selected Aircraft, as of November 2022



Source: GAO analysis of Army, Navy, and Air Force information. | GAO-25-108104

[a]Obsolescence refers to a lack of availability of a part due to its lack of usefulness or it no longer being current or available for production.

[23]GAO-23-106217.

[24]GAO, *Defense Acquisitions: DOD Should Take Additional Actions to Improve How It Approaches Intellectual Property*, GAO-22-104752 (Washington, D.C.: Nov. 30, 2021).

[b]Diminishing manufacturing sources refers to a loss or impending loss of manufacturers or suppliers of items.

[c]A service life extension refers to a modification to extend the service life of an aircraft beyond what was planned.

We have related ongoing work reviewing (1) aircraft sustainment; (2) B-52 modernization and sustainment; (3) Air Force refueling tanker force structure and sustainment; (4) air logistics complex performance; and (5) DOD weapon system intellectual property and data rights for programs in sustainment. We plan to report on the results of that work later in 2025.

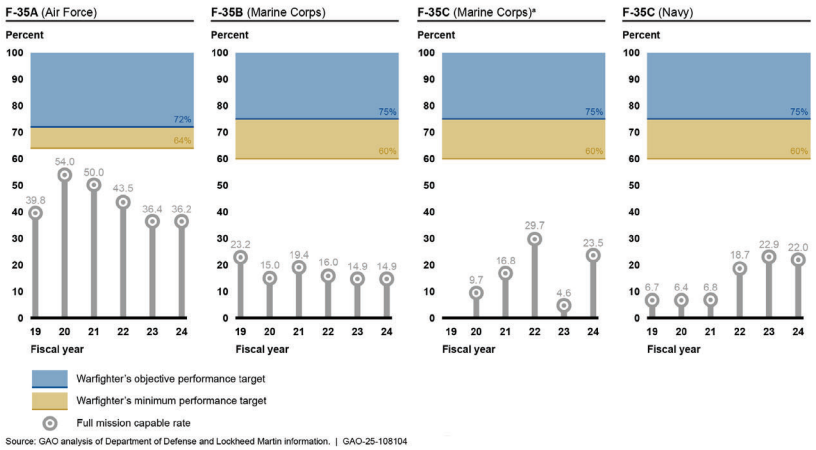
Actions Needed to Address F-35 Sustainment and Operational Challenges

The F-35 Lightning II aircraft—a growing portion of DOD's tactical aviation fleet—faces significant sustainment challenges. With over 700 F-35s now in service with the Air Force, Navy, and Marine Corps, the F-35 is DOD's most ambitious and costly weapon system. In April 2024 we reported that DOD plans call for procuring 2,470 F-35s at an estimated total acquisition cost of about $442 billion, and an additional $1.58 trillion in sustainment costs for the aircraft.[25] These costs have grown about 44 percent from $1.1 trillion in 2018 due to an increase in the planned life cycle of the aircraft from the 2070s to the 2080s and inflationary pressures.

The Air Force, Navy and Marine Corps have deployed the F-35 to forward locations including Air Force deployments to Europe, the Middle East and the Pacific; Navy carrier deployments in the Pacific; and Marine Corps stationing in Japan and deployments on amphibious ships and carriers. However, in recent years, the program has not met performance goals for F-35 aircraft readiness. In fiscal year 2024, the F-35A and F-35B variants were below the full mission-capable minimum-performance target by more than 27 and 45 percentage points, respectively (see fig. 8). Furthermore, each F-35 variant in fiscal year 2024 did not meet its target for mission-capable minimum performance by at least eight percentage points (see fig. 9). When programs overpromise a weapon's prospective performance and deliver systems that cannot achieve their requirements, such as mission capable goals, the warfighter receives less capability than originally promised.

[25]GAO- F-35 *Sustainment: Costs Continue to Rise While Planned Use and Availability Has Decreased*, GAO-24-106703 (Washington, D.C.: Apr. 15, 2024).

Figure 8: F-35 Full Mission Capable Rates by Military Service/Variant, Fiscal Years 2019 through 2024

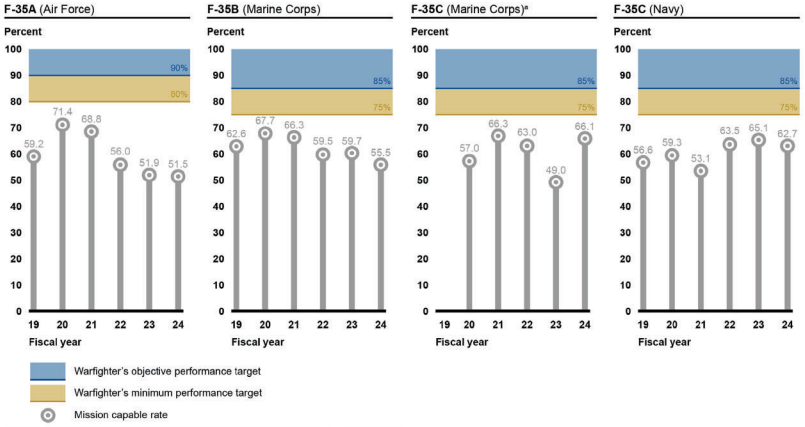


Source: GAO analysis of Department of Defense and Lockheed Martin information. | GAO-25-108104

Note: The full mission capable rate assesses only aircraft that are in the possession of F-35 units. It measures the percentage of time during which these aircraft are fully capable of accomplishing all tasked missions. The warfighter's minimum and objective performance targets are those requirements established for non-deployed F-35 aircraft by the U.S. Air Force for the F-35A, by the U.S. Marine Corps for the F-35B, and by the U.S. Navy for the F-35C, in their respective performance-based arrangements.

[a]The Marine Corps activated its first F-35C squadron in fiscal year 2020.

Figure 9: F-35 Mission Capable Rates by Military Service/Variant, Fiscal Years 2019 through 2024



Source: GAO analysis of Department of Defense and Lockheed Martin information. | GAO-25-108104

Note: The mission capable rate assesses only aircraft that are in the possession of F-35 units. It measures the percentage of time during which these aircraft are safe to fly and able to perform at least one tasked mission. The warfighter's minimum and objective performance targets are those requirements established for non-deployed F-35 aircraft by the U.S. Air Force for the F-35A, by the U.S. Marine Corps for the F-35B, and by the U.S. Navy for the F-35C, in their respective performance-based arrangements.

*The Marine Corps activated its first F-35C squadron in fiscal year 2020.

We have previously reported that a host of challenges negatively affected F-35 readiness and the ability of the aircraft to achieve mission capable goals, as shown in figure 10.[26] In particular, DOD officials have told us that recurring issues with parts reliability and maintainability continue to negatively affect the program. We also found that a lack of technical data, spare parts, and training hinders the ability of maintainers to maintain the aircraft.

[26]GAO- F-35 *Aircraft: DOD and the Military Services Need to Reassess the Future Sustainment Strategy*, GAO-23-105341 (Washington, D.C.: Sept. 21, 2023).

Figure 10: Key Maintenance Challenges That Negatively Affect F-35 Readiness

Source: GAO analysis of Department of Defense information; U.S. Air Force/R. Nial Bradshaw. | GAO-25-108104

In a deployed environment, including potentially contested environments, it is of critical importance for squadrons to be able to conduct maintenance to support mission goals. In March 2025, we reported that F-35 squadrons have faced maintenance challenges while deployed, including that personnel lack access to certain data needed to independently take certain maintenance actions, which limits aircraft availability.[27] We found that the F-35 Joint Program Office is taking steps to improve maintenance capabilities for the entire F-35 fleet, but that these efforts remain in early stages. We recommended that DOD assess whether F-35 maintenance personnel are granted appropriate authorities and access to technical data and information when deployed and make any changes necessary to ensure the success of the F-35 in future uncontested and contested environments. DOD agreed with this recommendation.

We also found that the F-35 Joint Program Office was taking steps to improve access to supply chain information, particularly for deployed and deploying units. Program officials said that they recognize that the warfighter wants visibility into the supply chain to determine how to allocate resources. However, we found that these initiatives were still in

[27]GAO- F-35 *Aircraft: Actions Needed to Address Long-Standing Risks to Operational Effectiveness*, GAO-25-107101C (Washington, D.C.: Mar. 7, 2025) (SECRET//NOFORN). This report includes additional details and recommendations that were deemed classified by the Department of Defense and are not discussed here.

early stages with unclear implementation timelines. We recommended that DOD establish implementation timelines and fully implement current initiatives to improve the visibility and the quality of data, as appropriate, for operational squadrons. DOD also agreed with this recommendation.

Overall, we have published a series of reports examining sustainment of the F-35 and how problems with sustainment affect readiness. Since 2014, we have made 43 recommendations designed to improve the department's operation and sustainment of the F-35 program. DOD agreed with many of these recommendations and has implemented 13 of them but needs to take further actions to implement the other 30. For example:

- In 2022, we found that the sustainment strategy for the F-35's engine did not meet the desired outcomes of the military services, and we made recommendations designed to improve that strategy.[28] DOD implemented one of our recommendations to, among other actions, develop a shared model for spare part forecasts. However, DOD has not implemented our recommendation to update the F-35 engine sustainment strategy, including its goals and the necessary actions to achieve its goals.
- In 2023, we found that, as DOD seeks expanded government control, it has neither (1) determined the desired mix of government and contractor roles, nor (2) identified and obtained the technical data needed to support its desired mix. We recommended that DOD reassess F-35 sustainment elements to determine government and contractor responsibility, identify any required technical data, and make final decisions on changes to F-35 sustainment to address performance and affordability. DOD officials told us they were working to do this as part of their efforts to transfer all functions relating to the management, planning, and execution of sustainment activities for the F-35 from the F-35 Joint Program Office to the Secretary of the Air Force and the Secretary of the Navy. Section 142 of the National Defense Authorization Act for Fiscal Year 2022 requires this transfer to occur by October 1, 2027.[29]

In October 2024, DOD submitted a report to Congress describing the status of its efforts to implement our recommendations related to F-35

[28]GAO- F-35 *Aircraft: DOD Should Assess and Update Its Engine Sustainment Strategy to Support Desired Outcomes*, GAO-22-104678 (Washington, D.C.: July 19, 2022).

[29]Pub. L. No. 117-81, § 142 (2021).

sustainment.[30] We are reviewing additional documentation that DOD provided in February 2025 and will close recommendations as implemented, if appropriate.

We have an ongoing review examining the alignment of F-35 sustainment funding with performance goals and plan to report on the results of that work in late 2025.

Air Force Actions Needed to Improve New Process for Preparing Units to Deploy

Continuous deployments over the past 2 decades have reduced the Air Force's readiness to deploy units. To rebuild readiness, the Air Force is implementing a new cyclical process to organize and deploy its forces, known as Air Force Force Generation (AFFORGEN). The Air Force's primary focus of the new process is to standardize deployment schedules and meet demand for its units, while providing enough downtime for rest, training, and the preservation of readiness. It seeks to change how the Air Force generates and presents forces to better mirror how the other military services generate and present forces to meet combatant command requirements. For example, the Navy offers carrier strike groups as a standard force package to them. In addition to the active-duty Air Force, the Air National Guard and Air Force Reserve are also implementing AFFORGEN.

In November 2024, we found that the Air Force has taken steps to address some challenges in implementing this new process, but it continues to face a variety of ongoing challenges.[31] For example, units assigned to combatant commands, such as bomber units that directly support U.S. Strategic Command missions, did not have enough forces to meet Air Force and combatant command taskings and move through AFFORGEN's four phases. The Air Force acknowledged and addressed this issue by revising the composition of these forces and tailoring the AFFORGEN process to specific types of units.

However, we identified other implementation challenges. For example, the Air Force has not completed an assessment of minimum U.S. base staffing needs. Under AFFORGEN, the Air Force planned to deploy whole units from U.S. bases, but it has relied on some of these personnel to operate its bases and perform duties to provide security measures for a

[30]Office of the Under Secretary of Defense for Acquisition and Sustainment, *Implementation of Improvements to F-35 Sustainment* (September 2024).

[31]GAO, *Air Force Readiness: Actions Needed to Improve New Process for Preparing Units to Deploy*, GAO-25-107017 (Washington, D.C.: Nov. 26, 2024).

base's perimeter, or support the nuclear mission, among other functions. Completing a service-wide assessment of Air Force base minimum staffing needs would identify any personnel gaps and help the Air Force better manage staffing at U.S. bases. Assessing these gaps and potential risks could also help base commanders develop plans and ways to address or mitigate risk to their installations from reduced staffing.

We also found that the Air Force's ongoing efforts to implement AFFORGEN partially align with some selected leading reform practices and do not align with others. For example, while the Air Force has released visionary statements, it has not set goals to track implementation progress. Incorporating leading reform practices, such as establishing goals and outcomes, into its implementation of AFFORGEN would assist the Air Force in instituting outcome-oriented goals and evaluating its progress.

We made four recommendations in our November 2024 report to address these issues, including that the Air Force completes an assessment of minimum U.S. base staffing needs and issues an implementation plan for AFFORGEN that includes goals, a timeline with key milestones, and performance measures. DOD agreed with our recommendations but has not yet taken action to address them.

Sea Domain

Ship Sustainment Challenges Hinder Navy's Ability to Generate Forces

We have reported extensively on the sustainment challenges facing the Navy's surface ships, submarines, and aircraft carriers in the last several years. Figure 11 shows key sustainment challenges that we determined were affecting selected ship classes.

Figure 11: Sustainment Challenges Affecting Selected Navy Ship Classes, as of January 2024

	Ticonderoga-class cruiser (CG-47)	*Nimitz*-class aircraft carrier (CVN-68)	*Arleigh Burke*-class destroyer (DDG-51)	*Freedom*-class littoral combat ship (LCS-1)	*Independence*-class littoral combat ship (LCS-2)	*America*-class amphibious assault ship (LHA-6)	*Wasp*-class amphibious assault ship (LHD-1)	*San Antonio*-class amphibious transport dock (LPD-17)	*Whidbey Island*-class dock landing ship (LSD-41)	*Harpers Ferry*-class dock landing ship (LSD-49)
Service life longer than anticipated	●	●							●	●
Unexpected replacement of parts and repairs		●	●	●	●		●	●		●
Delays in depot maintenance	●	●	●	●	●	●	●	●	●	●
Delays in intermediate maintenance	●		●		●		●			
Shortage of trained maintenance personnel	●		●	●	●	●	●	●	●	●
Unscheduled maintenance	●	●	●	●	●	●	●	●		
Diminishing manufacturing sources	●	●	●		●		●			
Parts obsolescence	●	●	●	●	●		●	●		●
Parts shortages and delays	●	●	●	●	●		●	●	●	●

● Applicable maintenance issue

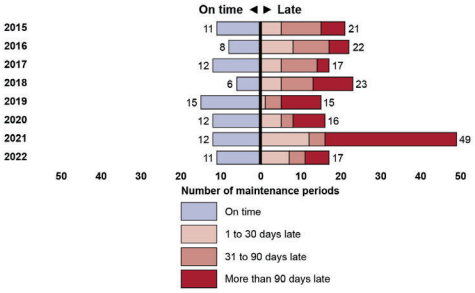
Source: GAO analysis of Navy information. | GAO-25-108104

Note: Diminishing manufacturing sources refers to the loss, or impending loss, of manufacturers or suppliers of items, raw materials, or software.

We have also reported that sustainment challenges hinder the Navy's ability to generate naval forces for deployment. For example, in January 2024, we found the Navy continued to face maintenance delays with only 20 percent (12 of 61) of carrier strike group maintenance phases on time in fiscal year 2021 and 39 percent (11 of 28) maintenance phases on time in fiscal year 2022 (see fig. 12).[32]

[32]We examined the extent to which the Navy met its maintenance goals under its force generation model—referred to as the Optimized Fleet Response Plan—and what factors, if any, have hindered its performance. We found the Navy continued to fall short of the maintenance goals it established for sustainably generating ready forces. GAO, *Navy Readiness: Challenges Persist in Sustainably Producing Ready Naval Forces*, GAO-24-106363C (Washington, D.C: Jan. 11, 2024).

Figure 12: On-time Maintenance Frequencies with Carrier Strike Group Ships Overall, Fiscal Years 2015–2022



Source: GAO analysis of Navy data. | GAO-25-108104

Our work also identified several interrelated challenges hindering the ability of sailors to maintain and repair Navy ships. In September 2024, we reported that the Navy provides training for sailor-led maintenance that both officers and sailors described as inadequate to meet their needs.[33] Specifically, sailors who responded to our survey expressed dissatisfaction with both the quality of training—whether it prepares them to perform maintenance aboard ship—and the format in which training is delivered (see fig. 13).

Figure 13: Examples of Sailors' Statements Regarding the Quality and Format of Training

"Training is curtailed or omitted due to funding and manning shortages. This leads to knowledge gaps which require additional trouble shooting to overcome and overreliance on the contractors and an inability for sailors to learn their equipment."

"Since the Navy cut the length of schools, we've also made advancing easier, so senior personnel have less experience, so junior maintenance personnel and their supervisors may both be doing the same maintenance and repair tasks for the first time."

"The Navy has taken away far too many schools and is making our sailors simply operators of the equipment. Most of the younger sailors have no idea how to perform proper troubleshooting."

Source: GAO selections from survey responses and interviews with ships' crews. | GAO-25-108104

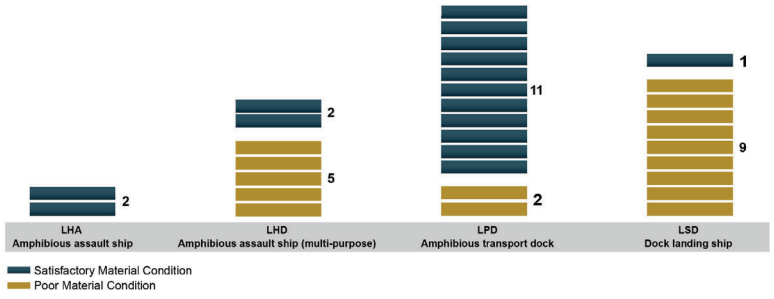
[33]GAO-24-106525.

In addition, the Navy's guidelines for performing ship maintenance are sometimes inaccurate with respect to the time and personnel needed and are not written appropriately for sailors' maintenance skills and supervisor's experience levels.

We made seven recommendations in our September 2024 report, including that the Navy evaluates and adjusts the balance between classroom training and on-the-job training on maintenance skills for junior sailors. The Navy agreed with our recommendations but has not yet taken action to address them.

We have also reported on challenges with the Navy's ability to provide amphibious ships for Marines due to fleet condition and maintenance issues.[34] The Navy's amphibious fleet transports Marines and their equipment, such as landing craft, for critical missions like amphibious assault and humanitarian response. We found in December 2024 that half of the fleet of 32 amphibious warfare ships were in poor condition and that these ships were not on track to meet their expected service lives (see fig. 14).

Figure 14: Navy Assessment of the Condition of Ships in the Amphibious Warfare Fleet



Source: GAO analysis of Surface Maintenance Engineering Planning Program documentation. | GAO-25-108104

[34]GAO, *Amphibious Warfare Fleet: Navy Needs to Complete Key Efforts to Better Ensure Ships Are Available for Marines*, GAO-25-106728 (Washington, D.C: Dec. 3, 2024).

We identified factors that contributed to the fleet's poor condition and reduced its availability for Marine Corps' operations and training. For example, the Navy faces challenges with spare parts, reliability of ship systems, and canceled maintenance. Specifically, the Navy had previously decided to cancel maintenance for nearly a third of its aging amphibious ships that it wanted to divest or retire before the end of their expected service lives. However, the Navy made this decision before notifying Congress and completing a required waiver process.[35] When Congress prohibited divestment of some of these ships, they fell into further disrepair, which compounded the amount of work the Navy needed to complete in future maintenance periods.

Another key reason the Navy was not meeting its ship availability goals is that it has generally failed to complete amphibious warfare ship maintenance in accordance with its planned maintenance schedules. Maintenance delays can result in cascading delays to training and, ultimately, deployment. For amphibious warfare ships that began depot maintenance periods in fiscal years 2020 through 2022, the Navy completed only three of 14 of those periods on schedule, according to our analysis. The remaining 11 maintenance periods that the Navy did not complete on schedule resulted in more than 1,200 days of cumulative delays. Additionally, in total, the maintenance periods cost $400 million more than the original contract value for the efforts.

We also found that the Navy is likely to face difficulties meeting a statutory requirement to have at least 31 amphibious ships in the future given the age of many ships and other factors. The Navy is considering extending the service life for some ships to meet the 31-ship requirement. However, these efforts will require preliminarily up to $1 billion per ship, according to the Navy, with six ships needing service life extensions in the next 3 decades amid rising ship construction costs and maintenance backlogs.

We made four recommendations in our December 2024 report to address these issues, including that the Navy update its policy to clarify that it should not cancel maintenance when divesting ships before completing the waiver process. The Navy agreed with three of the four

[35]The Secretary of the Navy may waive the limitation on decommissioning before the end of the expected service life of a ship only after (1) submitting a certification accompanying the President's budget for the fiscal year in which the waiver is sought to the congressional defense committees and (2) a waiting period after the enactment of the fiscal year National Defense Authorization Act. 10 U.S.C. § 8678a.

recommendations. The Navy partially agreed with our recommendation that it update its policy but noted actions it will take to address the recommendation.

Ongoing Challenges Could Jeopardize Navy's Ability to Improve Public Shipyards

In prior reports, we found that fewer aircraft carriers and submarines are available for training and operation when their maintenance is not completed in time. The Navy will have difficulty addressing aircraft carrier and submarine maintenance delays, backlogs, and other sustainment challenges given the poor condition of infrastructure at the Navy's four public shipyards.[36] The Navy's public shipyards are critical to maintaining the readiness of its fleet of nuclear aircraft carriers and submarines, and to supporting ongoing operations around the world. The four shipyards are Norfolk Naval Shipyard in Virginia, Pearl Harbor Naval Shipyard and Intermediate Maintenance Facility in Hawaii, Portsmouth Naval Shipyard in Maine, and Puget Sound Naval Shipyard and Intermediate Maintenance Facility in Washington. These shipyards provide the Navy with the capability to perform depot-level maintenance on ships, emergency repairs, ship modernization, and ship deactivations.

The Navy has taken several actions in recent years to improve its public shipyards.[37] In 2018, the Navy began a 20-year effort to modernize and optimize its shipyards, known as the Shipyard Infrastructure Optimization Plan. The plan includes efforts to address limitations with three major facets of the public shipyards' operations: dry docks, facilities, and capital equipment.

However, in June 2023, we found that the Navy had made limited progress in implementing its Shipyard Infrastructure Optimization Plan.[38]

[36]We reported in May 2022 on the condition of 21 depots operated by the military services, including the four public shipyards. We found that, since fiscal year 2016, the condition of the depots' infrastructure—their facilities and equipment—generally has remained in the fair-to-poor range and has not improved, while backlogs of facility projects grew by $3.1 billion. We made two recommendations to improve the DOD strategy for addressing deteriorating facilities and equipment. See GAO, *Military Depots: DOD Strategy for Addressing Deteriorating Facilities and Equipment Is Incomplete*, GAO-22-105009 (Washington, D.C.: May 9, 2022). The two recommendations—(1) identifying in annual budget submissions the minimum level of annual investment needed to prevent further infrastructure deterioration and (2) completing the depot infrastructure strategy to fully address all required elements—have not been fully implemented.

[37]GAO, *Naval Shipyards: Ongoing Challenges Could Jeopardize Navy's Ability to Improve Shipyards*, GAO-22-105993 (Washington, D.C.: May 10, 2022).

[38]GAO, *Navy Readiness: Actions Needed to Address Cost and Schedule Estimates for Shipyard Improvement*, GAO-23-106067 (Washington, D.C.: June 28, 2023).

For example, the Navy had not developed a full cost and schedule estimate for its plan and reports that it will not be able to do so until fiscal year 2025—3 years later than originally planned. Additionally, its cost estimates for implementing the plan have increased. Finally, the Navy's cost and schedule estimates for the Portsmouth Naval Shipyard dry dock project followed most, but not all, GAO best practices.

We have made 12 recommendations in two reports related to the Navy's public shipyards.[39] The Navy agreed with our recommendations and has taken action to address seven of them, but needs to take further actions to fully implement the other five.

Private Sector Shipbuilding and Ship Repair Industrial Base Is Challenged to Meet Navy Goals

The Navy contracts with private companies to build vessels and repair surface ships to augment the repair work conducted at the Navy's public shipyards.[40] However, we found that the shipbuilding and ship repair private sector industrial base has struggled to meet the Navy's goals for on-time completion of ship construction and ship repair periods due to key infrastructure and workforce challenges.[41]

With regard to the private sector ship repair industrial base, it generally has enough capacity to support the Navy's planned surface ship repair work in the near term. However, this industrial base does not always have the capacity to support maintenance plan changes, such as growth work, emergency repairs, or wartime needs due to limited infrastructure and workforce capacity. For example, the Navy estimates that its planned repair workload could exceed ship repair companies' workforce capacity

[39]See GAO-22-105993 and GAO-23-106067.

[40]The Navy's fleet of nuclear aircraft carriers and submarines mostly undergoes repair periods at the Navy's four public shipyards—located at Norfolk Naval Shipyard in Virginia, Pearl Harbor Naval Shipyard and Intermediate Maintenance Facility in Hawaii, Portsmouth Naval Shipyard in Maine, and Puget Sound Naval Shipyard and Intermediate Maintenance Facility in Washington. Private industry also conducts a limited amount of this repair work.

[41]GAO, *Shipbuilding and Repair: Navy Needs a Strategic Approach for Private Sector Industrial Base Investments*, GAO-25-106286. Washington, D.C.: Feb. 27, 2025. For examples of our recent work in shipbuilding and ship repair, see GAO, *Columbia Class Submarine: Overcoming Persistent Challenges Requires Yet Undemonstrated Performance and Better-Informed Supplier Investments,* GAO-24-107732 (Washington, D.C.: Sept. 30, 2024); *Navy Frigate: Unstable Design Has Stalled Construction and Compromised Delivery Schedules,* GAO-24-106546 (Washington, D.C.: May 29, 2024); *Weapon System Sustainment: Navy Ship Usage Has Decreased as Challenges and Costs Have Increased*, GAO-23-106440 (Washington, D.C.: Jan. 31, 2023); and *Navy Ships: Applying Leading Practices and Transparent Reporting Could Help Reduce Risks Posed by Nearly $1.8 Billion Maintenance Backlog*, GAO-22-105032 (Washington, D.C.: May 9, 2022).

in three fleet concentration areas—San Diego, California; Mayport, Florida; and Pearl Harbor, Hawaii—at some times through fiscal year 2031 if workforce capacity does not change from current levels.[42]

The Navy's maintenance plan states that demonstrating steady demand for ship repair, such as through projections of ship repair work, is the most consequential action the Navy can take to improve repair outcomes—such as reducing maintenance delays. This is because the Navy expects stable demand to enable private companies to invest in infrastructure, such as dry docks and workforce. Navy officials told us that bi-monthly workload projections were the primary method of communicating upcoming demand for ship repair to the private sector.[43]

However, our analysis of these projections—which provide ship repair companies with an estimated workload for the current and next 3 fiscal years—shows that (1) the amount of work the Navy projected for private repair companies fluctuated significantly, and (2) the Navy consistently reduced the expected volume of workload over time.[44] For example:

- In fiscal years 2022, 2023, and 2024, the Navy's annual projections for the number of labor days of repair work for the private sector fluctuated by nearly 2 million labor days—based on bi-monthly projections the Navy published during a 4-year period.[45]
- The Navy's projections for future work that ship repair companies can expect have declined over time. As of April 2024, the Navy projected roughly a third less repair work in fiscal year 2027 than it had for fiscal

[42]The Navy estimates future workforce capacity using a calculation based on data from the last 3 years. Private industry provides the workforce for major surface ship repair, even when their work is performed at Navy facilities.

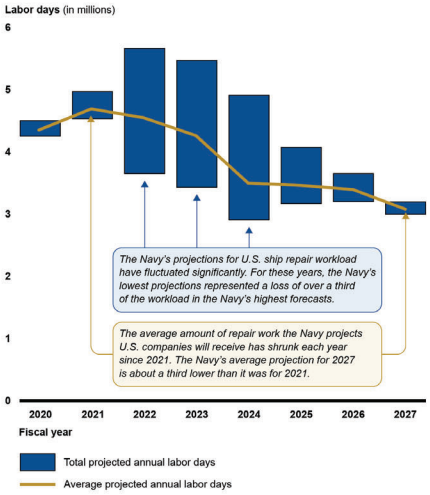
[43]As we previously reported, the Navy's current contracting strategy allows for bundling multiple repair periods together under a single contract. The Navy intends this approach to increase contractors' visibility into and confidence regarding future ship repair workloads. See GAO, *Navy Ship Maintenance: Evaluating Pilot Program Outcomes Could Inform Decisions to Address Persistent Schedule Challenges*, GAO-20-370. (Washington, D.C.: May 11, 2020). However, a senior official from NAVSEA's contracts division told us that use of bundling has not been frequent. Officials from NAVSEA's Directorate for Surface Ship Maintenance, Modernization and Sustainment told us that in some instances bundling repair periods increases the complexity of the Navy's planning efforts.

[44]The Navy's workload projections include upcoming depot maintenance periods across each of the Navy's five domestic fleet concentration areas and generally include projections for the current fiscal year as well as the next 3 fiscal years.

[45]A labor day is the amount of work expected to be completed by a single full-time equivalent employee during a normal work day.

year 2021.[46] Navy officials told us that most of this decline is attributable to ship decommissionings.[47] See figure 15.

Figure 15: Change in Fiscal Years 2020-2027 Navy Projections for Domestic Ship Repair Workload



Source: GAO analysis of Department of Defense data. | GAO-25-108104

[46]Navy officials told us that this decline in workload is partly attributable to an improvement in their process for projecting surface ship repair work, which they implemented in February 2022. They stated that 8.8 percent of the decline in projected workload we identified is attributable to this process change. We conducted our analysis without accounting for this process change because we focused on the demand signal to the industrial base, and therefore based our calculations only on publicly available projections.

[47]Navy officials also told us that many factors can influence the demand for ship repair, such as where ships are in their lifecycle, ship count, and operational requirements. For example, they explained that when ships enter service at similar times, they will also likely enter repair periods at similar times. They noted that this can drive cyclical demand for repair.

We identified several factors that hindered the Navy's ability to address these challenges. For example, the Navy has not developed a strategy to guide management of the ship industrial base. Our prior work has shown that a consolidated and comprehensive strategy enables decision-makers to better guide program efforts and assess results. Without an overall strategy, the Navy has struggled to provide industry with a stable workload projection, which has hindered industry efforts to invest in needed infrastructure. Developing a ship industrial base would help the Navy align and assess its actions to manage the industrial base for shipbuilding and repair.

We made six recommendations in our February 2025 report to DOD to improve its management of investments in the private sector shipbuilding and repair industrial base, including that the Navy create a ship industrial base strategy. DOD generally agreed with the recommendations.

We have related ongoing work reviewing (1) attack submarine force generation and (2) shipyard infrastructure planning. We expect to report on the results of that work in 2025 and 2026.

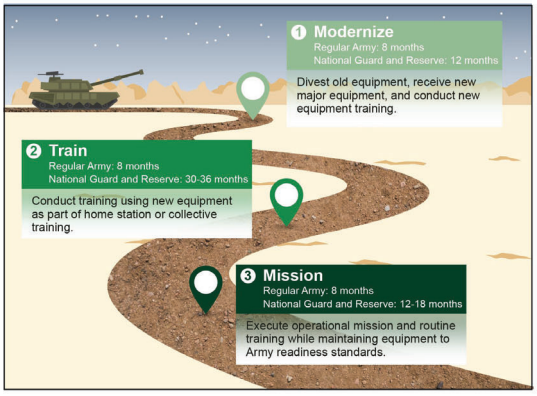
Ground Domain

The Army Has Not Fully Developed Plans to Support Fielding New Equipment

In July 2024, we found the Army has put new equipment into the field before plans for the facilities, personnel, and training were ready. From 2020 through early 2024, the Army has been taking steps to implement and to improve its revised approach to generate ready forces. The approach is called the Regionally Aligned Readiness and Modernization Model (ReARMM). The Army uses ReARMM to prepare forces for combat, including fielding new equipment on a more predictable schedule, to ensure that units train and deploy with the most modern equipment (see fig. 16). We reported that the Army met its initial goals of aligning units with geographic regions and providing forces to combatant commands; developing and meeting unit life-cycle schedules; and fielding upgraded and new equipment to combat units, such as air defense systems.[48]

[48]GAO, *Army Modernization: Actions Needed to Support Fielding New Equipment*, GAO-24-107566 (Washington, D.C.: July 15, 2024).

Figure 16: ReARMM Phases, General Lengths, and Activities



Source: GAO analysis of Army information. | GAO-25-108104

Note: ReARMM refers to the Regionally Aligned Readiness and Modernization Model.

Among the Army's ReARMM implementing steps are identifying priority units and fielding upgraded, new, and priority modernized equipment to units. However, we found in July 2024 that the first two transfers of major equipment under ReARMM to Army National Guard units included equipment that did not meet required condition standards, according to officials. Without identifying and implementing a means to reasonably assure units transfer equipment that meets condition standards, receiving units will continue to be at risk of incurring unexpected costs and delays in their modernization and training.

According to the Army's modernization strategy, ReARMM is a key component for fielding modernized equipment more rapidly to units. However, in fielding new equipment through ReARMM, we found that the Army has been unable to fully complete key planning elements for training, facilities, and personnel, and other planning elements needed to operate and sustain the equipment. The Army has taken steps to manage the risk of units not having some of the planning elements completed,

such as training strategies or necessary facilities for the new equipment. However, the Army expects to continue to face challenges completing requirements in some of the other planning elements before fielding new equipment.

We made three recommendations in our July 2024 report to the Army to improve the continued implementation of ReARMM. Among other actions, we recommended that the Army identify and implement corrective actions that would reasonably assure that equipment sets meet required condition standards before they are transferred to other units during their ReARMM life cycle. We also recommended that the Army review and determine opportunities to better complete planning elements by the time it fields new equipment. The Army agreed with our recommendations but needs to take further action to fully implement them.

The Army Faces Capability and Capacity Gaps to Move Its Forces and Equipment

Our work has shown the Army faces challenges in transporting people, equipment, and materiel over water and land to places where it needs them to support exercises and other operations.

Army Watercraft

The U.S. Army's watercraft fleet is designed to carry supplies, vehicles, and people in deep ocean and shallow coastal waters, as well as provide access by water to remote, undeveloped areas. For example, in October 2024, Army officials shared with us examples of exercises and transport missions in the Indo-Pacific that use Army watercraft, including bilateral exercises with partners in the Indo-Pacific region, such as Australia and the Philippines; and transport missions involving inter-island movements and the use of watercraft in training areas, such as the Pohakuloa Training Area in Hawaii.[49] In addition, Army watercraft have supported humanitarian aid missions. Most recently, in March 2024, they supported a mission to Gaza in the Palestinian Territories.

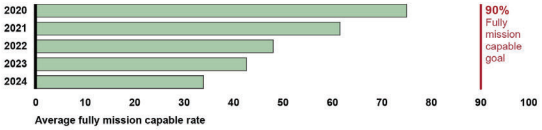
However, we reported in October 2024 that the Army has identified significant capability gaps in its watercraft fleet. Concurrently, the Army has increased its use of watercraft, and plans to increase the use of its fleet, especially in the Indo-Pacific theater. The Army plans to address these capability gaps by acquiring new watercraft and modernizing its current fleet. However, it has not fully considered potential options to mitigate challenges and optimize the use of its existing watercraft fleet to

[49]GAO, *Army Watercraft: Actions Needed to Optimize Small but Critical Fleet*, GAO-25-106387 (Washington, D.C.: Oct. 16, 2024).

meet current mission requirements. Further, the Army has not addressed the challenges and risks from current gaps in capability.

We found that the Army's ability to meet its mission requirements with its fleet of 70 watercraft is limited. Army policy establishes a fully mission capable goal of 90 percent for ground equipment, including watercraft.[50] However, the fully mission capable rate for watercraft has steadily declined, from 75 percent in 2020 to less than 40 percent in 2024 (see fig. 17).

Figure 17: Army Watercraft Fleet Average Fully Mission Capable Rate, Fiscal Years 2020–2024



Source: GAO analysis of Army data. | GAO-25-108104

The Army has struggled to address a series of long-standing maintenance challenges with its watercraft fleet. Lengthy delays in completing planned maintenance, use of handwritten systems to manage maintenance, and delays in updating repair manuals for upgraded systems have adversely affected the fleet's operational readiness. For several years, the Army's governance body established to address these and other watercraft management functions was unable to integrate Army watercraft maintenance efforts, which remained diffused among various entities across the Army. In February 2024, the Army established the Army Watercraft Enterprise Executive Board, which has since taken positive steps to provide oversight and coordination. However, the Board has not fully adopted leading practices of effective governance bodies into its framework that will enable it to develop comprehensive and cohesive strategies to address long-standing maintenance challenges.

We made four recommendations in our October 2024 report to the Army to address these issues, including that it develops a mitigation plan to meet current and near-term requirements, and ensures the Watercraft

[50]Fully mission capable means that watercraft are ready and available to perform their missions.

Board develops a framework that reflects leading practices for effective governance. The Army agreed with our recommendations.

We have an ongoing review examining the availability, condition, and operations and sustainment costs for 12 Army and 7 Marine Corps land-based weapons systems. We plan to report on the results of that work in 2025.

Army Rail System

We have also reported that the Army faces challenges moving its people and equipment on rail transportation.[51] The Army depends on rail transportation as the primary means of moving ammunition, tracked vehicles, and other items needed by deploying units from their bases to ports of embarkation within the United States in support of contingencies and exercises.

The Army has taken actions to improve management of its rail system, such as conducting inspections to monitor track conditions and track repairs. However, over 550 miles (59 percent) of track on Army installations was in such poor condition that the track was closed pending repairs, according to our 2021 report.[52] Also, the Army had not determined if it would have enough rail operating crews to support large-scale combat operations and had not determined how many trained personnel would be needed for such operations.

We made three recommendations in our August 2021 report to the Army to require and implement a quality assurance program to inform decision-making in providing oversight of rail track conditions, to determine the requirement for trained rail operating crews, and to quantify the risk of any shortfall of crews. The department agreed with all three recommendations and took action to implement them.

Space Domain

DOD's ability to conduct space operations is critical to national security. The space domain is no longer a permissive environment, with China and Russia pursuing capabilities to deny the United States' use of its space

[51]GAO, *Defense Transportation: The Army Should Take Action to Better Ensure Adequate Rail Support to Combatant Commanders*, GAO-21-411 (Washington, D.C.: Aug. 23, 2021).

[52]GAO-21-411

capabilities. In the face of these threats, DOD has made maintaining current and future readiness for space operations a top priority.

The Space Force Faces Current and Future Force Generation Challenges

In May 2024, we issued a report on DOD's readiness for space operations that described, among other things, the Space Force's efforts to address current and future readiness challenges for contested space operations through its force generation model and through efforts to fully resource new systems.[53]

The Space Force established a force generation model—referred to as SPAFORGEN—in early fiscal year 2022 that was intended to address its current readiness challenges. Many space units operate in place continuously from their home station, and officials noted these units lack a deployment cycle that includes time for rebuilding readiness. SPAFORGEN establishes a cycle of three phases—Prepare, Ready, and Commit—to ensure that its operational space units have the capacity and time to conduct readiness-building activities that cannot be accomplished while supporting a combatant command's ongoing operational needs (see fig. 18).

[53]GAO, *Space Operations: Improved Planning and Better Information Will Help DOD Address Readiness Challenges*, GAO-24-106457C (Washington, D.C.: May 10, 2024).

Figure 18: Space Force's Force Generation Model (SPAFORGEN)—Prepare, Ready, and Commit Phases

Source: GAO analysis of Department of Defense information. | GAO-25-108104

In our May 2024 report, we found that the Space Force had not fully analyzed or reported all the personnel, and the types of personnel, that the service needs to fully implement SPAFORGEN. While a September 2023 Space Force report identified a shortfall of nearly 2,000 military personnel to implement SPAFORGEN, the report did not include estimates of the civilian or contracted personnel that will also be necessary to implement the model.

We also found that training-related limitations affected Space Force's implementation of SPAFORGEN. Specifically, the Space Force faces interrelated challenges that include shortfalls in training personnel, limitations in training capability, and variation in the SPAFORGEN phase lengths among operational space units. Without a plan for how to navigate these challenges, Space Force will continue to face challenges ensuring SPAFORGEN provides opportunities for training and exercises as intended.

As described in our report, the future readiness of DOD to conduct space operations relies not just on new or upgraded systems but on combat-ready units able to effectively operate those systems. In August 2023, the Space Force took a positive step by outlining the actions needed to ensure operational space units are fully resourced with the appropriate personnel and training capabilities required for day-to-day operations prior to operationally accepting a new system. However, translating this strategy into reality will likely require significant resources—resources that the service has not identified.

We made seven recommendations in our May 2024 report, including that the Space Force analyzes and reports the minimum number of personnel needed to implement SPAFORGEN and develops a plan to ensure its execution of SPAFORGEN meets its stated purpose of generating space readiness. DOD generally agreed with our recommendations but needs to take additional actions to implement them.

Allies and Partners in Space Operations

We have ongoing work related to the integration of allies and partners into space operations and activities. In its 2020 Defense Space Strategy, DOD recognized that allies and partners play a critical role in space operations and emphasizes the advantage gained from continued integration, which may improve deterrence and defeat strategic threats. The U.S. Space Command and Space Force have undertaken a variety of steps to better integrate with allies and partners but face potential challenges, including barriers resulting from the highly classified nature of space capabilities and operations.

As part of this work, we plan to, among other activities, describe how DOD collaborates with allies and partners, including through NATO, on space operations and activities. NATO remains a key forum for allies to share information and coordinate activities on various space-related issues. We plan to report on our work in spring 2025.

We continue to conduct other work reviewing space issues. We have ongoing work on the (1) basing selection process for U.S. Space Command; (2) sustainment of key space-related capabilities such as the Global Positioning System, Intelligence, Surveillance, and Reconnaissance, and missile warning systems; and (3) U.S. Space Force

personnel needs.[54] We expect to report on the results of that work later in 2025.

In sum, the military services will continue to depend on many of today's capabilities in the air, sea, land, and space domains for decades to come, but face persistent challenges ensuring these capabilities are available and capable of performing their assigned missions. At the same time, as DOD develops and deploys new capabilities, it will also need to address long-standing challenges it has faced sustaining weapon systems and training and organizing the forces that will operate and maintain them. Implementing GAO's recommendations will help DOD meet current mission needs, rebuild the readiness of existing forces, and modernize its capabilities within available resources.

Chair Sullivan, Ranking Member Hirono, and Members of the Subcommittee, this completes my prepared statement. I would be pleased to respond to any questions that you may have at this time.

GAO Contact and Staff Acknowledgments

If you or your staff have any questions about this testimony, please contact Diana Maurer, Director, Defense Capabilities and Management, at (202) 512-9627 or maurerd@gao.gov.

Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this statement. GAO staff who made key contributions to this testimony are Matthew Ullengren (Assistant Director), Adam Hatton (Analyst-in-Charge), Anna Beischer, John Bumgarner, Bethany Cole, Mike Dworman, Nick Cornelisse, Kaity Hudson, Eric Inumerable, Amie Lesser, Felicia Lopez, Anne McDonough, Kevin O'Neill, Kieran Pierce, Clarice Ransom, Andrew Ringlee, Michael Silver, Mollie Todd, and Chris Watson.

[54]We previously reported on the Air Force's process for identifying the preferred location for U.S. Space Command headquarters. See GAO, *U.S. Space Command: Air Force Should Develop Guidance for Strengthening Future Basing Decisions,* GAO-22-106055 (Washington, D.C.: June 2, 2022). In our report, we recommended that the Air Force develop guidance for future strategic basing decisions, among other actions. DOD has since completed steps to address our recommendation.

Related GAO Products

The following list contains both public reports, which are available on GAO's website, and reports that are not publicly available. Report numbers with a C or RC suffix are classified. Report numbers with a SU suffix are sensitive but unclassified. Classified and sensitive but unclassified reports are available upon request to personnel with the proper clearances and the need to know.

F-35 Aircraft: Actions Needed to Address Long-Standing Risks to Operational Effectiveness, GAO-25-107101C. Washington, D.C.: March 7, 2025.

Missile Defense: DOD Faces Support and Coordination Challenges for the Defense of Guam, GAO-25-107116C. Washington, D.C.: February 28, 2025.

Shipbuilding and Repair: Navy Needs a Strategic Approach for Private Sector Industrial Base Investments, GAO-25-106286. Washington, D.C.: February 27, 2025.

Ukraine: DOD Can Take Additional Steps to Improve Its Security Assistance Training, GAO-25-107923. Washington, D.C.: January 28, 2025.

Amphibious Warfare Fleet: Navy Needs to Complete Key Efforts to Better Ensure Ships Are Available for Marines. GAO-24-106728. Washington, D.C.: December 3, 2024.

Air Force Readiness: Actions Needed to Improve New Process for Preparing Units to Deploy, GAO-25-107017. Washington, D.C.: November 26, 2024.

Special Operations Forces: Additional Oversight Could Help Mitigate High-Risk Training Accidents. GAO-25-106321. Washington, D.C.: November 21, 2024.

Army Watercraft: Actions Needed to Optimize Small but Critical Fleet. GAO-25-106387. Washington, D.C: October 16, 2024.

Columbia Class Submarine: Overcoming Persistent Challenges Requires Yet Undemonstrated Performance and Better-Informed Supplier Investments, GAO-24-107732. Washington, D.C.: September 30, 2024.

Navy Readiness: Actions Needed to Improve Support for Sailor-Led Maintenance, GAO-24-106525. Washington, D.C.: September 9, 2024.

Army Personnel: Improvements Needed to Address Recruitment, Training, and Retention Challenges in Air and Missile Defense, GAO-24-106722SU. Washington, D.C.: September 6, 2024.

Army Modernization: Actions Needed to Support Fielding New Equipment. GAO-24-107566. Washington, D.C.: July 15, 2024.

Priority Open Recommendations: Department of Defense, GAO-24-107327. Washington, D.C.: June 28, 2024

Navy Frigate: Unstable Design Has Stalled Construction and Compromised Delivery Schedules, GAO-24-106546. Washington, D.C.: May 29, 2024.

Space Operations: Improved Planning and Better Information Will Help DOD Address Readiness Challenges. GAO-24-106457C. Washington, D.C.: May 10, 2024.

Navy Readiness: Actions Needed to Improve the Reliability and Management of Ship Crewing Data. GAO-24-105811. Washington, D.C.: April 29, 2024.

F-35 Sustainment: Costs Continue to Rise While Planned Use and Availability Have Decreased. GAO-24-106703. Washington, D.C.: April 15, 2024.

Military Readiness: Comprehensive Approach Needed to Address Service Member Fatigue and Manage Related Efforts. GAO-24-105917. Washington, D.C.: March 26, 2024.

Navy Readiness: Challenges Persist in Sustainably Producing Ready Naval Forces. GAO-24-106363C. Washington, D.C.: January 11, 2024.

Navy Readiness: Challenges to Addressing Sailor Fatigue in the Surface Fleet Continue. GAO-24-106819. Washington, D.C.: October 11, 2023.

F-35 Aircraft: DOD and the Military Services Need to Reassess the Future Sustainment Strategy. GAO-23-105341. Washington, D.C.: September 21, 2023.

European Deterrence Initiative: DOD Should Establish Performance Goals and Measures to Improve Oversight. GAO-23-105619. Washington, D.C.: July 10, 2023.

Navy Readiness: Actions Needed to Address Cost and Schedule Estimates for Shipyard Improvement. GAO-23-106067. Washington, D.C.: June 28, 2023.

Navy Frigate: Unstable Design Has Stalled Construction and Compromised Delivery Schedules, GAO-24-106546. Washington, D.C.: May 29, 2024.

Marine Corps Indo-Pacific Posture: Actions Needed to Address Training Challenges. GAO-23-105783C. Washington, D.C.: May 5, 2023.

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Senator SULLIVAN. Thank you, Ms. Maurer, and I agree with you that you guys do excellent work.

I recently had the opportunity to highlight your work on the Navy industrial base issues to our incoming Secretary of the Navy, and I think that was a excellent report.

So I am going to begin with just a line of questions. By the way, it is great to have our Chairman of the Full Committee here. Shows the importance of this Subcommittee and the topics we are tackling today.

I will begin my questioning for all six witnesses so please try to be brief. It is going to focus on bad news, good news, and flexibility.

So what do I mean? You have already touched on it, General Spain. You did a good job. The CR, right? I think from a readiness standpoint none of us think this is helpful.

What would be worse, in my view, is a Government shutdown. So the impact of the CR and then, very importantly, and General Mingus, you and I had the opportunity to talk about this yesterday. Flexibilities that you would like us to provide you in the future, NDAAs on budgeting, that is a topic that when we deal with these CRs. Unfortunately, it has been a way of life for our military for many years. It is a failure on the part of Congress.

But what kind of flexibilities do you need to be more ready that you could use? And this could be very broad or very specific.

Then the good news, very quickly, we have had a turnaround in recruiting. I think it has a lot to do with some of the comments I made in my opening statement. Where the last 4 years our military was not focused on lethality and warfighting, and why young men and women join to fight and defend their country was focused on other stuff, irrelevant stuff, and it hurt recruiting.

Where are you on recruiting and why do you think there has been such a dramatic turnaround?

So those are the questions I would like each of you to answer. We will start in the lineup here.

General Mingus, if you can hit on all three of those.

General MINGUS. Thank you, Chairman.

A full year-long continuing resolution impact, yes, to the degree and the severity is unknown as was kind of talked about earlier.

Based on the anomalies that come out of this, the puts and takes in the various lines in the budget, what is plussed up and not we will have to take a couple of days to kind of fully—if it is actually enacted before the end of the week the true impact.

But new starts, spending limits, spending power and buying power, those are critically the ones that always rise to the top and we have never had a yearlong continuing resolution. This it will the first for the Department of Defense.

So a lot to be determined in terms of what those impacts are going to be.

Flexibility sir, you and I talked about this last night. We all submit a justification book (J-book) and a budget almost 18 to 20 months before we actually see an enactment in an appropriation. A lot can happen in that 18 to 20 months.

Every line of accounting, every piece of equipment, every radio, has its own individual line within the J-books that come back in our budget line items on the back end of appropriations.

For high-tech things, UAS, counter UAS, high-tech command and control systems that evolve at a rate faster than our budget cycle. We would like to compress those lines to allow us to move in year of execution those moneys to new things that come online in year of execution.

Senator SULLIVAN. If you can work with us, all the services with regard to language on those kind of flexibilities are really important, I think needed, and something that we could work on to get in the NDAA.

General MINGUS. Sir, and I yield my time to the others because I went pretty deep in recruiting.

Senator SULLIVAN. Just for the Committee's sake, real quick here. I mean, we talked about it but just for the on the record I think it is important for lessons learned on recruiting.

General MINGUS. Who you recruit, where you recruit, how we recruit, more professionalization of our recruiting force, expanding the population. All those things that we have been working for the last 18 to 24 months we believe are coming to fruition this year.

We have seen momentum unlike we have seen in probably a decade. We are at 50 percent ahead of where we were last year, 73 percent of mission. So as I said in my opening statement, just over 44,000 of a mission of 61,000.

I think as you and I talked last night, we are going to have the opposite problem we did a couple years ago where come this summer we may have an end strength that is actually bigger than what we have an appropriations for.

Senator SULLIVAN. Maybe we can work on that.

Admiral, and, again, I will yield time back. These are important questions but we will get through all of them.

Go ahead, Admiral.

Admiral KILBY. Sure. Hey, two big buckets. One, the CR. Major impact on us. We have gotten used to partial CRs. As General Mingus says, this is our first full year CR so we will have to figure that out, and we are looking forward to flexibility, anomalies, authorities, to address the kind of things that General Mingus talked about.

Let me just use one specific example. Two years ago, probably a little more than 2 years ago, we were thinking about counter UAS. We were not thinking about counter UAS from the perspective that we have grown to appreciate in the Red Sea.

So the ability to turn quickly and use money and have the flexibility to address those things, as we are trying to do with the forward strike group where we are bolting on systems that are more effective for counter UAS like Coyote and Road Runner. Those are all appreciated and hard to do in a CR.

So I give you that piece, the flexibilities and for us to work through it. There is a merge with the next topic, which is recruiting. We have made some progress in the Navy as the other services have.

We have stormed the problem. We understand, and you and I went over, and Ranking Member Hirono and I discussed what we did in the Navy to break down the problem and understand what it takes to make a productive recruiter.

So I think there is renewed focus and clarity on that. We have done the things General Mingus has described where we have spread to zip codes to get every available person into the Navy and we are ahead of goal.

Right now our projection was 12,000 contracted. We have contracted 14,000. We were supposed to have 12,200 shipped. We have shipped 12,700. So we are ahead of goal.

I am very concerned about the CR and the impact on that machine and slowing it down. So for us we want to maintain course and speed, accelerate and bring in all the people we need to close down our gaps at sea. CR makes that a little more challenging.

Senator SULLIVAN. Great. I am going to yield back to Senator Hirono. I will get through this line of questioning.

I do want to do a recognition, Admiral, to the sailors and marines who have been deploying all over the world and in the Red Sea in particular, you know, remarkable performance in terms of shooting down all the incoming missiles and drones at your ships.

My understanding it is the most combat that the Navy has undertaken in terms of serious missile threats to our ships since World War II and you have done it incredibly well.

So to all the sailors and marines on those deployed ships for the great job they have done, thank you from the

entire U.S. Senate.

Senator Hirono?

Senator HIRONO. Thank you, Mr. Chairman.

I get that a full year CR is going to present some very unique challenges for all of our services including our Space Force. So we will do what we can to help you all.

Admiral Kilby, I recognize the need to build a larger fleet. However, I have significant concerns about the Navy's basically dismal track record of maintaining ships and submarines in the current fleet.

We consistently see delays, increased costs, ships without adequate crew, a lack of spare parts, and other issues.

General Mahoney, it seems clear that maintaining amphibious ships is not a top Navy priority and I do understand Ms. Maurer said that the Navy and the Marine Corps need to come to an agreement on how these amphibious ships will be maintained.

But how do delays in the Marine Corps' amphibious ship maintenance impact your ability to train and deploy marines and how would you be better supported by and how could you be better supported by the Navy?

General MAHONEY. Senator, thank you for the question.

We are very concerned with the condition of the amphibious fleet and the availability of the amphibious fleet. As of this morning, I check it every morning, there were 13 of 32 amphibious ships available. In order to get to a goal of 3.0 MEUs, that is heel to toe MEUs, combined with our amphibious shipping off the East Coast—one off the East Coast, one off the West Coast, and one in the Forward Deployed Naval Forces (FDNF). That number is not going to do it.

I look at it in short, medium and kind of longer term, perhaps, solution sets, and we are working closely with the Navy. Of course, we have to get to terms of reference.

We cannot classify a ship that has not sailed in 10 years and probably never will sail as an available ship of any class, much less an amphib.

What I would say is we need to resource amphibious shipping to make it to their service lives and not decommission them early.

Second, we have to get ahead of the maintenance curve. That means years ahead of port loading, of availability sequences, getting the avails in on time, making sure that we have the parts and the maintenance crews to maintain them and get them out of the avails on time.

More toward the midterm, we need to make every ship count with service life extensions and midlife upgrades.

Senator HIRONO. Thank you. I am sorry to interrupt but I think that your needs are being clearly articulated, and as Ms. Maurer suggested, it sounds like a good suggestion to me, that the Navy and the Marine Corps need to get to an agreement on what we are going to do with the maintenance of these amphibious ships. To have only 13 out of 32 available is what we say unacceptable.

So as we sit here can we have a commitment from the Navy that you are going to get into an agreement on this issue with the Marine Corps?

Admiral KILBY. Ranking Member Hirono, you have my commitment to that. We do brief off the same data, which is an improvement in the Navy and the Marine Corps.

We have the same data base so we look at the things similarly from big deck amphibs to Landing Platform Docks (LPDs) to Landing Ship Docks (LSDs). So to me that is a start. We have to do better.

Senator HIRONO. Thank you. I agree you need to do better.

Let me move on to General Mingus.

Several of the critical training areas the Army uses in Hawaii, the main one being Pohakuloa on the Big Island, and the leases are set to expire in 2029 and these are vital. These leases are vital to ensure military forces can adequately train in the Pacific. When we talk about the importance of the Indo-Pacific area we obviously need our people to be trained.

I would like to ask you will you commit to continue engaging in good faith with State officials, because that is who you are negotiating these important leases with, and the community to ensure lease negotiation is renegotiated in a way that is fair to the State, the people of Hawaii and the military?

General Mingus?

General MINGUS. Absolutely, ma'am. We are committed to that. Since 2017 we have been working this. As you are well aware, over 500 town halls, meetings, various engagements that are out there.

2029 seems like a long ways away but it will be here tomorrow.

Senator HIRONO. I know that it is not.

General MINGUS. We will continue to, and are committed to working this with you.

Senator HIRONO. To the extent that a land swap may be in the offing, I do believe that we need to provide the Secretary of the Army with the authority for that. Is that correct?

General MINGUS. Yes, ma'am.

Senator HIRONO. Mr. Chairman, like you I have a number of other questions. Could I just go over 1 minute?

Senator SULLIVAN. Sure.

Senator HIRONO. Thank you.

So, General Mingus, last year we spoke at this hearing about the Army's crumbling infrastructure in the Indo-Pacific region. In Hawaii, 50 percent of Army facilities are currently classified as failing or failed, and the cost to repair or replace them is over $5 billion.

However, the Army and other services are not using non-DOD-funded contracting mechanisms like energy savings performance contracts to upgrade its infrastructure and lock in lower utility bills.

What is the Army's plan to repair or replace infrastructure in Hawaii and the Indo-Pacific?

General MINGUS. Ma'am, as we talked last year there were significant investments in 2023 to 2024. We are committed to that for 2025 and beyond.

We know that the water and some of the critical infrastructure underneath a lot of these locations are failing. We actually think it is maybe in excess of $5 billion.

We have committed over a billion for this next year so we absolutely want to work with you on those infrastructure to include the leadership that goes with this as well.

Kwajalein is an example where that was largely paid for with Research, Development, Test, and Evaluation (RDT&E) dollars. We have actually put a garrison commander there to make sure that the leadership in addition to the resources is there to fix these problems.

Senator HIRONO. I think the energy projects, for example, are important because the Army is the biggest user of it in the DOD, Army in particular, is the biggest user of energy and whatever sums you can save on energy costs as well can go to other needed, necessary projects.

So would you commit to clear the logjam on installation of energy projects funded through non-DOD contract mechanisms?

General MINGUS. Absolutely can take a look at that, ma'am, yes.

Senator HIRONO. Thank you.

Senator SULLIVAN. Thank you. Thank you, Senator Hirono.

Chairman Wicker?

Senator WICKER. Well, Chairman, I surely am glad you gave Senator Hirono a few extra moments. You offered me an opening statement and so I may take those few extra moments.

Senator SULLIVAN. You are the Chairman of the Committee. You can do whatever you want.

Senator WICKER. Thank you. But I also want to congratulate Chairman Sullivan and Senator Hirono for their leadership in calling this hearing. It is a terrific panel and it has been great so far.

Let me say this about the CR. We repeatedly say House and Senate, Republican and Democrat, that we never need to do this again and for some reason something comes up, some group is unwilling to compromise and look at the long picture, and we find ourselves in this position.

I will say this about the fact that this is the first yearlong CR for the Department of Defense. I guess we could at least admit that

it is a hybrid CR in the sense that there are the anomalies that our witnesses have mentioned and the numbers have been plussed up just a little bit.

But this is a shame on our process and it is not in keeping with what the Founders intended. They intended for legislation to be difficult but they intended for the parties and the houses to compromise and have some give and take and finally get in the right direction.

In my view, Mr. Chairman and Ms. Ranking Member, the real flaw in the CR that we will be voting on later this week is that it does not provide enough money, regardless of the anomalies and the tiny plus ups here and there. Regardless of that it does not provide adequate support for the military and for the challenges we have from four adversary nations pacing challenges, plus Russia, plus North Korea, plus Iran, that never before have worked together to bring us ill.

It is contrary, Mr. Chairman and Madam Ranking Member, to the voice of the Senate in the National Defense Authorization Act which plussed up national defense out of the Armed Services Committee and from a bipartisan vote on the floor about $25 billion. We could not get that done in conference and so we are where we are on the authorization.

But were it not for the prospect of a reconciliation bill that adds $150 billion for vital national security purposes, I could not vote for the Continuing Resolution as it is.

Unless something changes, I will have to swallow my words again this year and go ahead and pass it because the alternative is so unpalatable and so dangerous.

But I will say this. Based on what we see and based on what is in this Continuing Resolution, $150 billion in the reconciliation bill may not be enough, and I am hearing some comforting words, Mr. Chairman, from the Administration that they realize that too.

I realize they are the budget hawks in this city and they are the defense hawks in this city and we all want fiscal responsibility.

But I am telling you $150 billion in the reconciliation bill may not be enough based on the way we have treated defense over the past few years and based on what we are about to do this week.

So thank you all for doing what you can with the authorities, anomalies, and little plus ups that would give you.

In the time I have to ask questions, let us talk about the ability, and I will direct this to you, General Mingus, the ability of our Reserve component to be ready for potential conflicts with near peer adversaries.

If a conflict began today, General, is the Army Reserve component manned, trained, and equipped appropriately to be successful?

General MINGUS. I would say it would depend on the type of organization within the Guard and the Reserve, sir. We meet our directed readiness tables requirements in terms of the Active component, the Guard and the Reserve, in terms of what are required inside those immediate forces that are needed inside of 10 days, 30 days, and 45 days.

Once you get beyond that then it is not as pretty as you would see. This last year we did have to bring down in the op tempo accounts for the Guard and Reserve. We typically like to keep them

at 85 percent of their training requirements. We had to bring that down a little bit this year because of the top line that we were at. So there is concern.

Now, as a result of that, the Secretary and the Chief and all of us are taking a look at what is the right balance between the Active Guard and Reserve and what mission sets should be in those, and there is an active look at all of that.

Senator WICKER. Well, do you not wish you did not have to begin your answer with it depends. I wish you did not have to begin your answer with it depends.

You talked about the balance. How about the balance between the types of Reserve units?

General MINGUS. That is what I mean, sir. So, for example, our petroleum capacity is almost all in the Reserve component. We know that we are going to need some of that capability early on in a fight and so do we need to move some of that from our Reserve component into the Active component. So that is some of the analysis that that we are looking at.

Senator WICKER. Okay. Let us go to Admiral Kilby.

It seems that we are picking on that end of the table so far today.

Admiral Kilby, the Navy spends billions of dollars each year to operate and maintain its combat surface ships. Those surface ships are vital to combat deterrence, defense of the Homeland. Yet, year after year we hear about significant challenges to the readiness of our Navy's surface fleet.

How is the Navy changing and modernizing in this regard and also in the way they attack ship maintenance to get problems under control?

Admiral KILBY. Two general areas here, sir. Thanks for that question. One was addressed by General Mahoney.

One, locking down that planning in advance of that availability is key. That requires the funding and the contract closed about 4 months before we start the availability, which allows the contractor to order those long lead parts and develop those teams, in particular for amphibs, steam maintainers and diesel maintainers, which are a shrinking pool in our Nation.

So lock down that project ahead of time and understand the condition of the ship, which means you have to do inspections and really understand vice opening things and inspecting them during the avail.

So that is the first part about that. The second part is this piece I mentioned in my opening statement, which you did not hear, but getting to 80 percent of combat surge-ready ships, aircraft and submarines.

We have had some success in the Navy doing that with our fighter fleet and are spreading it to all our aircraft. We want to do the same thing with our ships, same thing with our submarines.

That is a bigger challenge because of the complexity of it but that is the goal we are after. That requires some focus and some effort to do that but it also requires looking at processes which may not be helpful now in changing those processes, and that is what we did with aviation, sir.

Senator WICKER. Okay, and then let me just ask General Mingus and Admiral Kilby, on the recruiting is part of making this more successful long term a better career path for the people we place in these positions?

General?

General MINGUS. Yes, sir. I mean, most come in the military to serve, to make a better way for themselves in terms of their lifestyle, some it is to get college benefits.

Senator WICKER. A better career path for the people we put in recruiting position.

General MINGUS. Oh yes, sir. Absolutely. I misunderstood the question.

That is one of the things we have talked about, similar to what the Marine Corps has been doing for decades. If we are going to put talent out in our recruiting formations we have to reward that talent on the back end of it.

Senator WICKER. Absolutely.

General MINGUS. So absolutely.

Admiral KILBY. Same applies for the Navy. Focus on those recruiters, teach that, one, telling their story to a potential recruit is what sells it.

Identifying with that individual and connecting with them on a very personal level and having them see their future in that is what we need. So focus on that process.

For us we had an incentivized structure which was not to get the max people in. It was to recruit a certain number of people per month.

We have taken those limits off. Bring everybody in. Do not save up recruits for next month. Bring them all in as soon as you can and that will either fill up our delayed entry program or get those sailors to boot camp as soon as possible. That has been our success.

Senator WICKER. Okay. Mr. Chairman, I want people in the military who are assigned to our recruiting programs to say, thank gosh I got this great position. My career path looks bright because I have been put on a fast track by being a recruiter. That is my point.

Senator SULLIVAN. General Mahoney, so you want to comment on that because the Marine Corps has been doing that for decades.

General MAHONEY. Yes, I would. Of the three things that I think are the pillars of our success in recruiting, the one main one is a professional recruiting force.

These people are screened, slated, handpicked, incentivized while they are in the job. Typically, will get meritorious promotions, and when they get out what we find is when they return to the fleet they are some of our strongest officers and staff NCOs.

The Commandant was a recruiter.

Senator SULLIVAN. Most commandants have been recruiters.

General MAHONEY. Most commandants have been recruiters. Most of our general officers have been recruiters. Among our most successful staff and COs, the sergeant major of the Marine Corps was a recruiter.

So as far as Senator Wicker seeing a path, that is baked in to how we make our recruiters and they are a breed apart.

Senator WICKER. Thank you, Mr. Chairman.

Senator SULLIVAN. Thank you, Mr. Chairman.

Admiral, just real quick. Eighty percent, you hit that with naval aviation on maintenance, right? Or on readiness.

Admiral KILBY. We certainly hit it with fighters. I get a report every week on every type, model, series of aircraft in the United States Navy. We are not hitting it in Cargo Multi-Mission Vertical Takeoff/Landing (CMV) 22s.

That is another story. That is our goal is to get there across the board for every type, model, series that requires a different level of attention and daily individual management by the Air Forces and the Navy to make that happen. We want to apply that same level of focus to our surface ships and our submarines.

Senator SULLIVAN. Great. Good.

Senator Kaine?

Senator KAINE. Thank you, Mr. Chair, and like others I am just going to talk about the CR first.

You know, I came on this Committee in January 2013 and every year you all and your predecessors sit before us and tell us that a CR is a bad thing and we do not listen to you.

You know, at some point you got to measure by the action, not by the words that we say. We have allowed a CR to be normal from October 1 to the end of the calendar year. That is just kind of the norm.

But we have often gone beyond that into the next calendar year, and we stand on the threshold of the first time where we have just gone to CR for the entire year.

I agree with what the Chairman said earlier, the Chairman of the subcommittee, that a CR is better than a shutdown. I do agree with that. But why do we have to accept half-assed over catastrophic?

The House voted on the CR yesterday and they left town. They are out. They adjourned. Now we are going to hear what the Senate has to say and then try to do the right thing for the country.

They are gone, because they are, like, okay, we can jam you to vote for a CR that is bad for the defense of this Nation by skipping town on a Tuesday.

This speaks very loudly about the priorities of this Nation and this is all done in public with our adversaries watching.

Admiral Kilby, I think you testified in your opening testimony that under a CR one-fifth of our ships will miss their maintenance schedule. Did I hear that right?

Admiral KILBY. Eleven. Specifically, 11 ships those maintenance availabilities are at risk.

Senator KAINE. Okay. So we want to get to 80 percent ready on ships and subs. Where are we now?

Admiral KILBY. Depending on the day, around 67 percent.

Senator KAINE. On both ships and subs?

Admiral KILBY. Ships and submarines are a little less.

Senator KAINE. Okay. What will one-fifth of our ships missing their maintenance schedule under the CR. What will that do to the quest to get to 80 percent readiness for ships and subs?

Admiral KILBY. Well, it will certainly be a setback. We will take a penalty there. We will have to bow wave that maintenance to the next year depending on the availability and scheduling of that ship.

Worse off, we skip that availability which means it is doubled down for the next one, which means we will have growth work and a lot of things we did not anticipate.

Senator KAINE. All right. So we are being told in public this is the impact of voting yes on this CR that is coming to us, that we are just accepting that the quest to get to 80 percent is going to be set back because maintenance availabilities for one-fifth of the ships under a CR are not going to be, according to protocol.

Admiral KILBY. The only, and I do not want to say silver lining in that because I do not see a lot of silver lining. If we get a flexibility to move money we may be able to address that. But it will impact something else.

Senator KAINE. Yes. You will pull it out of something else, of course.

But, we are told, well, it is better than a shutdown. Hey, it is Wednesday morning. I mean, on the Senate side the appropriators basically had a deal at the end of last year and that deal is still basically on the table.

My hope is that there will at least be a vote in the Senate to do a short-term CR and then actually get an omnibus for the rest of the year.

I mean, an omnibus is kind of a funny thing, word, to apply to a budget for less than half of the year but it would be far preferable to a CR because you would have new starts. You would have other authorities within an omnibus that you are not going to get in the CR and we ought to be able to do that.

The House decided on Tuesday night, we are splitting so we can force the Senate to accept a substandard CR that will hurt the military. Great week, man.

Great, great week of work to leave town on Tuesday night feeling good about yourself because you forced the Senate to try to accept a substandard work product year after year after year after year.

General Mingus, I want to ask you one question about counter UAS readiness because the Army is the DOD's executive agent.

Talk to me about how you are ensuring coordination between the services and developing a joint counter small UAS doctrine and solutions to addressing the UAS threat.

General MINGUS. Thank you, sir.

As the executive agent you are well aware of the joint counter UAS officer (JCO). It is a joint entity, and everybody that is sitting at this table there is probably very few weeks that do not go by where we do not come together to talk about this problem set. Whether it is in the venue of what Replicator 2.0 is going to bring across 100-plus sites across the country to now what is going to be part of the Golden Dome.

But this conversation on the counter UAS side is absolutely a joint problem. Yes, we have an Army officer in charge of it but he is in a joint billet and he is speaking for and trying to solve this problem for the Joint Force, and I collectively think this team is trying to get after that.

Senator KAINE. Give your effort a grade. That will be my last question. Give the joint effort a grade right now.

General MINGUS. I would give it a grade in two ways. One, compared to where we were 2 years ago in the B to B+ category compared to where we need to be it is probably in the C.

Given the rate of technology changes in this space and where our adversaries are going in this space, we cannot go fast enough when it comes to counter UAS.

Senator KAINE. Thank you very much. Thanks, Mr. Chair.

Senator SULLIVAN. Thank you, Senator Kaine.

Senator Scott?

Senator SCOTT. So my Democrat colleagues do not like CRs but the prior majority leader, a Democrat, would not even bring up a spending bill that we could have done last summer to make sure we did not ever have to do a CR at all.

After 4 years of the Biden administration appeasing our enemies and making our forces less lethal, I am glad President Trump's back and restoring peace through strength.

He has been clear that he takes the threat posed by Communist China seriously, ensuring the United States is posed to combat these threats. I look forward to hearing how you are doing with that.

But my first question for General Mingus and Admiral Kilby, since President Trump was elected recruitment numbers are way up. So is that a result of President Trump's election?

General MINGUS. I think it is a combination of things, sir. I think it is the efforts as I talked about in my opening statement that have been put into place for the last 18 to 24 months. But we have seen a momentum over the last couple months that has been pretty remarkable.

Admiral KILBY. I agree with General Mingus. We really took a round turn on this last year. We had 373 more sailors than we predicted to get at last year.

So we had an apparatus that was aligned to try to get after this. I will take any win to get sailors in the Navy that want to serve our country. So I do not know that I can map that to the election or not but I am going to ride that wave as long as I can.

Senator SCOTT. So my background before I got into politics was I ran businesses and, you know, the expectation was you had to beat your competition by improving every day. You had to get your costs better. You had to get your quality better. Everything you did you had to get better.

So, General Mingus and Admiral Kilby, can you tell me in the last 12 months what would you say, for what you are responsible for, what would you say is the big improvements?

General MINGUS. Sir, I would say our transformation and contact effort. We have infused the latest and greatest technology when it comes to mobility, firepower, our network, our UAS, counter UAS efforts into multiple formations, infuse that technology at a rate faster than we typically would do in quantities that is greater than we would typically do because we want to learn from them bottom up to refine the decisions that we are going to make programmatically down the road.

So that is going to expand into more formations as part of TIC, transformation in contact 2.0 this year and next year. But that has

been over the last 12 months what I would say that has been our biggest win.

Admiral KILBY. Two things. One, coming from the same type of thinking we are trying to build in the Navy, a focused mindset, skill set, and tool set to get after that continuous improvement.

There are some common themes here that we have applied across the board from aviation. So the recruiting is an improvement and I would say on-time completion of ship availabilities as well as some success in submarine availabilities.

But we have got a long way to go there, sir, to apply that model consistently every single day.

Senator SCOTT. Thanks.

Admiral Kilby, we have seen the Pentagon failing to recruit, pass an audit or deliver ships, equipment, missiles, et cetera, on time and on budget.

On top of that, while the Marine Corps and Air Force are 100 percent recapitalized on their C–130's, the Navy needs over 30 C–130's and has yet to program for this critical tactical air lift platform.

Today, the Navy only has one on contract. So can you explain why that is?

Admiral KILBY. Sir, we try to balance our program across the board, all aircraft, all ships, all submarines. I will take that question for the record and come back to you with specifics about C–130. But, again, it is building the most lethal program we can afford.

[IFR INSERT HERE]

Senator SCOTT. General Mahoney, what would you say as far as if you take the last 12 months how are you in a better position and your response forward in a better position than you were a year ago?

General MAHONEY. Senator, two things.

The first is the second clean audit opinion 2 years in a row and I think we are in the midst of having a hat trick.

Why do I say that? One of the things, I call it the audit dividend, we know exactly what we own, exactly where it is, exactly who takes care of it, and what it is worth. In that audit we can tell the condition of those pieces of equipment so we have an increased visibility into the operational readiness as a result of the audit.

The second thing is our 3rd Marine Littoral Regiment has just undergone a CRTX. They have been delivered their long-range precision fires, their air defense.

So the concept of force design has gone forward. I wish we could accelerate it and deepen the magazine but we have seen that success on time.

Now we need to marry that capability up with organic littoral maneuver in the form of the light amphibious worships. But those are the two things, force design and audit.

Senator SCOTT. Thank you Chairman.

Senator SULLIVAN. Thank you, Senator Scott.

Senator Sheehy?

Senator SHEEHY. General Mahoney, am I to understand the Marine Corps is the only branch to have passed an audit?

General MAHONEY. That is correct, Senator. The only DOD branch, sir.

Senator SHEEHY. I get really tired of marines lecturing me how much better they are than I am. My wife is a marine so I already get it every day.

Senator SULLIVAN. I am glad your wife has wisdom.

Senator SHEEHY. Well, I was in the Navy so I had to marry up, right?

[Laughter.]

Counter UAS, General Mingus, you brought it up. General Mingus was my boss, actually, back in the day when I went to Ranger school.

Counter UAS, what branch, what functional branch of the Army do you guys place the counter UAS responsibility in?

General MINGUS. We have six warfighting functions inside the Army so intel, command and control, maneuver, fires, protection is where counter UAS sits right now.

But as we think about the future in the Army, the land force, the vast majority of casualties that occur on a battlefield is direct fire.

I think that a future battlefield the most casualties are going to occur from the air, and so the notion of the convergence of offensive and defensive fires, taking it out of that protection warfighting function and making it part of that scheme of fires and scheme of maneuver, I think, is the way of the future. But today, to answer your question, it is in the protection function.

Senator SHEEHY. Okay. Admiral Kilby, where does the Navy view counter UAS as a functional area?

Admiral KILBY. Because of our platform, Senator, we keep them owned by the resource sponsors. So it is a division of labor between the N9, which owns all our warfighting platforms, and the N4, which owns our shore installations. So there is a mix between those two.

Senator SHEEHY. General Mahoney, where does the Marine Corps place that?

General MAHONEY. Our counter small UAS, two parts. Operational units with two programs of record, Marine Air Defense Integrated System (MADIS) and Light MADIS, in our installations with installations counter UAS.

Just as a comment, as General Mingus brought up, we are part of Project Convergence which has a counter small UAS element to it in Research and Development (R&D) and experimentation.

We are a big part of Replicator 2.0 which also invests in counter small UAS, and we are invested in the program office as well.

Senator SHEEHY. General Spain, in Space Force and Air Force where do you guys place counter UAS as a functional area?

General GUETLEIN. From a Space Force perspective it is very limited. We have very limited involvement.

Senator SHEEHY. Right. Yes.

Lieutenant General SPAIN. Senator, we put it in the protection function as well. It is with our defenders. But as was mentioned by the other panelists, we are in the process of evolving that to the operational function.

So it is a blend of our both defender force and our operational force as we go forward.

Senator SHEEHY. Well, I ask that because I actually was one of the manufacturers of the MADIS program back in my former life before I came here and so I spent a lot of time on the range with your air defense Littoral Anti-Air Battalion (LAAB) platoon marines working with that and what I found as we worked with all the branches as each branch, understandably, had a very different view of where the Chief of Army Staff (COAS) function fell and how they viewed it.

You know, the Air Force was very much looking at it from a security forces perspective, fixed installation defense. The Navy, of course, was focused on it from a shipboard.

When the *Boxer* had its incident with Iran in 2019 the Army, of course, had more of an electronic warfare (EW). They really viewed it kind of as an electronic warfare issue.

What I found was as each branch looked at it through their own lens, the joint capability's office really struggled to coalesce that into an acquisition vision that actually worked and they ended up just buying any shiny object that was dangled in front of their face and it led to kind of the schizophrenic approach to it.

It is not a criticism. It is just a reality that as that technology was developing quickly it was hard to meet all the needs.

So I think trying to determine whether it is a specific Military Occupational Specialty (MOS) or actually assigning a functional area within the branches that say this is a fundamental change in battlefield tactic technology.

As we see in Ukraine, I mean, every single day whether it is First Person View Drones (FPVs) or beyond line of sight drones it is not transforming warfare but it is functionally transforming how maneuver units will behave on the ground, and I think treating it as a subspecialty that is branching off whatever convenient, you know, area is there by focusing on what really is a core capability, in my opinion, would help coalesce the operational vision for what counter drone looks like. It will also help streamline the acquisition process so we can find that good technology quickly and field it quickly.

But then also there is the offensive aspect where, you know, we think of offensive drones as Reapers and Predators dropping Hellfires and that we are defending against small drones, but we are not, as far as I can tell, adopting small UAS organic to our maneuver elements.

Just like every infantry squad has an automatic weapon every infantry squad should have an organic small unmanned aircraft systems (SUAS) offensive capability, a backpack full of FPVs that they can fly at and into the enemy maneuver units and disrupt them just like we are seeing all over the world in battlefields, from Iranian proxy groups to the Russia-Ukraine war.

From my old buddies still in uniform I do not hear that we have an organic offensive small UAS capability within our maneuver units and I think that is going to be a great disservice to our young men and women when the next conflicts arises.

I yield back. Thank you.

Senator SULLIVAN. Thank you, Senator Sheehy.

I am going to continue my line of questioning that I started with General Mahoney to you just, again. We have already touched on it a lot but it is okay. I want to hear from all the services.

The negative impact on the CR, the budget flexibility that you would want or request as part of this year's NDAA, and then any lessons learned on the good news that we are all starting to see, I think, across the services on recruiting and to make sure we are learning across services on that. I do not think you got enough press but if you have an All-Volunteer Force and we are hitting a recruiting crisis of tens of thousands of Americans who we were short that is an existential threat to our military.

Fortunately, it looks like we are beyond that but we need to embed the lessons learned from all the services on how we got out of that danger zone.

So, General, to you on those three questions.

General MAHONEY. Senator, as far as the CR we have canvassed pretty much all the negative things. I would just like to hammer down on one.

We talked about anomalies and flexibility in order to move between appropriations or accounts. We also need to be mindful of what the top line is.

If there is only so much top line from which to flex or with to move we are going to rob from one account to pay for another.

Examples might be inflation that outpaces the plus up, pay raises that were not planned for or budgeted but are must pay bills, that money will come from somewhere, and nonbudgeted contingencies that we pay out of primarily our own merged appropriation (M) accounts will have to be accounted for somewhere in the rules of that continuing resolution. A knock-on effect specific to the Marine Corps is if, and it has already been touched on by Admiral Kilby, if ship maintenance or ship building or procurement or anything that touches amphibious shipping it will have a knock-on effect to the Marine Corps, as I spoke about with Senator Hirono earlier.

As far as flexibility goes, I would reference the Lord Hale study on Planning, Programming, Budgeting, and Execution (PPBE) reform and I will just bring up three things that come to mind immediately.

I think they have 16 recommendations in there which are all really good. Multiyear availability of 1-year accounts so that you are not forced into making bad decisions at the end of the year and buying things that you really do not need but have a period of availability to where you can make better executive and managerial decisions against that appropriation.

Greater transfer authority so that we can move between appropriations or move between sub activity groups in order to solve a problem early so that we do not have to come to Congress for an above threshold massive reprogramming late in the year that may be related to need or not solve the problem.

And last, and I will let it go, is multiyear COLIS appropriations to have flexibility within a portfolio to strengthen where you are weak and move money around to make sure that you can get your objectives attained within an account.

So multiyear availability, greater transfer authority, and multiyear COLIS appropriation. We did the last one in, if you think of Mine-Resistant Ambush Protected (MRAP) and you think of Joint All Domain Operations (JADO) back in the day, that worked pretty well to get things done at an accelerated pace.

I am running on here but recruiting, for us three things. We have a brand that we will not back off from. We believe that that brand is attractive.

We believe it is a magnet to a wide demographic of young Americans who will prove themselves physically, mentally, and morally qualified. We will not back off of the standard.

Counter intuitively if you maintain a standard at a high level that attracts people who want to perform to that standard.

Senator SULLIVAN. That is a great lesson and I think we have to always keep that in mind. All the services, no matter what our recruiting challenges are, it is counter intuitive but it works. So thank you for that.

General MAHONEY. Lastly, Senator, I already talked about it in detail and that is our recruiting force, a breed apart who are hand screened, selected, incentivized, promoted, and, as I said, when they get back in the fleet, as you know, they are some of the best staff Non-Commissioned Officers (NCOs) and officers we have and they become a sergeant major in the Marine Corps and commandant in the Marine Corps.

Senator SULLIVAN. Real quick, General Guetlein, can you just hit on these three questions? Try to be concise. I am going over my time here. I want to be respectful to my colleagues but I do want to get through this issue of CR, budget flexibilities and recruiting.

General GUETLEIN. Yes, Chairman, I can go pretty quick.

From a CR, is a huge challenge. It is very, very inefficient. It does impact us especially because we are the smallest force with the smallest budget. So any churn in our budget is a huge hit to us.

As far as what we would ask for flexibilities, I agree with the rest of the staff. New start—we are seeing an enormous amount of threats emerging every single year and it is very hard to get after those threats when you have to wait two to 4 years to get the budget to get after those threats. So anything you can do, budget flexibility for new start authorities.

Private equity consolidation, the ability to move money between programs would be hugely beneficial, and then the multiyear procurement, the multiyear execution authority that General Mahoney talked about.

As far as recruiting and retention we have actually got a much easier problem because we have a much smaller force. But we are seeing two volunteers for every recruit that we take into the United States Space Force.

So we are able to be very, very, very selective for high quality. Almost nearly 15 percent of our recruits have some college level of education to include all the way up to Masters and Doctors of Philosophy (PhDs).

Our recruiting objectives were met the last 4 years in a row, 104 percent for our enlisted, 101 percent for our officers, and we are

looking at continuing growth in the future and our retention rate has been in excess of 98 percent.

Senator SULLIVAN. Wow. Great. That is great news. Great job, General.

Senator Schmitt?

Senator SCHMITT. Thank you, Mr. Chairman.

Admiral Kilby, I want to direct this question to you. I feel like the fever has broke finally on this obsession that the previous Administration had with DEI. That is a good thing.

The previous Administration also treated climate change as a national security priority. I actually had one of the more ridiculous exchanges in my first couple years here with Secretary Del Toro, who told me Admiral Nimitz would have cared about climate change too. It was sort of like the "Twilight Zone."

But we have issues, right, in ship building. Now that we are refocused on warfighting capability what should Congress do to prioritize modernizing the fleet as opposed to this political stuff?

Admiral KILBY. Two things, sir, super important for us is to keep our maintenance going. We have got to get our ships available. I am not going to build a whole mess of new ships in 2 years so I have got to get the ships I have up to speed and available.

The other thing we can do is continue to invest in munitions. I think the lead time for them is shorter than a ship so we must renew our magazines so we are ready to fight if called.

Senator SCHMITT. Okay. Sticking with you, Admiral Kilby, and then also for General Spain, if we had to fight a peer war in the next 2 years. What would be our greatest capability gap and what should Congress do to address that?

Admiral KILBY. I will start first.

Again, munitions, long-range munitions, preferred munitions, are an area where we need to increase our productivity as a Nation, and then from just a general sense, our capabilities are pretty good with the exception of that munitions quantity but our capacity is a problem. So getting those ships and funding available out on time will result in a greater capability overall.

Lieutenant General SPAIN. Senator, thanks for the question.

To your point, in the next 2 years the greatest challenge for us is going to be regaining the sustainment edge in our current fleet.

The lead time required for parts and supply within that timeframe required would require an infusion to help us with our aircraft availability, our mission capable rates, and training our flying force to be ready within that window.

In addition, some flexibility on new opportunities with technology in terms of asymmetric capabilities that would enable us to actually inculcate our Force Design, which calls for both high-end exquisite capability paired with low-end, low cost per effect massive capability that can augment the air component commanders who are in the field.

Senator SCHMITT. Sounds like next generation air dominance (NGAD).

Lieutenant General SPAIN. Next generation air dominance would be an example of the exquisite, yes, sir.

Senator SCHMITT. General, I guess, with the time that I have remaining, General Mingus and Mahoney, I just wanted to ask in

sort of the similar theme of flexibility, if you had unrestricted funding for readiness how should that be spent, first, in order to get that high-end capability what would we be doing?

Like, if we are in an era of scarcity, right, that we have to accept at some level what is the level of priority or what are the priorities?

General MINGUS. For us I would say well, the second one would be just what Admiral Kilby talked about, our magazine depth, precision-guided munitions, long-range precision fires, and the ability to scale rapidly at time of crisis and conflict.

So it is one thing to bring production rates up but it is another to have the ability to rapidly scale at time of crisis and conflict.

Senator SCHMITT. How would you rate where we are at right now on that front? Because I have heard that. I agree with that. Where do you think we are at with that?

General MINGUS. Well, just using 155 as an example, before the Russia-Ukraine conflict we were producing at 14,000 rounds a month.

We had a higher water mark in November of 42,000, ramp into 70,000 by this summer, and 100,000 a month by this fall. So that is a 2-year journey. We have got to be able to do that in months, not years.

It is about automation and robotics. People are hard to bring in, let go, bring in, let go, and so the key to all this is automating those both organic and defense industrial systems and bases to be able to do that.

Then the second place that I would put that money is in our transformation efforts that I described earlier, our TiC 1.0 and 2.0.

The end result of that infuse of technology into those formations is they are more lethal, they are more agile, they are lighter, they can get to places much faster, and they are just better formations that are designed purpose built for the next fight, not the last fight.

General MAHONEY. Senator, if I had a three-part wish list the first one would be to accelerate our Force Design to ensure victory and more killing power in the contact layer.

I agree completely with depth of magazine across people, parts, programs. There are several things that we do not have enough of that we need to build more and deepen that.

If anything, what Ukraine, what the Levant, what the Houthis, show us is that the short sharp illusion is just that, a short sharp illusion. We need to shoot. We need to be able to take a hit. We need to reset and get back in the fight.

Second, our fourth-gen platforms are, and specifically our barracks for our marines, if we are going to count on them to generate a lethal force we have got to provide them the quality of life and the living conditions that they rate.

Third, we have already talked about it extensively, is the ability for us to move, maneuver and sustain on 73 percent of the Earth's surface. That is amphibious shipping and project power from sovereign American soil when we do that, as well as organic littoral maneuver in order to move shore to shore in order to maneuver to a position of advantage in order to sustain in the contact group.

Senator SCHMITT. Thank you. Thank you, Mr. Chairman.

Senator SULLIVAN. Thank you, Senator Schmitt.

Senator Hirono?

Senator HIRONO. Thank you, Mr. Chairman.

I would say that as our services with the exception of Space Force are facing recruiting challenges why should we discourage or why would we be discouraging women and minorities from enlisting with all this anti-DEI stuff?

Admiral Kilby the Navy's Shipyard Infrastructure Optimization Program, or SIOP, projects were unfortunately not included in Secretary Hegseth's list of protected and prioritized programs following his directive to implement an 8 percent budget cut across the board at the Pentagon.

You testified today on the importance of SIOP and, of course, clearly, we need to do a better job of repair and maintaining our ships.

So with the flexibility that you are requesting in the CR, even if SIOP is not on Secretary Hegseth's list of priorities, are you planning to prioritize critical SIOP projects across the fleet including, for example, completion of the dry dock and planning and design for our waterfront production facility at Pearl Harbor?

Indeed, we need to get on with continuing to modernize our four public shipyards so that you will have available ships to do what you need to do. So would you use the flexibility that you request in the CR to prioritize SIOP?

Admiral KILBY. We want to continue on our SIOP program, ma'am.

I have talked about the 40 projects we have done, the additional $6.3 billion that are in the budget that we want to continue on, and the remaining projects we need to execute. So we are committed to SIOP.

Senator HIRONO. Good. I am looking to you for that because what is the point in enabling us to build more ships if we cannot maintain the fleet that we currently have.

A skilled workforce is foundational to military readiness. However, this Administration has implemented a DOD hiring freeze and is planning to fire up to 60,000 DOD employees.

DOD is eliminating people across the spectrum, from firing general, in fact, officers without cause to removing new and motivated employees. These would be the employees who had just gotten hired and are being trained, and you would think that we would want to keep those folks.

But the people in probationary status are among the first to go, as happened across the Administration. For example, the United States Department of Veterans Affairs (VA), which is already strapped with the need to hire people, they just eliminated some 2,400 employees and about to eliminate 83,000 employees, going forward.

So, gentlemen and Ms. Maurer, how are these personnel actions impacting the hiring, training, and retaining of a skilled national security workforce, briefly? You can say it is not helping.

General MAHONEY. I will start.

Specific to the Marine Corps, we started our leaning out process six budget cycles ago in accordance with Force Design and talent management. So the start game of this exercise for us we are pretty lean so any cut is going to have some impacts.

However, of the 2,300 employees that we have identified we have got protection, either exemption or exclusion, down to a number south of 75. Not without impact but manageable from the Marine Corps' standpoint.

What I am also concerned about is the exclusions or exemptions for a hiring freeze. We lose about 7 to 10 percent of our civilian workforce just through natural attrition each year so we have to figure out a way to replenish that or the number will just keep going down.

Senator HIRONO. Well, hundreds of thousands of Federal employees are being fired. These firings are not based on any kind of a job performance evaluation. So it is going to happen to DOD, I would say.

So anybody else wants to weigh in?

Admiral KILBY. I will just connect there our last exchange.

Senator HIRONO. Admiral?

Admiral KILBY. Ranking Member. The shipyards are exempt from the probationary employees and they are exempt from the hiring freeze.

So we are trying to shape this in a manner that allows us to continue the most important work as we work through guidance from the Administration. Also exempted from the hiring freeze is the military Sealift Command, an important force for us to maintain our fleet. So I think those are efforts on the services' part to manage.

Senator HIRONO. So basically all three of you are needing to identify some very critical people that you want to make sure that these firings do not hit. Is that what you are doing?

Admiral KILBY. Yes, Senator.

Senator HIRONO. Thank you, Mr. Chairman.

Senator SULLIVAN. Thank you, Senator Hirono.

I am going to finish this line of questioning with you, General Spain, on the CR budget flexibilities and specific, if you can get there, and then Air Force recruiting and lessons learned, and then, Ms. Maurer, I would like you to answer the same question as well.

Lieutenant General SPAIN. Mr. Chairman, thanks for the question.

We talked a little bit in the opening statement about the bad but echo the comments from across the table on top line restrictions.

Flexibility, in my mind, really comes down to treating our readiness accounts and quality of life accounts in terms of MILCON and Facilities Sustainment, Restorations, and Modernization (FSRM) with the same flexibility as operations. The readiness impacts within those accounts have the same deleterious effect across the force as stopping current operations.

So by allowing flexibility across the pillars of those readiness accounts, that is manpower, infrastructure, flying and training, and parts and supply. We can mitigate some of that risk that comes along with the CR.

From a recruiting standpoint, the Air Force is above glide slope on our recruiting goals for the year. We increased the number by 20 percent and in fact we are still above the 20 percent increase, and we have the largest delayed entry pool that we have had in

10 years and the most recruiting that we have done at this point in the year in the last 15 years.

So we are in a good position.

Senator SULLIVAN. Are there lessons learned from what you did to get over that hump?

Lieutenant General SPAIN. Yes, sir. So we have increased the number of recruiters. We have increased the training, which reflects some of the things that were said before.

I was a recruiter when I first started out in the Air Force waiting to go to pilot training. It is a tough job and you need the right people doing that work and we are bringing the right people in and we are training them even better than we had before.

Senator SULLIVAN. Great.

Ms. Maurer, do you have any views in general, the line of questioning that I have been going through on the CR . In particular what I want to hear from you is your sense on flexibilities, that I know that we could provide more in the budget to give our services the ability to address some of the challenges that you put in your report but also give them flexibility that if we have to, you know, and certainly I would not advocate for it but another CR, another kind of budgetary constraint issue that they have more flexibility to address them.

Then also if GAO has looked at lessons learned from the recruiting kind of challenge that we had over the last three or 4 years and how that has come about. What are those?

Ms. MAURER. Sure. Thank you for the question, Mr. Chairman.

On the issue of CR, talking about a full year CR makes me think back to work that we did over a decade ago looking at the impacts on sequestration.

Obviously, it is a little bit apples to oranges but we issued a report 2015-ish that looked at how sequestration impacted DOD, and at that time we had a recommendation that DOD collect the lessons learned from sequestration and stockpile them in case they needed those lessons later on down the road.

In 2017 we reached out to the comptroller's shop. They said they had taken action to implement that recommendation. So that is sort of a takeaway item for the department is to look back at what DOD did back in 2017 in terms of lessons learned on sequestration and see what, if any of those lessons can be applied to today.

In terms of flexibilities, we have heard a lot and my teams have heard a lot about the types of flexibilities that the generals and the admiral talked about today.

Obviously, GAO tries to stay a little bit agnostic in terms of specific flexibilities but what I will say is that whatever flexibilities are offered should be directed toward ensuring the ability of the services to meet the readiness challenges that they face.

I talked about earlier in my opening statement there is a significant imbalance between resources and mission and so anything that we have done to help bring that into better balance would be very helpful.

In terms of recruiting we are very encouraged to see that the recruiting numbers have come up. We have issued a whole series of reports in areas where the services have critical shortfalls in the number of people they need.

So, for example, at the Navy, for every six sailors that they need for the fleet they only have five assigned. We found efficiencies in the number of air defenders, that the Space Force has a really good force generation model but they do not have enough guardians to actually carry that out, much less on the civilian and the contractor side. So their improvements and that the change in the trend line in recruiting can be helpful in that regard.

In some of our work on recruiting we think it is important for the different programs, the different services, to get an understanding of what is working, what is not working, and then double down on the things that are working and then share those lessons with each other. That way you will get a better outcome.

Senator SULLIVAN. Okay, great. Thank you on that, and I still have a number of questions. Senator Hirono, do you want to do another round or do you want to submit questions?

I am going to stay for a while since I have all these very important members of our military.

Senator HIRONO. I will be submitting questions for the record. Thank you very much, Mr. Chairman.

Senator SULLIVAN. Great.

Well, let me continue with some additional questions.

General Mingus, one of the things that I want to try to nail down is my understanding is the top line number for the end strength of the Army was reduced because of the recruiting challenges. We almost had to do it in a forced way.

Now that we have met these numbers again and you have almost a surplus, will you be requesting from us and so you have the flexibility to increase your top line to a certain number? What is your flexibility on that? Because I would like to see it.

If you need more funding to get to that higher top line, I think we would all be certainly willing to provide it. But what kind of authorities do you need to get back to a higher end strength when the reduction in your end strength was actually a result and function of the recruiting challenges?

Now that you are going in the positive direction we want to take advantage of that to increase your end strength.

What do you need? Money? Authorities? Both.

General MINGUS. Thank you, Chairman.

Money, yes, in the Military Personnel Services (MILPERS) account, because what we asked for in this year's budget was an appropriations for an end strength of 442,000.

What I believe will happen if the trajectories remain consistent with where they are at today we are going to end this year somewhere between 449,000 and 452,000 so almost 10,000 over what we believe will be appropriated from a military pay and allowance account standpoint.

So there will be a deficit there that we will have to come back and ask for help.

Senator SULLIVAN. Okay.

I would strongly encourage you to do that. Nobody wants a smaller army and the fact that you had to shrink due to recruiting challenges nobody wanted that, and now that you are fixing it we need to reward you, in my view, to get back to a higher end strength.

General MINGUS. Yes, sir.

For authorities, the Secretary of the Army, all the service secretaries, can authorize a 2 percent deviation from the NDAAs. So that would put you at about 451,000. So we think unless it goes above that we will be okay on authorities.

Senator SULLIVAN. Okay. Great.

General Mahoney, I want to go to a topic you and I and the commandant have discussed a lot. That is where we are in Force Design and, you know, a very innovative Marine Corps initiative, started with General Berger, but not without criticism.

Any time you innovate you are going to get criticized. There is no doubt about that. I think the Marine Corps has gotten ahead of the curve on a lot of issues relating to drones and loitering munitions and, you know, light, flexible forces that can move with weapons systems that can take out Chinese shipping. All very innovative.

However, one of the criticisms was that the divest to invest strategy divested too much combat power. In the Marine Corps' primary mission of a 911 force with amphibs to go any anywhere in the world at a moment's notice to kick in the door with sufficient combat power was reduced. A lot of criticisms came from, you know, within the family, retired four stars and retired commandants and retired very well respected marines.

So that is a difficult balance. I remember a hearing that we had a couple years ago on Force Design where, you know, I asked one of the top Marine Corps officers, hey, look, you do an amphibious invasion and then you get three miles in wherever you are and you have to cross a river. Wait a minute.

Marine Corps got rid of all its bridging equipment. How are we going to cross a river? The answer, I think, if I remember was we are going to call on the Army.

Now, I love the Army but in the Marine Corps tradition calling on the Army was not something that we typically have done.

So where are we on the balance? Where are we on things like bridging and route clearing? Where are we on things like artillery, infantry, which the Marine Corps cut a lot.

Do you still think this criticism, which came from some very, very well respected marines, is legit? Are we recalibrating a little bit in terms of, we want an innovative Marine Corps but we do not want to get rid of our 911 capability to kick in the door anywhere in the world and bring significant combat power to bear anywhere and what is the balance and how we doing on all those things, General?

General MAHONEY. Senator, we talked extensively about this and if you remember where the Force Design journey started and that was with the statement that we are not manned, trained, or equipped for the future fight.

That is something tough for a marine to swallow. That is what generated the shift in some of the design elements of our force.

We believe that we are on the right course based on operations extant today, based on experimentation that we have done, based on what the Combatant Commands (COCOMs) demand.

That having said, the top priority of our Commandant, in fact, is to balance that modernization. If we put that in the moderniza-

tion bin, although Force Design is modernization, talent management, training and education and logistics, we will put it in the modernization bin with the ability to respond to crises.

We have talked about the dearth of amphib shipping. That is significant. I believe it is strategic to the Nation. As far as organic combat power goes, we divested of heavy armor. We do not believe in the situations that we were faced that we need organic heavy armor for maneuver or maneuver support.

We believe we have enough artillery, both rocket artillery and cannon artillery, for the problems that we will face. We believe that we have enough engineering and engineering support.

You brought up bridging. What we have found at gap negotiation, gap crossing, is a shortfall and we have divested of bridging equipment, frankly, that was too heavy and logistically unsupportable.

Senator SULLIVAN. So can marines cross a river if they do an amphibious invasion and find themselves three miles inland and have to cross a river?

General MAHONEY. So there are other ways to negotiate a gap, Senator. You know that. But as far as bridging goes, we are looking at more expeditionary solutions and this circles back to your point of recalibration.

One of the things about Force Design, I will try to keep this short, was that it immediately admitted to being wrong. We were to challenge all the assumptions along the way.

If we found an assumption wanting or invalid then we had to adjust to satisfy and verify that assumption. We have looked very closely through what we call the campaign of learning at those assumptions.

We have adjusted the size of a battalion. We have adjusted some of the aviation capabilities we have. We have adjusted some of the weapons that we have either bought or not bought, and to your point where we are looking hard at expeditionary solutions to bridging.

As far as joint support, frankly, I am less concerned about the Army providing an M1A2 Abrams Main Battle Tank for us as I am about us as a Joint Force being able to project, set a theater, and sustain a theater from a joint perspective.

Senator SULLIVAN. Great. Thank you.

Senator Hirono?

Senator HIRONO. Thank you, Mr. Chairman.

In 2019 the Secretary of Defense discontinued certain tasks at the border after determining that servicemembers were not performing military functions and the continued support would negatively affect military readiness and morale.

I think that is an important aspect of what is happening, the impact on morale.

General Mingus and General Mahoney, how is the current deployment any different from 2019 when DHS was asking your units to perform the same non-DOD tasks?

General MINGUS. Thank you, ma'am.

We have been asked to defend and secure the border and we are going to do that. That is a priority for this Administration. We are going to execute that mission as we have been asked to do.

Anytime you are asked to defend it has three critical components, a physical, a technical, and a human. As those physical and technical things come online, as our Secretary testified, the human resources associated with this mission set will come down.

But to answer your specific question that the lessons we learned from 2019 is the troop to task, as we like to use, was a one for one. Detection and monitoring, Path of Exile (POE) support, admin support, data entry, et cetera.

So there was no time to come offline to continue to train and do their mission.

Senator HIRONO. So it does not sound much different than what was going on in 2019.

General MINGUS. No, this time we are going to make sure that the troop to task allows for rotations so that the degradation in readiness is not as substantial as what we saw in 2019.

Senator HIRONO. That remains to be seen.

Do you have something to add?

General MAHONEY. Senator, similar but not the same.

We have been on the border, as has been stated, for a while. The mission has changed with this recent evolution where we are primarily executing engineering tasks and engineering support tasks.

Think barrier and placement. But we are also executing intelligence tasks and in both of those there is training value, especially for the intelligence analysts, to collect and analyze what is a very complex situation.

But as General Mingus brought up, any time you have 10 essential tasks and you are only training to one or two of them you have to figure out a way to either accept risk in the tasks that you are not training to or to figure out a training plan.

Maybe unlike the Army, we even before we had a rotational basis where we could plus up the skills any tasks that were not being performed and we will manage the same way right now.

Senator HIRONO. From what you are testifying, you are needing to find some tasks that our military people are doing on the border that somehow has more relevance to what they should be doing in the military. Perhaps, if you had your druthers your people would not be in the border at all, especially as border crossings are at an all-time low.

During the United States Northern Command (NORTHCOM) posture hearing, General Guillot said that units deployed to the Southwest border get only one dedicated training day per week.

General Mingus, General Mahoney, and Ms. Maurer is 1 day a week normal for military training?

General MINGUS. Depending on which cycle you are in, ma'am, it could be normal. But I will go back to where I talked about before it is the ability to cycle people in and out of their tasks associated with the border mission versus going back and the ability to train on their mission and central tasks.

The other thing I would offer, and this is going to expand on General Mahoney, is that at the highest level of our doctrine the Joint Force has to be able execute offense, defense, and stability operations simultaneously.

This is a defensive operation and so there is training value associated with that. Is it going to be the same as if they went to the

National Training Center? Absolutely not. But there is still value to be had if the leadership takes the right approach to it.

General MAHONEY. Senator, I am not familiar with exactly what NORTHCOM said but I would maintain that our engineers and our intel analysts have had far more than 1 day of training to train for this mission.

For obstacle and placement, for intelligence analysts, they undergo a whole battery of training to prepare them for just to support the civilians.

Senator HIRONO. So you are saying that our troops on the border are actually getting something that is equivalent to more than 1 day a week in training.

So, you know what? I mean, I think that you are doing your best to be very forthcoming in your assessment of your troops being deployed to the border and, clearly, you are doing your best to enable these people to be getting some sort of equivalent training.

But it is hard to, frankly, it kind of stretches the imagination to think that that is happening and that they are not losing the kind of training and opportunities to train that would be the case if they were not.

Ms. MAURER. Senator, from a GAO perspective I will just say real briefly that I think back to one of my previous jobs at GAO was on GAOs Homeland Security and Justice team and that team continues to do oversight of the DHS, and I think about all the capabilities that currently exist within Customs and Border Protection (CBP) and Immigration and Customs Enforcement (ICE) and other Federal law enforcement agencies on the border.

I think from an oversight perspective it would be interesting to pursue what those agencies are doing and at what point are their capabilities insufficient to meet the mission needs on the Southwest border and we are not looking specifically at that topic right now. But I think that is something valuable to think about.

From a readiness perspective one of the trends we have seen over the years is there can sometimes be a tendency to look to DOD to perform functions that can also be performed by the domestic and civilian agencies.

In many cases that is definitely warranted, but DOD comes in with a heavier footprint, it costs bigger dollars, and it does have a readiness and a mission and a resource tradeoff for the department as well.

Senator HIRONO. Yes. Of course, a flight using military aircraft to take only about 100 people to another country costs over $2 million. That is not a very efficient use of military resources.

You raise a good point, Ms. Maurer. I know you know that up to today we have not received information from either the Homeland Security or the DOD as to the need asserted for the troops to go to the border.

We await that kind of information but until then, highly questionable.

Thank you, Mr. Chairman.

Senator SULLIVAN. Thank you, Senator Hirono.

I am going to wrap up here with just a few more questions. Again, thanks for the patience. This has been a really good, en-

lightening hearing and I appreciate all the witnesses' testimony and frank discussion of our readiness challenges.

General Spain, I am going to turn to you a little bit on contested logistics. Ms. Maurer talked about it. We all deal with it, all the services, but the Air Force, I think, in particular with its tanker fleet, is particularly challenged because tankers are so important.

The previous Secretary of the Air Force committed after the Chief of Staff of the Air Force and many others over the last several years we are going to be moving more KC–135s to Eielson.

But what is the sense of your tanker fleet writ large and how can we be addressing that, and can you commit to me to keeping that timeline on getting those four tankers? I think one has already been moved to Eielson but we need three more with over 100 fifth-gen fighters in Alaska.

As you know, our Air Force is doing a fantastic job, real-world missions, very regularly intercepting Russian Bear bombers in our Air Defense Identification Zone (ADIZ), Chinese and Russian strategic bombers in our ADIZ.

Our military, our Air Force has done a great job up there. But as you know, those intercept missions are not easy and we need tankers, but we need tankers throughout the world. So what is the situation there?

Lieutenant General SPAIN. Thanks, Senator. I appreciate the question.

As you are fully aware, we are committed to the KC–46 program, 89 aircraft on the ramp today, and recent deployments have been wildly successful in their ability to offload gas to a multitude of receivers both in theater and around the world.

For the KC–135, obviously, we did some reengineering and service life extension in the 1980's and the 1990's that will keep the platform flying for decades to come.

But we are also fully committed to tanker recapitalization post the KC–46 program. Right now we are on track to continue to procure 15 KC–46es a year and we are continuing to move the tanker recap acquisition strategy forward and we will continue to do so.

To your point, we are continuing to move down the path to bringing the remaining three KC–135s to Eielson for the reasons that you mentioned. We have some work to do with the department on some notifications but beyond that we will be able to move relatively quickly.

Senator SULLIVAN. Great. Keep me posted on that. That is very important.

General Mingus, we talked about the 11th Airborne Division, Arctic Angels. I would like to just to get an update from your perspective on how that unit is doing. I try to touch base with them a lot.

From what I can tell they seem to be very motivated, and now that that is a warfighting headquarters any other additional personnel that we talked about coming to that unit in Alaska.

Then any other thoughts about additional multi-domain task force that you are looking at placing? I know that you were looking at Alaska for a multi-domain task force at one point but just to update, really, the operations and morale of the 11th Airborne Division, who do a great job in my State.

General MINGUS. Thanks, Chairman. I know you are proud of them and we are as well.

Their trajectory still continues to move in a very positive direction both on the suicide front, also on the people side that you and I talked yesterday, but also on the operational side.

Multiple warfighter exercises, they just demonstrated their ability to self-deploy in flight rig all the way from Alaska to Hawaii, jump in and participate in a high-scale warfighter exercise on island just a couple months ago. So from an operational perspective they continue to improve and get better every day.

The other fundamental change that we made in Alaska was converting the brigade in Alaska from a Stryker to an infantry brigade combat team.

So that climate, culture, and the identity associated with being light fighters, Arctic light fighters, they absolutely have embraced that. It has turned the corner in that organization and they are often a great start. So very, very proud of where they are headed.

On the multi-domain task forces we did consider but in the end, sir, we did not make a selection to go to Alaska for the for the fifth multi-domain.

Senator SULLIVAN. Where is the fifth multi-domain task force going to be home ported?

General MINGUS. Fort Lewis, Fort Carson, Hawaii, Fort Bragg, and Europe.

Senator SULLIVAN. Okay, great. Thank you.

Admiral, you and I had a good discussion on Adak the other day. If you look at a map it is an incredibly strategic base. It is the gateway to the Arctic. It is much further west than Hawaii. It is kind of a dagger in the flank of China.

Can you give me your sense on the strategic value of Adak and any updates since you and I talked about that?

Admiral KILBY. Well, just for the record, sir, we went to look at Adak from kind of a small, medium and large warm basing perspective on what we could do in the future with your support, and we are going to send up a team to engage with the Aleut Corporation and the Department of Transportation from Alaska to really understand that to a greater level.

We sent 14 ships to Dutch Harbor last year, two from the Forward Deployment Naval Forces (FDNF), 12 from San Diego. So there is a need. I happened to speak to Admiral Paparo last night on a number of issues. This came up. He talked about the increased activity by China and Russia in that area.

So, to me, that lends itself to address those types of activities so we are not having to sail so far to get there.

Senator SULLIVAN. Well, I appreciate that, and again, that is not just aircraft. Strategic bombers and our ADIZ that our great Air Force is doing such a good job of addressing.

To your point, it is Chinese and Russian joint naval task forces in our Exclusive Economic Zone (EEZ) up in Alaska. This is happening on a regular basis. The rest of the country does not really notice but we notice in Alaska. We are on the front lines, and we appreciate the great work our servicemembers are doing there.

I want to thank you on that and look forward to working with you on that.

Can we get to a point, I know it was already discussed in depth, but on the on the amphibs between the Navy and the Marine Corps?

You know, General Mahoney, we talked about the marines kind of 911 kick in the door capability. But essentially that goes away if you do not have a MEU Amphibious Ready Group (ARG) that you can rely on.

So, Admiral, can you commit to us to work with us and the Marine Corps on prioritizing amphibs? You know, I am just being frank here. You do not get the sense that if it was a *Ford*-class carrier or something like that that the maintenance numbers that GAO has reported would be so challenged.

Right now the recent GAO report stated, roughly, 50 percent of the amphib fleet was in poor condition, poor material condition, including five out of the nine Landing Helicopter Assault/Dock (LHA/LHD) carriers, in 90 percent of the LSDs. Those are numbers that are shocking and they really undermine the Marine Corps' ability to do its job. It is a team—one team, one fight, Navy/Marine Corps. But that is a real detriment.

Admiral KILBY. Yes, sir. Thanks for that question. I am not satisfied with amphibious maintenance or readiness. We are committed to the 80 percent combat surge ready.

Senator SULLIVAN. So that is going to be all surface warships, the 80 percent idea?

Admiral KILBY. Yes, sir. As a subset, I have asked Admiral McLane, who is a Surface Warfare Officer (SWO) boss, to really do a deep dive on amphibious ships in particular and there are some things I discussed that we can do better there.

But you have my commitment to meet that goal, to exceed that goal, and to ensure that we have a three-ship amphibious ready group (ARG) ready for the Marine Corps when they embark.

As a result of the *Boxer* and *Wasp* challenges, the LHDs that you mentioned, I directed a study in last April, and I reviewed that study in November and there are some actions that were taken to get after that splitting up the flag responsibilities of Commander Navy Regional Maintenance Center (CNMRC), which is a maintenance command, as of today, and C–21. Admiral Bill Greene will give command to Admiral Lannamann and he will be C–21 and Admiral Lannamann will be CNRMC.

So focusing on that with that effort and leadership I think will help us there but as a subset of our perform to plan for surface ships I am going to focus on amphibious ships. You have my commitment.

Senator SULLIVAN. Great. Thank you very much for that.

General, how many MEU ARGs did we deploy out of the West Coast last year?

General MAHONEY. Fifteenth MEU.

Senator SULLIVAN. Was it a full complement?

General MAHONEY. It was not. It was due to the issues with *Boxer, Somerset* sailed as a single. She was joined by *Harper's Ferry. Boxer* had to go back for maintenance, and so it was a conga line of three ships. I believe they only operated as a three-ship for less than 2 months.

Senator SULLIVAN. We need to fix that.

My final question is a bit of a complicated one. So, General Guetlein, I am going to give it to you since it seems to make the most sense but it is an issue that I am trying to figure out how we work this, and it relates to the President's vision for a Golden Dome.

As I mentioned, have drafted legislation with Senator Cramer that we are hoping is going to be bipartisan. It is very comprehensive in terms of missile defense for the country.

I think most people would be surprised that missile defense for America really, really strongly entails pretty much every service right here. Of course, there is a space-based component, that is in my bill. There is an Army component.

General Mingus, you certainly know the 49th missile defense battalion is a U.S. Army battalion at Fort Greely that really protects the whole country right now.

I love their motto, "The 300 protecting the 300 million," but all the ground-based missile interceptors protecting our country are at Fort Greely. This bill would dramatically plus that up.

Admiral, this bill has a lot of Aegis Ashore focus, in Hawaii, for example, in other places. Then, of course, General Spain, the Air Force plays a huge role in missile defense.

So my question is as we are working on this, I briefed Mike Waltz on our bill. I briefed Secretary Hegseth on our bill, I have even briefed President Trump on the legislation that we put together after the executive order came out. So I know the Pentagon is really getting on this.

How do we coordinate? What is your sense, and, General, I will start with you as the Space Force service.

What is the best way to try to integrate and work together? This Committee wants to work with all the services but it is an integrated effort. It literally is Space Force, Air Force, Army, Navy.

The Marine Corps, as I am sure, has some tactical element to it, General Mahoney, but this is a full service approach.

What is the best way that we can work together legislatively, of course, with the President's executive order, but the full Pentagon integrating the different services, all of whom play a important role?

I think a lot of Americans would be surprised that, you know, the cornerstone of missile defense, which is in Alaska, all the ground-based missile interceptors commanded by the Army, all the major radar sites, particularly the Clear Space Force Air Station with the new long-range discrimination radar.

How do we integrate that, General, and if anyone else has a thought on that. It is a really important issue. It is a really good vision that the President has put forward. We just need to operationalize it between the Pentagon, the Congress, and we need to get on it.

Ms. Maurer, if you have a view on this as well I would welcome that.

So, General, why do we not start with you? Final question, I promise, but it is an important one.

General GUETLEIN. Thank you, Senator. Let me start with it is a very bold vision that is going to have a lot of complexity to it, as you said.

The good news is we just met with the Vice Chairman yesterday in the Joint Requirements Oversight Council. So we had all the combatant commands.

We had the Office of the Secretary of Defense (OSD) staffs. We had the service staffs. We had National Geospacial-Intelligence Agency (NGA). We had Missile Defense Agency (MDA) and the National Reconnaissance Office all present in that room talking about what is it going to take to get after something of this magnitude.

I would compare this, the only time that I can think of in the history of the United States where we have gone after something this complex was the Manhattan Project. That is how complex this capability is going to be.

I am going to tell you it is not complex because the technology is going to be hard. It is complex because of the number of organizations and the number of agencies that need to be involved as you said as you were going around with your question.

Organizational behavior and culture are going to be our two biggest challenges. The way to get through organizational behavior and challenges is we got to make sure first and foremost that we have one entity in charge that has the full support of the Nation, from the President, from the Hill and from the American people on down. That person or that that entity needs to be empowered and resourced to make decisions across organizational boundaries.

Senator SULLIVAN. Do we have that yet?

General GUETLEIN. We do not have that yet. That is what was in discussion. That is what we talked about yesterday with the Vice Chairman. We are going to talk about it next week with the Deputy Secretary of Defense.

Senator SULLIVAN. Good.

General GUETLEIN. The Secretary of Defense owes an answer back to the President by the end of March.

Senator SULLIVAN. Good.

General GUETLEIN. We are on path to do that. Not only is it an organizational challenge between agencies and services but we also need to bring the full blunt of our industrial base into the equation and empower them to be successful, harness their innovation.

That means we need to embrace the nontraditional contractors and get their ideas and get their capabilities on the table.

Senator SULLIVAN. By the way, they are really motivated, those nontraditional contractors, to play an important role here. So I am really glad you are highlighting that.

General GUETLEIN. Yes, sir. We have had numerous industry days. I have taken numerous meetings.

The Missile Defense Agency had an industry day trying to look at the whole of the U.S., not just the government, but the whole of the U.S. to get after this problem. We are also having conversations with our allies, can the allies bring capabilities to the table.

The Canadians are very interested in partnering with us on the protection of the Homeland. They would like it to be the protection of the continent. So we are having those kind of conversations as well.

Senator SULLIVAN. It would be great to see the Canadians participating and helping fund missile defense right now. It is my distinct recollection that they do not participate hardly at all. They do

not do anything on North American Aerospace Defense Command (NORAD) missile defense.

General GUETLEIN. They do participate in NORAD. They do not participate in missile defense. Yes, that is correct.

Senator SULLIVAN. Yes. They need to participate in missile defense. If a rogue North Korean missile is shot into our continent we are not going to wait to see if it hits Chicago or Toronto. We are going to shoot it down.

Canada needs to step up like they have not been on defense spending. It has been woefully inadequate as a wealthy North American Treaty Organization (NATO) member, and they need to do it on missile defense, too.

I have been pressing the Canadians for years on this. They do not put any money into missile defense and it is not acceptable.

General GUETLEIN. The last element that I would bring to bear on here, as we start to look at the authorities and start looking at the accountability everything we have talked about in this session today dealing with the continuing resolution also comes to bear.

This program to be successful has to have funding stability. They have to know that they are going to have those resources from year to year to be successful or else they are going to be very inefficient and they are going to suffer death by a thousand cuts through fits and starts and stops.

Senator SULLIVAN. That is an outstanding answer, General. I really appreciate that.

Any other comments? Ms. Maurer, do you have a——

Ms. MAURER. Yes, very quickly, Mr. Chairman.

So we issued a report a couple weeks ago looking at sustainment of missile defense in Guam, which I think could be, in a sense, sort of a preview of potential coming attractions, and the general's point is definitively spot on about the sheer complexity of the number of organizations.

That report we had probably the most complicated org chart that I have ever put in a report that I signed out under my name because there are so many different organizations.

That is just Guam, which is a small island, as you know. So getting arms around that challenge is going to be important.

The second point I would like to make is that thinking about sustainment, that needs to be part of the conversation from day one. That has been a continuing challenge in the missile defense enterprise.

The Missile Defense Agency develops and purchases the technology. In theory, it is handed off to one of the services to operate and sustain. Those handoffs have not been happening in the way that they have been envisioned.

In fact, that is one of our recommendations in this report on Guam is that DOD needs to spell out specifically who is going to do what and how sustainment is going to work for a Guam defense system.

Senator SULLIVAN. Great. Any other thoughts?

Admiral?

Admiral KILBY. Yes. I am just going to offer one thing I talked about at Joint Requirements Oversight Council (JROC). We can do

this. In 2008 we shot down a satellite that was deorbiting full of fuel in 6 weeks.

The whole-of-government got together with agencies, the science community, and industry and we made it happen. So we can do this. We just need to do the things that were outlined and provide clear lines in C2 and solid, consistent budgeting, and I am convinced that we can deliver.

Senator SULLIVAN. Good. That is a great answer. Anyone else on this topic?

General Spain?

Lieutenant General SPAIN. Senator, briefly, I agree with everything that has been said.

The stitching together of the various capabilities will be the key enabler of Iron Dome and Golden Dome, obviously, the scaffolding of which exists today in Air Force forces and Space Force forces, along with the Army ground-based deterrent.

The integrated Program Executive Officer (PEO) that we have in Major General Luke Cropsey in our Advanced Battle Management System (ABMS) program and the Combined Joint All Domain Command and Control (CJADC2) program will be the thing that will allow each of the services to connect the effectors, the sensors, and the sense making capability across all services and agencies.

That will need to be a primary focus of this effort along with the capabilities that each of the services will bring.

Senator SULLIVAN. Good. Well, these are great answers. You know, you have a strong vision from the Commander in Chief. The President, obviously, is really focused on this. He mentioned it in his State of the Union last week.

It will be in the budget reconciliation bill that we are working on. The DOD component is going to have a lot of funding on this. So I think it is a sense of urgency that we all need to work together on, the Congress, the executive branch.

General, you kind of laid out a vision in the importance of some key principles and we look forward to working with all of you and look forward to having that designated individual or agency in charge. I think that is a really important component as well.

So with that, I want to thank everybody. This has been a long hearing but a really important hearing. I want to thank, again, all six of you for your decades of service to our country in uniform and not in uniform. GAO does a great job.

If there are additional questions for the record my Senate colleagues will submit those in the next few days, and we respectfully request that you try to respond to those within the next 2 to 3 weeks.

With that, this hearing is adjourned.

[Whereupon, at 11:53 a.m., the Committee adjourned.]

[Questions for the record with answers supplied follow:]

QUESTIONS SUBMITTED BY SENATOR DAN SULLIVAN

ALASKA

1. Senator SULLIVAN. General Mahoney, 6 years ago, the Marine Corps was poised to alter its Indo-Pacific force laydown to account for the inherent risk of access, basing, and overflight (ABO) denial and limited training opportunities on Marine Corps bases across the Indo-Pacific. The 37th Commandant of the Marine Corps, General Robert Neller, sent several teams to Alaska to assess infrastructure and training opportunities to support a Unit Deployment Program (UDP) to preposition assets the Marine Corps would need to surge forward in the event of conflict with the People's Liberation Army (PLA). Alaska's benefits were as obvious then as they are now: Alaska provides year-round training for the Marine Air-Ground Task Force (MAGTF) in nearly every clime and place found on the globe; Alaska's cold weather training opportunities are cheaper than other overseas options and permit significantly larger forces to train simultaneously; perhaps most importantly, Alaska is in the Indo-Pacific Command (INDOPACOM) Area of Responsibility (AOR). The Secretary of the Navy nominee, John Phelan, committed to work with me to resource the Marine Corps to get a UDP or regular rotation to Alaska. Will you work with me to ensure we resource our Marine Corps appropriately so that we can support a UDP or regular rotation to Alaska and take advantage of the unique opportunities afforded by the great State of Alaska?

General MAHONEY. The Marine Corps prioritizes maximizing participation in Alaska-based exercises, including Red Flag, Northern Edge, and Arctic Edge. Arctic Edge 25 exemplifies this increased focus, evolving from a single company commitment into a large-scale, distributed, multi-domain exercise, led by a Marine Air-Ground Task Force (MAGTF) and spanning the Aleutian Islands. The Marine Corps uses the Unit Deployment Program (UDP), governed by the Global Force Management Allocation Process (GFMAP), to manage all unit deployments.

Currently, six UDPs exist, five within the U.S. Indo-Pacific Command (USINDOPACOM) area of responsibility (AOR). Three of these USINDOPACOM deployments position infantry battalions in Okinawa, Japan, while two are seasonal deployments to Australia and Singapore. Any increase in UDPs necessitates Combatant Command Requests for Forces through the GFMAP or direct intervention by the Secretary of Defense. To source an additional UDP without pulling out of existing requirements, the Marine Corps would require either end-strength growth or relief from current taskings. Otherwise, deploying units would face an unsustainable deployment to dwell ratio and a high level of risk to operational readiness.

2. Senator SULLIVAN. General Mingus, can you elaborate on what the Army is doing regarding Unmanned Aircraft Systems (UAS) and Counter Unmanned Aircraft Systems (cUAS) testing with the University of Alaska—Fairbanks and what its plans might be to expand that testing in the future?

General MINGUS. The Army and University of Alaska Fairbanks (UAF) Alaska Center for UAS Integration (ACUASI) have developed a strong partnership in the area of Unmanned Aircraft Systems (UAS). UAF has worked with Army partners on cold weather UAS requirement development, additive manufacturing feasibility, National Defense Authorization Act-compliant small UAS training, and airspace deconfliction. Potential areas for expansion in the future include lethal UAS integration efforts, longer term airspace management strategy development, and the addition of a Sensitive Compartmented Information Facility for increased ability for ACUASI to handle classified information.

3. Senator SULLIVAN. General Mingus, the 11th Airborne Division (Arctic Angels) is the Nation's premiere Arctic unit and it's only Arctic-designated Airborne Unit. However, in recent years the rollout of the Cold Weather All-Terrain Vehicle (CAT-V) and procurement contracts for cold weather clothing have fallen short of desired resourcing levels. Can you describe on what efforts the Army is taking to speed up CAT-V deployment?

General MINGUS. The Army is leveraging fiscal year 2024 Supplemental funding through the Tranche replacement process to complete the fielding of the Cold Weather All-Terrain Vehicle (CAT-V) to the two brigades of the 11th Airborne Division (ABD). We are on track to deliver 11 CATVs this fiscal year and another 24 vehicles in fiscal year 2026. I have approved the developing Arctic Modified Tables of Organization and Equipment (MTOE) to reflect the doctrinal requirement for equipment required to operate in the Arctic. The initial basis of issue for CAT-V in an Arctic MTOE is 92 per brigade. We anticipate this MTOE change to reflect later in fiscal year 2026.

The All-Range Tactical Clothing (ARTC) program for the 11th ABD is currently on track to award a Low-Rate Initial Production contract in fiscal year 2026, with initial fielding planned for the 1st quarter of fiscal year 2027. We are working with the 11th ABD to establish procedures that will enable the Division to execute direct procurement of cold weather clothing.

4. Senator SULLIVAN. General Mingus, can you describe what the Army is doing to create long-term supply chains for winter weather clothing and personally issued equipment for 11th Airborne?

General MINGUS. To improve the delivery of Organizational Clothing and Individual Equipment (OCIE), the Army has established the Army OCIE Board (AOB) at the Headquarters Department of the Army level. The AOB will align current and future OCIE programs with Army priorities, ensuring optimal funding and addressing the unique needs of units operating in extreme cold weather, such as the 11th ABD. By fostering collaboration and enhancing visibility, the AOB will oversee the funding, fielding, and maintenance of new capabilities for soldiers, like the ARTC, being developed by the Program Executive Office Soldier, for operating in arctic climates. This improved oversight will enable more accurate long-term demand forecasting for our supply partners. The Army utilizes Regional Logistics Supply Centers and Central Issue Facilities to efficiently distribute equipment for units.

The Army continues to collaborate closely with our supply partners through contract reviews, prioritizing clothing and equipment needs, seeking opportunities to improve visibility into contract performance and mitigate potential supply shortfalls. The addition of the AOB will further strengthen the long-term supply chain for extreme weather clothing and personally issued equipment for units operating in extreme-weather environments.

In 2024, we enhanced cold weather readiness in Alaska by increasing the basis of issue for Extreme Cold Weather Clothing System layers 1, 2, and 5, providing an additional set to all Soldiers, including those in the 11th ABD. This initiative, driven by Soldier feedback and a 2022 request, ensures adequate layering options and addresses laundry cycle needs in the extreme Alaskan climate. It included utilizing on-hand stocks and increasing orders, transitioning to Operational Camouflage Pattern items in 2024.

5. Senator SULLIVAN. General Mingus, as you may know, the President of the United States (POTUS) signed an executive order called "Unleashing Alaska's Extraordinary Resource Potential" which relies heavily on the U.S. Army to help the Governor of Alaska facilitate large scale building projects in Alaska. Can you work with me to ensure that we are maintaining levels of readiness in U.S. Army Corps of Engineers (USACE) to complete these types of projects?

General MINGUS. Yes, I will ensure that the Department of the Army supports and complies with the President's Executive Order to enable actions in compliance with current law. I will also ensure that the U.S. Army Corps of Engineers maintains a level of readiness to continue providing assistance to the State of Alaska in accordance with the President's Executive Order.

6. Senator SULLIVAN. Admiral Kilby, in a 2018 interview, then Secretary of the Navy, Richard Spencer, said that the Navy "needs to have on-sea presence [in the Arctic] now that we have a blue water Arctic more times than not." He additionally pushed the Navy to look at "warming up Adak again," not only for additional training but also for naval sea and air facilities, as well as bulk fuel capability. When Chinese and Russian naval vessels and air assets enter the Alaska Exclusive Economic Zone (EEZ) and Air Defense Identification Zone (ADIZ), aircraft and ships must often travel long distances, which stretch sustainment and make it more difficult to keep a constant presence in the region where our adversaries are located. How concerned are you that our existing infrastructure in Alaska is insufficient to counter the threats posed by China and Russia in the Arctic?

Admiral KILBY. Russia and China are expected to continue their episodic air and maritime operations in the Arctic region to signal their deepening defense ties. China has declared itself a "near-Arctic-state" with rights to participate in Arctic governance, as it seeks to legitimize its influence in Arctic affairs. China is expected to leverage its increased cooperation with Russia to increase its Arctic presence. However, neither Chinese nor Russian advancements in the Arctic have kept pace with their stated goals for Arctic expansion.

The U.S. Navy operates and exercises in the Subarctic Region and conducts subsurface and periodic surface operations and exercises within the Arctic Region, including in response to Russian and Chinese out of area deployers. While dedicated U.S. Navy infrastructure in Alaska to support these operations is limited, the Navy

successfully relies on joint and commercial infrastructure. Navy combatants—and more frequently—Military Sealift Command (MSC) ships, have refueled in Alaskan commercial ports including Dutch Harbor and Anchorage over the past several years. Navy P–8 Poseidon maritime patrol and reconnaissance aircraft (MPRA) routinely deploy to and operate from Joint Base Elmendorf-Richardson in Anchorage, Alaska. In short, given the current trajectory of Russian and Chinese military capabilities in the Arctic, our existing infrastructure in Alaska is sufficient to counter these threats in the near to mid-term.

7. Senator SULLIVAN. Admiral Kilby, Alaska is the only U.S. State in the Arctic region. What advantages do you see in having multiple ports in the Aleutians and Western Alaska that can refuel U.S. Navy ships?

Admiral KILBY. In the Arctic, as elsewhere, a military force that possesses multiple locations to rearm, refuel, repair, resupply, and revive maximizes its operational flexibility. Distributed logistics hubs allow a fleet to operate persistently, with fewer limitations, and sustain a higher tempo in support of sustained combat operations. That being said, the establishment of a forward base with the necessary capabilities, infrastructure, and personnel to support naval combatants comes at a very high cost with frequent severe operational restrictions due to the harsh Arctic environment. We must balance our requirements for each theater and assess the relative value of potential forward bases within each theatre compared to the resources required to build and sustain those bases. With the rapidly increasing reach of the pacing threat, fixed bases are subject to adversary strikes from strategic distances, especially in Alaska and the Aleutians, and would drive a requirement for substantive missile defense capability.

8. Senator SULLIVAN. Lieutenant General Spain, in 2024, after 10 years of discussions, the Secretary of the Air Force recently signed off on a memorandum to base 4x KC–135's in Alaska through active association to Eielson Air Force Base. We are still waiting for final delivery of 3x KC–135s to Eielson Air Force Base along with the facilities and military construction projects needed to support them. This Active Duty component brings flexibility to a very critical capability in our Air National Guard. Can I get your commitment to fulfill the promise of Secretary Frank Kendall to send the remaining three aircraft to Alaska as quickly as possible?

Lieutenant General SPAIN. Yes. On December 13, 2024, the Air Force announced an increase in KC–135 at Eielson Air Force Base (AFB) with the first of the four aircraft already assigned and on-station at Eielson AFB. The U.S. Air Force (USAF) will continue with the transfer and movement of aircraft, personnel and their families throughout fiscal year 2026 to meet Full Operational Capability. The USAF is finalizing its analysis of personnel requirements and expects an increase of ¯175 (plus dependents). Initial coordination of the Overseas Force Structure Change is being staffed by the Joint Staff and OSD.

UNMANNED AIRCRAFT SYSTEMS AND COUNTER UNMANNED AIRCRAFT SYSTEMS

9. Senator SULLIVAN. General Mingus, how are lessons learned about UAS/cUAS warfare from Ukraine and the Tower 22 incident in the Middle East making their way into maneuver doctrine and training?

General MINGUS. The Army, with feedback from Army Commands to include our joint partners, uses the lessons learned and observations drawn from recent conflicts to inform our approach to doctrine development, Initial Military Training, and unit training in preparation for combat operations. For example, the Maneuver Center of Excellence (MCoE) recently published Counter-sUAS Training Modules in Joint Knowledge On-Line and has published the react to sUAS contact mounted and dismounted battle drill. The team is currently developing a doctrinal publication describing the tactical employment of sUAS and two Training Circulars providing training guidance for both sUAS and lethal sUAS systems. The MCoE also ensures Initial Military Training, Infantry and Armor Basic Officer Leader Courses, Maneuver Captains Career Courses, and multiple functional courses all incorporate sUAS into training. This training uses specific techniques, such as the use of cover, concealment, camouflage, dispersion, radio, and electronic transmission discipline as well as incorporating inert drop munitions (water balloons and chalk) to simulate sUAS aerial attack in training. All this is done to enable Soldiers to operate in an environment contested with the ubiquitous presence of sUAS or drones. Finally, lessons learned are used to develop Opposing Forces threat scenarios at our Combat Training Centers providing the most realistic combat training and scenarios to develop the most lethal Warfighters and units.

10. Senator SULLIVAN. General Mingus, what does that pipeline look like from the moment the lessons are gathered to dissemination into the Force?

General MINGUS. The pipeline of observations from the evolving character of warfare and change on battlefields is best characterized as The Center for Army Lessons Learned (CALL) which consists of—Military Analyst Forward—Field units—our automated Quickfire system and connections to the Joint Lessons Learned System.

Ukraine along with multiple theaters are actively monitored due to rapidly changing tactics, techniques, and procedures of warfare. Regardless of the source for the observation, trend, or insight, we have the systems and processes in place to rapidly analyze the observation for U.S. Army implications. This process feeds the development of changes to Doctrine, Organization, Training, Materiel, Leadership, Personnel, Facilities and Policy (DOTMLPF-P).

To enable rapid entry and dissemination, we have the Quickfire observation portal that allows all Army components maximum access to enter observation, trend, and insight feedback. Quickfire affirms that every Soldier is a mobile and agile sensor. Senior leaders can view a dashboard to quickly detect training and operation trends that span the DOTMLPF-P spectrum. CALL maintains the data entries in a cloud with Microsoft Business Intelligence software.

Changes in Doctrine, Training, and Leadership and Education are relatively fast—days to weeks from the time we screen an observation as valid and identify its U.S. Army implications. Solutions requiring organizational re-design, new materiel, upgraded facilities, or even revised policies take longer—months to even years depending on the respective manning, equipping, or military construction processes. Continuous Transformation addresses all time horizons: Transformation in Contact (near term solutions 18–24 months), Deliberate Transformation (2–7 years), and Concept-Driven Transformation (7 to 15 years).

Concurrently, CALL analysts are present with key units, locations, and training events to observe and guide the feedback process pipeline. In addition, CALL conducts quarterly lesson learned reviews and updates across the Army enterprise which brings in all Army leaders to highlight changes, current trends and status of on-going lessons integration. This is also the venue where field units are selected to share and brief key observations from recent exercises, training events or experimentation. This pipeline enables DOTMLPF–P integration with the alignment of Army Futures Command, Futures and Concepts Center, Cross Functional Teams, Capability Development Integration Directorates with U.S. Army Training and Doctrine Command, the Combined Arms Center, and Centers of Excellence. These key organizations enable enterprise-level force development and provide warfighters with the concepts and future force designs needed for transformation.

11. Senator SULLIVAN. General Mingus and General Mahoney, how are the Army and Marine Corps working together to develop UAS or cUAS capabilities for ground forces?

General MINGUS. The Army has partnered with the USMC on a few efforts in both the C-sUAS and sUAS capabilities. In the C-sUAS space, the Army leveraged USMC Tactical Resupply UAS program for our Joint Tactical Autonomous Aerial Resupply System efforts. We utilized the same air vehicle (Service Engineering TRV–150) and leveraged USMC research and development efforts and their data to support Army Airworthiness Release, Authority to Operate, Life Cycle Sustainment Plan, and other documentation. In the sUAS space, we coordinate with USMC to leverage their data on systems they have researched to support our Long-Range Reconnaissance (LRR) effort, which consists of at least one of the potential awardees for the LRR development contract. The Army also expects to initiate Middle Tier Rapid Prototyping efforts in early fiscal year 2026 for its Launched Effects Long Range effort and plans to again leverage significant investment made by the USMC in their launched effects capabilities. This will allow for accelerated fielding to Soldiers and provide a valuable baseline for further development.

General MAHONEY. The Army and Marine Corps are collaborating to develop UAS capabilities for ground forces through mutual briefings and integration efforts. The Marine Corps recently briefed Army stakeholders on the Unmanned Common Control (UCC) concept and policy, while the Army shared details on its Uncrewed Vehicle Control (UVC) program, which leverages common software like Robotics and Autonomous Command and Control (RAC2) for ground systems and small UAS, and Scalable Control Interface (SCI) for larger UAS. The Army excels in software development but faces hardware challenges, whereas the Marine Corps has identified MAGTF Agile Network Gateway Link (MANGL) hardware nodes for UCC but lacks integrated software. In fiscal years 2025 to 2026, UCC efforts will involve competing and selecting UCC software, with Army's SCI, RAC2, and UVC under consideration.

Regular meetings and Army UVC demonstration touchpoints facilitate further integration.

The Marine Corps works directly with the Army and the Joint Force to inform development of cUAS capabilities. Additionally, the relationship with the Joint Counter-Small UAS Office (JCO), led by the Army as the Department of Defense's executive agent for counter-small UAS, identifies opportunities for resource sharing, enhanced interoperability, and potential streamlined acquisition. The forum provided by the JCO governance process at the working group and general officer levels enhances information sharing and promotes collaboration. The Marine Corps actively engages with the JCO, leveraging lessons learned from JCO activities to inform air defense capability development. Also, the Marine Corps' participation in periodic demonstrations, experiments, and exercises with the Army Rapid Capabilities and Critical Technologies Office has provided welcomed exposure to the myriad cUAS solutions, some of which may be adopted for Marine Corps use. Additionally, the Marine Corps is exploring expanding participation in JCO-developed training materials and courses at the Joint Counter-Small UAS University (JCU) at Fort Sill to improve cUAS capabilities across the Marine Corps and promote further alignment with Army UAS efforts.

12. Senator SULLIVAN. Lieutenant General Spain, in my home State of Alaska we have the highest concentration of combat-coded fifth generation aircraft in the world including F–35s. The Government Accountability Office (GAO) has reported extensively on F–35 sustainment challenges including low mission capable and full mission capable rates that do not meet service targets, reliability and maintenance issues, and spare parts availability.

Lieutenant General Spain, in 2024, GAO reported that Department of Defense (DOD) plans call for procuring 2,470 F–35s at an estimated total acquisition cost of about $442 billion and an additional $1.58 trillion in sustainment costs. These costs have grown 44 percent since 2018 due to an extension of the planned life cycle of the aircraft to the 2070's and 2080's. In recent years the program has not met performance goals for F–35 aircraft readiness. What is the Air Force doing to improve F–35 affordability and availability to ensure the aircraft are ready to support mission needs?

Lieutenant General SPAIN. We are also not satisfied with the current sustainment posture in the F–35 program. The USAF is engaged with the F–35 Joint Program Office (JPO), international partners, and industry teammates to address sustainment costs challenges and fully supports the current JPO F–35 Sustainment Reset efforts. The USAF will continue to provide expertise and resources to assist the JPO in working sustainment contracting, modernization prioritization, and propulsion issues, among others. The largest Service drivers for sustainment costs are fleet size, flying hours, and personnel. The USAF is reviewing the Future Force Design, the appropriate mix of live, virtual, and constructive training for our pilots, and the optimum number of maintenance personnel for the program.

13. Senator SULLIVAN. Lieutenant General Spain, how do the sustainment challenges I've outlined above effect the Services' ability to meet operations and training requirements for the aircraft in the near and long term?

Lieutenant General SPAIN. Shortfalls in F–35 mission capability rates directly impact operational readiness and training requirements. Deployed units are meeting their readiness requirements, but units in garrison are operating at suboptimal capacity, are suffering training shortfalls, and are forced to focus on priority training requirements to mitigate those impacts. The F–35 flying training units face additional challenges from older model aircraft that have lower mission capability rates than the fleet average. We fully support the F–35 Joint Program Office Sustainment Reset efforts to aggressively address all F–35 readiness issues.

SHIPBUILDING CAPACITY

14. Senator SULLIVAN. Admiral Kilby and Ms. Maurer, since 2018 the Navy has been implementing the Shipyard Infrastructure Optimization Program (SIOP) to improve the Nation's four public yards and maximize maintenance availabilities. Can you describe what the status of those improvements are overall and whether you're pleased with the progress the Navy has made?

Admiral KILBY. Yes, the Navy is satisfied with the improvements delivered to date and appreciates the ongoing support from Congress for this critically important program. To date, SIOP has completed 45 projects, 237 new pieces of capitalized equipment, and an Area Development Plan for Pearl Harbor Naval Shipyard. Included in the $1.2B of completed construction is a Waterfront Production Facility

at Portsmouth Naval Shipyard expected to reduce submarine maintenance period duration by 2 percent, as well as upgraded piers for the newest Virginia Class Submarines and a training facility in Norfolk that consolidates classrooms from 14 different buildings. Progress continues with 48 projects in execution (valued at $6 billion), including the dry dock 3 replacement in Pearl Harbor, the shipyard electrical backbone in Puget Sound, the dry dock 4 refueling complex in Norfolk, and the multi-mission dry dock #1 extension in Portsmouth.

Ms. MAURER. The Navy must have combat-ready ships to keep the U.S. safe and ensure the seas are open to trade. The Navy's four public shipyards in the U.S. play a critical role in helping the Navy maintain the readiness of its fleet of nuclear aircraft carriers and submarines and in supporting ongoing operations around the world.

The Navy has taken several actions in recent years to improve the four public Navy shipyards in the U.S. but has made limited progress implementing its Shipyard Infrastructure Optimization Plan (SIOP). Since 2017, GAO has issued a series of reports with 10 recommendations to help enhance the Navy's efforts to improve the public shipyards. [1]

GAO found in prior work, for example:

- The Navy's four public shipyards in the U.S are in poor condition, and capital equipment is generally past its useful life.
- Navy dry docks are unable to support newer ship classes, such as the *Ford*-class aircraft carrier and some *Virginia*-class attack submarines.
- Navy drydocks are vulnerable to flooding and seismic risks such as earthquakes.
- The Navy's public shipyards in the U.S. have inefficient layouts that contribute to thousands of days of maintenance delays for aircraft carriers and submarines.

GAO reported that in July 2022, the Navy completed a shipyard-specific plan for Pearl Harbor Naval Shipyard to inform estimates for the overall SIOP costs—including dry dock, facility optimization, and capital equipment costs. The Navy's estimated costs to implement the plan significantly increased—by $9.9 billion, or 162 percent above its 2018 estimate—due to several factors, such as expanding the scope of individual projects as well as identifying additional projects that were not part of the original cost estimate. As noted previously, the Navy intends to complete a shipyard-specific plan for each of the four public shipyards in the U.S.

In 2023, GAO identified several key challenges affecting dry docks, facilities, and equipment.[2] These include: costs of SIOP drydock projects have more than doubled; backlog of restoration and modernization projects intended to restore, renovate, or replace buildings or components has continued to grow in recent years, and is now over $7 billion; and the age of capital equipment has grown since 2016, and more than half of all shipyard equipment is past its expected service life.

As of March 2025, the Navy has implemented five of GAO's recommendations. Implementing these recommendations has allowed the Navy to better manage its SIOP efforts by ensuring clear roles and responsibilities, performing regular management reviews, and providing consistent updates to Congress, among others (see table 1).

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[1] GAO, *Naval Shipyards: Actions Needed to Improve Poor Conditions that Affect Operations,* GAO–17–548 (Washington, DC, Sept. 12, 2017); GAO, *Naval Shipyards: Key Actions Remain to Improve Infrastructure to Better Support Navy Operations,* GAO–20–64 (Washington, DC, Nov. 25, 2019); GAO, *Navy Readiness: Actions Needed to Address Cost and Schedule Estimates for Shipyard Improvement,* GAO–23–106067 (Washington, DC, June 28, 2023).

[2] GAO, *Navy Readiness: Actions Needed to Address Cost and Schedule Estimates for Shipyard Improvement,* GAO–23–106067 (Washington, DC, June 28, 2023).

Table 1: Status of GAO Recommendations the Navy Implemented for Its Shipyard Infrastructure Optimization Plan, as of March 2025

Report	Status	Description
GAO-17-548 *Naval Shipyards: Actions Needed to Improve Poor Conditions That Affect Operations*	Closed – Implemented	The Secretary of the Navy should conduct regular management reviews that include all relevant stakeholders to oversee implementation of the plan, review metrics, assess the progress made toward the goal, and make adjustments, as necessary, to ensure that the goal is attained.
	Closed – Implemented	The Secretary of the Navy should provide regular reporting to key decision makers and Congress on the progress the shipyards are making to meet the goal of the comprehensive plan, along with any challenges that hinder that progress, such as cost. This may include reporting on progress to reduce their facilities restoration and modernization backlogs, improve the condition and configuration of the shipyards, and recapitalize capital equipment.
GAO-20-64 *Naval Shipyards: Key Actions Remain to Improve Infrastructure to Better Support Navy Operations*	Closed – Implemented	The Secretary of the Navy should ensure that the shipyard optimization program office (PMS 555), in coordination with relevant stakeholders, establish clear roles and responsibilities for the shipyards involved in the Shipyard Infrastructure Optimization Plan.
GAO-23-106067 *Navy Readiness: Actions Needed to Address Cost and Schedule Estimates for Shipyard Improvement,*	Closed – Implemented	The Secretary of the Navy should ensure that Program Management Office 555 update the cost sensitivity, risk, and uncertainty analyses of key SIOP projects throughout the design process.
GAO-23-106067	Closed – Implemented	The Secretary of the Navy should ensure that Program Management Office 555 document its use of different methods to cross-check high-value cost elements of future key SIOP projects.

However, as of March 2025, the Navy has not implemented five GAO recommendations related to SIOP (see table 2).

Table 2: Status of GAO Recommendations That the Navy Has Not Implemented for the Shipyard Infrastructure Optimization Plan, as of March 2025

Report Number	Status	Description
GAO-17-548	Open – Priority	The Secretary of the Navy should develop a comprehensive plan for shipyard capital investment that establishes (1) the desired goal for the shipyards' condition and capabilities; (2) an estimate of the full costs to implement the plan, addressing all relevant requirements, external risk factors, and associated planning costs; and (3) metrics for assessing progress toward meeting the goal that include measuring the effectiveness of capital investments.
GAO-20-64	Open	The Secretary of the Navy should ensure that the shipyard optimization program office (PMS 555) include all costs—such as costs for program office activities, utilities, roads, environmental remediation, historical preservation, and alternative workspace—when developing its second, more detailed, cost estimate.
	Open	The Secretary of the Navy should ensure that the shipyard optimization program office (PMS 555) use cost estimating best practices—as outlined in the GAO Cost Estimating and Assessment Guide—in developing its second cost estimate, including a program baseline, work breakdown structure, a description of the methodology and key assumptions, inflation, fully addressing risk and uncertainty, and a sensitivity analysis.
	Open	The Secretary of the Navy should ensure that the shipyard optimization program office (PMS 555) obtain an independent cost estimate of the Naval Shipyards program prior to the start of its project prioritization effort.
GAO-23-106067	Open	The Secretary of the Navy should ensure that Program Management Office 555 use best practices for well-constructed schedules when developing schedules for key SIOP projects.

Source: GAO

Absent improvements, the Navy public shipyards in the U.S. will be unable to support about a third of the Navy's planned maintenance availabilities for aircraft carriers and submarines through 2040. The lack of a results-oriented management approach could lead to ineffective investment, resulting in missed opportunities for improvement that could affect shipyard cost and schedule performance. Further, if

the shipyards are unable to maintain facilities and equipment, they risk not being able to support Navy readiness over the long term. Moreover, by developing a more complete cost estimate, the Navy could reduce the risk that it might request too little funding to achieve its desired outcome. Without high-quality estimates, agencies are at risk of experiencing cost overruns, missed deadlines, and performance shortfalls. Last, by ensuring the Navy follows best practices for cost and schedule estimating for all key SIOP projects, the Navy could reduce the risk that it might request too little funding to achieve its desired outcomes or experience schedule slippages that could adversely affect its ongoing maintenance missions.

GAO is currently examining the Navy's implementation of SIOP, including plans and projects at each of the four public Navy shipyards. Specifically, GAO is reviewing the extent to which (1) Navy oversight of SIOP includes processes for identifying, mitigating, and communicating program risks to inform decisionmaking; (2) the Navy has established project management mechanisms to ensure each shipyard's SIOP projects fulfill shipyard, fleet, and program requirements and objectives; and (3) what, if any, challenges, efficiencies, or other observations the Navy has identified implementing SIOP to date, and to what extent has it informed relevant SIOP planning or project activities. GAO plans to issue its report in early 2026.

15. Senator SULLIVAN. Admiral Kilby, last year in response to concerns about ship repair capacity in allied shipyards, my team worked on a provision to expand repair access for U.S. ships in overseas locations. That provision got significantly pared back. Do you believe that we have adequate ship repair capability between Guam and the First Island Chain right now or should we look to expand on last year's provision?

Admiral KILBY. The Navy appreciates your support and the additional authorities provided by the Fiscal Year 2025 NDAA in 10 USC 8680. They provide the Navy with the ability to conduct limited maintenance availabilities on non-forward deployed naval vessels in foreign shipyards. These authorities to conduct this maintenance for non-forward deployed vessels is key. This ensures that exercises do not impact the operational or personnel tempo of forward deployed naval vessels. The authorities provided are critical in aiding the Navy to identify which foreign shipyards are capable of adequately maintaining and repairing U.S. naval vessels prior to the start of any potential conflict in the Indo-Pacific, and this authority allows us to do so.

16. Senator SULLIVAN. Admiral Kilby, last year it was discovered that there were a number of issues with critical welds made on submarines made at Newport News Shipbuilding. Can you provide an update on how Huntington Ingalls Industries (HII) and the Navy are working together to take corrective action on this issue?

Admiral KILBY. Huntington Ingalls Industries—Newport News Shipbuilding (NNS) identified a global population of 35,015 joints that could be faulty due to improper adherence to weld procedures. With the assistance of the Navy and General Dynamics Electric Boat (GDEB), NNS deemed 20,836 joints acceptable as built. The remaining 14,179 joints were subjected to additional engineering analysis that included various sampling and lab tests of the actual welds. NNS identified, via their analysis, 82 welds that required repair, all of which have been repaired. Based on the positive analysis results and completion of the weld sampling plan, no additional repairs are required and NNS and the Navy are finalizing the official documentation to approve the affected hulls for full-service life.

17. Senator SULLIVAN. Admiral Kilby and Ms. Maurer, what amount of money do you estimate the Navy needs for repair and maintenance to get the Marine Corps amphibious fleet above 80 percent surge readiness by fiscal year 2027?

Admiral KILBY. The Surface Warfare Enterprise is conducting analysis into what changes will be required to deliver 80 percent Combat Surge Readiness in the Amphibious Force and the rest of the Surface Force. There are actions we are already taking such as procuring diesel engine overhaul kits, expanding rotatable pools of parts for cranes and davits, locking in work packages at least 120 days ahead of availability start, and up to 500 days ahead for LHA/LHD class ships, and completing open and inspect work prior to availability start. Navy is aggressively identifying other specific drivers with supporting metrics that we can use to drive improvements in the system and a more efficient flow of ships through the shipyards. Once the analysis is complete, we will be able to more accurately understand the cost to deliver 80 percent Combat Surge Ready across the Amphibious Force and the rest of the Surface Navy.

Ms. MAURER. As GAO has been reporting for the past decade, the Navy faces persistent maintenance challenges that continue to hinder its efforts to rebuild ship readiness. The Navy recognizes that addressing these challenges will require years of sustained management attention and resources. While the full cost to repair and maintain the amphibious fleet is unknown, taking action to address GAO's many recommendations can help the Navy make decisions about resource allocation to meet the Chief of Naval Operations' goal of achieving an 80 percent combat surge ready posture by 2027.

According to GAO, one of the key reasons that the Navy is not meetings its ship availability targets is the poor condition of many amphibious warfare ships. As of March 2024, the Navy's Surface Maintenance Engineering Planning Program assessed that 16 of the Navy's 32 amphibious warfare ships were in unsatisfactory condition.[1] With half of the fleet in poor condition—including some ships that have been unavailable for years at a time—we are concerned it may be difficult for the Navy to get the amphibious fleet to 80 percent surge readiness by fiscal year 2027.

Another key reason the Navy is not meeting its ship availability goals is that it has generally failed to complete amphibious warfare ship maintenance in accordance with its planned schedules. For amphibious warfare ships that began depot maintenance periods in fiscal years 2020–2022, the Navy only completed three of 14 of those periods on schedule.[2] The remaining 11 maintenance periods that the Navy did not complete on schedule resulted in more than 1,200 days of cumulative delays. Maintenance delays can result in cascading delays to training and, ultimately, deployment. Additionally, in total, the maintenance periods cost $400 million more than the original contract value for the efforts. To address the poor condition of the amphibious fleet and the Navy not meeting amphibious ship planned maintenance schedules, it is important that the Navy implement the recommendations GAO has made to improve readiness outcomes. In a selection of reports published from 2020 through 2024 on Navy ship sustainment, GAO has made a total of 49 recommendations that, as of April 2025, have not been implemented. Among others:

- In December 2024, GAO recommended that the Navy should not cancel depot maintenance for amphibious ships proposed for divestment that have yet to reach the end of their expected service life, prior to providing the requisite certification to the congressional defense committees and completing the divestment waiver process.[3]
- In December 2024, GAO recommended that the Navy establish performance goals with tangible, measurable objectives and associated timeframes that can be used to measure progress, for implementing the recommendations identified in the May 2023 Amphibious Readiness Review and, when completed, for implementing recommendations resulting from the Navy's April 2024 review.[4]
- In May 2022, GAO recommended that the Navy identify and assess the full range of fleet-wide risks, including operational, technical, and economic risks, associated with deferred surface ship depot maintenance.[5]
- In February 2022, GAO made 4 recommendations for the Navy to improve its intermediate maintenance periods, including to establish and implement procedures to collect and analyze reliable maintenance data; designate an entity to address maintenance challenges; share best practices and lessons learned; and

[1] The Navy's March 2024 assessment did not include two LPD class ships it took delivery of in 2022 and 2024, but we included them in this analysis as the Navy considers new ships to be in satisfactory material condition until they are evaluated as part of their first major maintenance period, which had not yet occurred for either ship at the time of our analysis. According to officials from the Office of the Chief of Naval Operations, the assessment also included a timeframe for when (and if) a ship in unsatisfactory condition is expected to return to a satisfactory State.

[2] The COVID–19 pandemic contributed to these delays. For example, we reported in April 2021 that COVID–19 exacerbated challenges they were already facing with their workforce when the pandemic began, such as personnel shortages or not having personnel with the right skills to perform work. GAO, *Depot Maintenance: DOD Should Improve Pandemic Plans and Publish Working Capital Fund Policy,* GAO–21–103 (Washington, DC: April 6, 2021).

[3] GAO, Amphibious Warfare Fleet: Navy Needs to Complete Key Efforts to Better Ensure Ships Are Available for Marines, GAO–25–106728 (Washington, DC.: Dec. 3, 2024).

[4] GAO–25–106728.

[5] GAO, Navy Ships: Applying Leading Practices and Transparent Reporting Could Help Reduce Risks Posed by Nearly $1.8 Billion Maintenance Backlog, GAO–22–105032 (Washington, DC.: May 9, 2022).

include the performance of intermediate maintenance periods in strategic planning efforts.[6]

The Navy requested about $24.9 billion to maintain combat surface fleet ships—which include amphibious fleet ships—from fiscal years 2020 through 2023. Approximately $25.9 billion was enacted—about $1 billion more than requested. The Navy obligated $25.8 billion—or 99.7 percent of the about $25.9 billion—and, as of the end of fiscal year 2023, had expended about $20 billion in obligations. Specifically for amphibious assault ships (which includes 2 LHA and 7 LHD ships), the Navy requested approximately $7.2 billion for maintenance from fiscal years 2020 through 2023, with approximately $7.7 billion enacted, $7.7 billion obligated, and $6.2 billion expended.

18. Senator SULLIVAN. Admiral Kilby, how does that number change if we are talking about continuous maintenance and readiness as opposed to surge capacity?

Admiral KILBY. The focus for amphibious ship maintenance is to capitalize on opportunities to improve readiness and operational availability through on time completion of depot level maintenance and through the use of continuous maintenance, which plays a critical role in sustaining readiness levels between major overhauls. This is especially important as we aim for an 80 percent surge ready fleet by January 2027. The 80 percent combat surge ready metric is measured across all ships not in the maintenance phase. Navy is actively exploring avenues to better align funding with the Navy's long-term readiness objectives while ensuring that continuous maintenance processes are maximized effectively across all available windows.

19. Senator SULLIVAN. Admiral Kilby, my office passed the requirement for the Marine Corps to have 31 amphibious ships at all times minimum. The Marine Corps Commandant is attempting to meet operational planning requests from the combatant commands by setting a requirement of 3x Amphibious Ready Group/ Marine Expeditionary Unit (ARG/MEU) ready and able to deploy at any one time worldwide. In a recent Voice of America article, you mentioned the 31 ship requirement as the requirement you are planning for and that the ARG/MEU 3.0 requirement is not a requirement. While that is legally correct, why is the Navy choosing not to take the combatant command requirement as the requirement is should shoot for when it comes to readiness?

Admiral KILBY. While the Navy attempts to resource all combatant command requests, the Combatant Commands regularly request more forces than the Navy can supply—across all platforms. The Joint Staff and Office of the Secretary of Defense conduct a thorough review of all requests and adjudicate those requests against the current strategic guidance and the Services' ability to source those requirements. Ultimately, the Joint Staff directs the services on which Combatant Command requests to meet.

Navy Force Design and Development efforts are aligned to the Interim National Defense Strategic Guidance as well as the Joint Warfighting Concept. Following the publication of the forthcoming National Defense Strategy, and the associated Defense Planning Scenarios, Navy will initiate the Battle Force Ship Assessment and Requirement process, per U.S. Code Title 10, Section 8695, to identify future fleet composition and size to meet the NDS and as a component of Navy long-range planning efforts. This effort will include all components of the battle force and will ensure that the Navy is able to field a Fleet suitable for global operations.

Presently, our primary focus is to increase the combat surge ready (CSR) status of our existing amphibious fleet with a goal of achieving 80 percent CSR. Amphibious ship CSR is currently 42 percent which we acknowledge is unacceptable. We are taking actions to increase readiness by procuring diesel engine overhaul kits, expanding rotatable pools of parts for cranes and davits, locking in work packages at least 120 days ahead of availability start and up to 500 days ahead for LHA/LHD class ships, and completing open and inspection work prior to availability start.

20. Senator SULLIVAN. Admiral Kilby, do you agree we should be aiming for 3.0 MEUs deployable and if not, why not?

Admiral KILBY. Yes, we should aim for this goal, but under the current force structure of ships and marines, a continuous deployable 3.0 Amphibious Ready Group/Marine Expeditionary Unit (ARG/MEU) is not achievable. The Navy must also work to meet demand for aircraft, carriers, submarines, and surface combatants and balance the demand across all platforms. To meet combatant command demand

[6] GAO, Navy Ship Maintenance: Actions Needed to Monitor and Address the Performance of Intermediate Maintenance Periods, GAO–22–104510 (Washington, DC: Feb. 8, 2022).

across all platforms, the Nation requires a much larger Navy with the manpower, maintenance, ordnance, infrastructure, and operations funding to support that larger fleet. Additionally, there is a process within the Department of Defense to adjudicate the COCOM demand against the Service's ability to provide those forces. That process generates the required presence the Service must supply. The Navy does, however, owe the Marine Corps, and regional combatant commanders, a three-ship ARG/MEU and we are executing targeted actions to ensure the ARG/MEU can deploy as a group.

21. Senator SULLIVAN. Admiral Kilby and General Mahoney, please outline here your personal positions when it comes to how you think the Navy should change its budget and resourcing allocations to get amphibious ships above the 80 percent surge readiness threshold. Please include analysis of how the navy is currently allocating budgetary resources to naval warship repair and maintenance versus amphibious ship repair and maintenance. Please also include a side-by-side comparison of the length of delays for Navy warships versus similar amphibious warships when it comes to repair and maintenance. Finally, please outline using bullet points any disagreements you all have about the way the resources described above are being allocated currently and how you are working toward finding a solution.

Admiral KILBY. I am committed to getting the amphibious ships above the 80 percent surge readiness threshold.

The Navy is transforming amphibious ship maintenance to improve readiness in a few different ways:

- World-Class Planning: NAVSEA led a planning sprint with combined input from 50+ stakeholders across the surface force readiness enterprise comparing Navy processes against cruise lines, commercial aviation, and commercial nuclear power plants. Navy adopted some of the best practices like generating a Government Preliminary Schedule (GPS) up to 540 days before maintenance. This allows us to lock the scope of the maintenance period based upon the duration of our schedule and not cost.
- Pit Stop Strategy: This strategy removes complex diesel overhauls out of major maintenance periods and doing them in targeted continuous maintenance availabilities (CMAVS). This accelerates readiness and reduces downtime. Pit Stops have been successfully accomplished on five LSD class amphibs and the goal is to expand this strategy to other classes of amphib ships.
- Contracting Strategies: Surface maintenance acquisition strategies are evolving to enhance surface ship repair capabilities and improve operational readiness. We are developing a holistic suite of contracting options to support a resilient and tailored contracting approach.
- Planning is key to successful execution. Learning from past experiences, our large deck amphibious ships can benefit from being awarded earlier than A–120 award. By awarding our most challenging availabilities at A–360, we are providing a longer planning window with a committed industry partner. This workload certainty for industry will assist in developing more effective resource and availability planning. The first two will be USS *Makin Island* and USS *John P. Murtha.*
- Reducing risk in critical efforts directly improves the ability to deliver ships on time. Complex system repairs to systems such as steam boilers, main propulsion diesels, and lifting and handling systems are drivers in meeting schedule. We are developing strategies to partner with providers (whether it be an Original Equipment Manufacturer (OEM) or others) to provide a continuity of support for targeted systems across platforms. Dedicated resources (in the form of trade skills and material) can provide increased schedule resiliency.
- We are exploring longer term contractual relationships with our industry partners for our continuous maintenance availabilities (CMAVs). By establishing competitive pricing for standard work that is typically performed in short in port maintenance windows, we are building a more responsive and balanced contractual relationship (single award IDIQ contract) to ensure operational support while providing increased work certainty for industry.
- Updating Class Maintenance Plans: This approach shifts from the "open and inspect" strategy to clearly defining the repair requirement before the maintenance period starts. For example, for USS *America* (LHA 6), nearly all mandatory tank inspections were completed before the maintenance period started by using insertable camera technology versus manned entry tank inspections. By using the insertable camera system, 50 tanks are able to be inspected per week by a six-person team.

- Material Readiness: To maximize operational readiness, we are transitioning from reactive maintenance to a proactive, data-driven approach for diesel, steam, and crane/davit systems. Utilizing predictive analytics and condition-based maintenance technologies, we will anticipate maintenance needs, enabling proactive forecasting and timely ordering of materials from the DOD supply system. This strategy minimizes downtime, optimizes resource allocation, and increases material availability.

The Navy uses the same scheduling, programming, methodology and funding tools to generate current and future years maintenance requirements for ALL surface ships, which includes amphibious and other surface combatants. All surface vessel CNO availability maintenance is conducted in the private sector, primarily in fleet concentration areas, and selected forward deployed regional maintenance centers in Japan, Spain and Bahrain. Surface Maintenance Engineering Planning Program (SURFMEPP) is responsible for generating detailed Technical

Foundation Papers (TFP's) by class and twice annually updates individual by hull, by specific availability ship sheets from which the CNO availability maintenance requirements are developed and priced.

Multiple factors impact in-year execution of individual ship depot maintenance packages. Among these factors are the volatility of operational schedules impacting maintenance execution, longer deployment cycles, unanticipated growth and new work found after contract signing that impacts size and duration of CNO availabilities, and private industry struggles to assume the total Navy workload in fleet concentration areas. CNO maintenance availability packages for amphibious ships, particularly large deck amphibs, tend to be bigger and longer in duration due to the negative impact of higher than average operational tempo and age of vessels.

Based on our increased efforts such as procuring diesel engine overhaul kits, expanding rotatable pools of parts for cranes and davits, locking in work packages at least 120 days ahead of availability start, and completing open and inspect work prior to availability start, the Navy is aggressively driving improvements in the system and a more efficient flow of amphibious ships through the shipyards. The Surface fleet has obtained a combat surge readiness of 62 percent with the Amphibious fleet at 42 percent combat surge ready. While the process improvements in amphibious ship maintenance is beginning to take effect, I am not satisfied as we continue to work toward meeting the goal of 80 percent combat surge readiness and close the gap between the amphibious fleet and our other surface platforms.

Navy is conducting a detailed analysis of how the Navy is currently allocating budgetary resources to surface combatant warship repair and maintenance versus amphibious ship repair and maintenance. The Navy will continue to review opportunities to refine its approach to requesting and allocating resources for surface ship maintenance with an eye toward opportunities to improve amphibious ship readiness.

General MAHONEY. Recent GAO reports highlighted how the Navy has allocated budgetary resources to warship repair and maintenance versus amphibious ship maintenance. The Navy's Amphibious Ship Maintenance Performance (ASMP) Review also highlights focus areas that contribute to low readiness for amphibious warfare ships. The Marine Corps will continue to work with our Navy shipmates on improving maintenance and construction so that the Amphibious Ready Group (ARG) / Marine Expeditionary Unit (MEU) is ready to support combatant commander registered and Joint Staff-validated requirements. Given the GAO reports and the ASMP, specific focus areas include the availability of long-lead-time materials, steam-repair contract capacity, and mid-life upgrades. Ultimately, the Marine Corps supports the Navy's efforts to maintain, modernize, and procure AWS, and the Navy's desire to break out AWS in its performance to plan effort.

While the Navy has an 80 percent surge readiness goal, Sec. 352 of the National Defense Authorization Act (NDAA) for fiscal year 2024 (Semiannual Briefing on the Operational Status of the Amphibious Warship Fleet) requires a maintenance and repair plan for sustaining a 3.0 ARG/MEU. The Marine Corps is supporting the Navy in any way possible in developing this congressionally mandated plan since a 3.0 ARG/MEU is a top commandant-level priority. Combatant commanders gain a sustained presence from a 3.0 ARG/MEU, which differs from a surge force. The plan mandated in Sec. 352 will provide a detailed analysis of the resources needed to get to a 3.0 ARG/MEU. However, any additional resources put toward AWS in service to an 80 percent surge readiness goal will likely improve the currently low rates of readiness.

22. Senator SULLIVAN. Ms. Maurer, please outline the major difference GAO noted in its recent report on Shipbuilding Repair and Maintenance between how the Ma-

rine Corps and the Navy view the amphibious ship repair problem, especially when it comes to allocation of resources.

Ms. MAURER. In GAO's December 2024 report on the amphibious warfare fleet, we reported that the Navy and Marine Corps have disagreed on the number of ships that should be available at any given time to conduct operations and training.[1] The services have established an analytical process to further develop ship availability definitions and targets, but the definitions require further refinement. Additionally, the process does not have a timeframe for completion or implementation.

Specifically, according to Navy and Marine Corps officials, the services have yet to agree on how many ships within the amphibious fleet should be available for operations and training at any given time. For the past several years, the Navy and Marine Corps have not agreed on basic amphibious warfare fleet requirements, such as the size and availability of the fleet. Congress has subsequently enacted statutes that provide the Marine Corps with more influence in establishing requirements for the amphibious warfare fleet.

In February 2024, Navy and Marine Corps leadership established a memo that requires the services to conduct an analytical process resulting in a plan that meets two general goals related to (1) ship availability definitions and (2) ship availability concerns.[2]

1) The first goal is intended to define what constitutes an available ship. In June 2024, the Navy and Marine Corps completed this goal by agreeing on a common understanding of what constitutes an available ship. Although the services took an initial step to define ship availability, we found these definitions are not tied to specific and measurable terms in some cases.

2) The second goal is to generally address concerns related to amphibious warfare ship availability. Completion of this goal should result in a plan that partially addresses challenges the Navy and Marine Corps face related to ship availability. As we reported in December 2024, Navy officials told us that they and the Marine Corps had yet to complete their initial report. Additionally, the memo does not clearly specify that the final plan should identify a specific number of ships that need to be available over the near-and long-term future to meet Marine Corps and statutory requirements.[3] According to officials from Headquarters Marine Corps, Combat Development & Integration, a preliminary Marine Corps assessment conducted prior to the memo's release indicated that a higher number of amphibious warfare ships should be available for operations or training compared to the Navy's initial assessment.[4]

To address the differences between the Navy and Marine Corps regarding the amphibious fleet, we made two recommendations that the services 1) refine definitions related to amphibious warfare ship availability to include specific and measurable terms and 2) establish a timeframe for completing and implementing their ongoing joint plan to address ship availability concerns and ensure that the analysis results in a specific number of amphibious warfare ships that the Navy and Marine Corps require to be available at any given time. Until the services implement these recommendations, they will be at continued risk of late or disaggregated marine deployments.

23. Senator SULLIVAN. Admiral Kilby, will you commit to working with the Senate Armed Services Committee to review military specification requirements for naval vessels created and executed by Naval Sea Systems Command (NAVSEA) and to proactively recommend the removal of those deemed most burdensome?

Admiral KILBY. Yes, I will commit to reviewing naval vessel requirements executed by Naval Sea Systems Command (NAVSEA). I recognize the importance of ensuring these requirements support operational effectiveness and readiness without overly complicating ship design and construction. I am committed to identifying and recommending the removal or revision of requirements that are outdated, overly burdensome, or do not add clear value to the mission.

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[1] GAO, Amphibious Warfare Fleet: Navy Needs to Complete Key Efforts to Better Ensure Ships Are Available for Marines, GAO–25–106728 (Washington, DC.: Dec. 3, 2024).

[2] The memorandum establishes a four-step process that the Navy and Marine Corps must complete. For the purposes of this report, we group those four steps into two general goals. While the memo's goal related to defining ship availability is unclassified, its remaining contents and required outputs are classified.

[3] The National Defense Authorization Act for Fiscal Year 2024, Pub. L. No. 118–31 (2023) requires the Secretary of the Navy to prepare a plan to schedule maintenance and repair in a manner that provides for the continuous operation of a total of three Amphibious Ready Groups.

[4] The specific numbers of ships that should be available according to the Marine Corps' and Navy's respective assessments are classified.

AIR AND MISSILE DEFENSE

24. Senator SULLIVAN. General Mingus, how is the Army ensuring that combatant commands' requirements for missile defense are being met considering the low retention and recruitment levels of Army air defense soldiers?

General MINGUS. Recruiting efforts for our Air Defense Soldiers have resulted in achieving 109 percent of our goal, year-to-date, and we are projected to be at 105 percent at the end of the fiscal year. Our emphasis on a robust bonus structure, guaranteed preferred assignments, and the success of the United States Army Recruiting Command (USAREC) drives our effectiveness. These efforts come at a particularly critical time as the Army undergoes the most significant air and missile defense modernization in the last 40 years, by adding such capabilities as the 16th and 17th Patriot battalion, 9 IFPC battalions, and additional divisional short-range air defense battalions, which include counter-UAS capabilities.

25. Senator SULLIVAN. General Mingus, the U.S. Government Accountability Office has reported that the Army faced challenges meeting service goals and requirements and factors that contributed to these challenges. These challenges include air and missile defense soldiers experiencing high operational tempo, unpredictable deployment schedules, the lack of an implementation plan to achieve recruitment goals for this specialty, and a personnel management data system that oftentimes provided inaccurate or incomplete data. What is the Army doing to increase its recruitment and retention rates for Air Defense (14 series) soldiers?

General MINGUS. The Army has taken this seriously. USAREC prioritized air defense artillery positions through critical skills bonuses, training seat management, and station of choice in negotiating enlistment contracts. As a result, recruitment for this Career Management Field (CMF) has steadily improved in first term accessions over the last 3 years. In fiscal year 2023 to fiscal year 2025, the Army achieved 62 percent, 92 percent and 106 percent of the CMF goals respectively. Projecting forward, the Army's recruiting force through its transformation is positioned to meet the needs of the force for this CMF. To implement the Army's strategic vision, retaining and growing our Air and Missile Defense (AMD) population is crucial. CMF 14 has maintained a steady and positive retention rate over the last 3 years. In fiscal year 2023 to fiscal year 2025, retention rates for CMF 14 remained at an average of ¯82 percent. Projecting forward, the Army has CMF target rate to facilitate precision targeting within retention. To date, CMF 14 is at 97.3 percent of the fiscal year 2025 retention target. The Army launched a plan to monitor and improve retention rates across AMD commands while targeting specific reclassification goals to increase this population. We're also focusing on key military occupational specialty reclassifications to meet future operational needs, with a phased approach that balances growth and sustainability to improve predictability and stability. Moving forward, we will continually assess our progress and adjust strategies to maintain a healthy AMD force while ensuring alignment with our broader talent management and leader development efforts.

TRAINING ACCIDENTS

26. Senator SULLIVAN. General Mingus, Admiral Kilby, General Mahoney, General Guetlein, and Lieutenant General Spain, training accidents, such as accidents involving ground combat vehicles, continue to be a challenge for the military services resulting in aircraft, equipment, and vehicle damage, and servicemember injuries and deaths. Recent GAO reports have pointed to issues related to accident data collection, safety and risk management processes, and training. For example, in 2018, GAO reported that DOD safety centers did not collect standardized data as part of their accident investigations. In addition, a 2021 GAO report on military vehicle accidents found that improper supervision, training, and risk management processes contributed to more than half of the most serious accidents. To what extent has your service taken steps to collect and analyze standardized data as part of accident investigations?

General MINGUS. The Army has implemented the DOD safety data standards in the Army Safety Information Management System to provide standardized data for use across the Army. The Army is collecting and analyzing this standardized data in formal collaboration with the other Military Departments through the Joint Safety Council to prevent future mishaps. Data collected over the last 2 years demonstrates an overall decrease in tactical vehicle mishaps by 4 percent. Class A tactical vehicle mishaps reduced from 9 incidents in fiscal year 2023 to 7 in fiscal year 2024; there were 14 Class B mishaps in fiscal year 2023 and fiscal year 2024; and Class C mishaps reduced from 147 to 142 over that time.

Admiral KILBY. In early 2023, the Department of Defense (DoD) and the services agreed to a set of minimum data elements for uniform safety data collection to improve understanding and awareness when sharing information across the DOD. In accordance with 10 U.S.C. § 185(d)(2)(A), the DOD and the Service Safety Chiefs established uniform data collection standards and established the Force Risk Reduction (FR–2) management tool as the standardized repository on March 1, 2024. As of March 1, 2024, all services are reporting service safety data into the FR–2 repository. The DOD Force Safety and Occupational Health Office continually reviews the compliance of each military department in adopting and using the established uniform data collection standards.

The uniform repository allows the Department and Joint Safety Council to review the compliance of each military department in adopting and using the uniform data collection standards established in early 2023. Additionally, the uniform repository allows for joint level analysis into mishap events and their associated causalities.

While each service has unique attributes with their investigational processes due to organizational and executional differences, the uniform data repository affords the DOD and Joint Safety Council access to service data to assess, identify, and prioritize risk mitigation efforts and safety improvement efforts across the Department.

General MAHONEY. *The Marine Corps has taken significant strides in standardizing data collection and analysis.* In early 2023, the Department of Defense and the services agreed to a set of minimum data elements for uniform safety data collection to improve understanding and awareness when sharing information across the DOD. In accordance with 10 U.S.C. § 185(d)(2)(A), the DOD and the service safety chiefs established uniform data collection standards and established the Force Risk Reduction (FR–2) management tool as the standardized repository on March 1, 2024. As of March 1, 2024, all services were reporting service safety data into the FR–2 repository. The DOD Force Safety and Occupational Health Office continually reviews the compliance of each military department in adopting and using the established uniform data collection standards.

The uniform repository allows the Department and Joint Safety Council (JSC) to review the compliance of each military department in adopting and using the uniform data collection standards established in early 2023. Additionally, the uniform repository allows for joint-level analysis into mishap events and their associated causalities.

While each service has unique attributes with its investigational processes due to organizational and executional differences, the uniform data repository affords the DOD and JSC access to service data to assess, identify, and prioritize risk mitigation efforts and safety improvement efforts across the Department.

General GUETLEIN. Since 2018, the Air Force Safety Center regularly works with the other Services as part of the Assistant Secretary of Defense for Readiness-Safety Information Management (SIM) Working Group, led by the ASD (R), Force Safety & Occupational Health, to standardize data collection. Through the SIM Working Group, the Services agreed to a common set of data standards for safety investigation & reporting systems specific to each Service that feed OSD's Force Risk Reduction (FR2) system. Within the Department of the Air Force (DAF), we've updated our automated mishap reporting and investigation system to collect a larger data set than the minimum joint standards and designed a Unit Risk Forecasting tool to be deployed across the Air Force later this year. This effort will allow a more detailed analysis of mishap data and foster greater cross-communication and sharing of lessons learned across the military departments.

Our Space Safety Division inside the Air Force Safety Center ensures space equities, nomenclature, and operations are appropriately considered in all training, written guidance, and other DAF safety efforts. Additionally, we continue to mature our Space Mishap Investigator Course to bolster Guardians' understanding of mishaps with respect to causes, human factors, and prevention opportunities. These efforts not only aid mishap prevention within the U.S. Space Force (USSF), but they also directly correlate to standardization of data and analyses with the other Services.

Lieutenant General SPAIN. Since 2018, the Air Force Safety Center regularly works with the other Services as part of the Assistant Secretary of Defense for Readiness, Force Safety & Occupational Health-led Safety Information Management (SIM) Working Group to standardize data collection. Through the SIM Working Group, the Services agreed to a common set of data standards for safety investigation & reporting systems specific to each Service that feed OSD's Force Risk Reduction (FR2) system. Within the Department of the Air Force (DAF), we've updated our automated mishap reporting and investigation system to collect a larger data set than the minimum joint standards and designed a Unit Risk Forecasting tool to be deployed across the Air Force later this year. This effort will allow a more

detailed analysis of mishap data and foster greater cross-communication and sharing of lessons learned across the military departments. Informed by mishap investigations on military vehicle incidents, Air Force Global Strike Command instituted new processes to better identify and mitigate risks. This action is in addition to the Command's consideration of employing a different vehicle potentially better suited for the mission. Similar actions across the Air Force will be considered for codification in written guidance as part of the next phase of the Chief of Staff of the Air Force's Integrating Risk and Readiness campaign.

27. Senator SULLIVAN. General Mingus, Admiral Kilby, General Mahoney, General Guetlein, and Lieutenant General Spain, are there any changes your service has made to training in the past 2 years to help mitigate and prevent accidents?

General MINGUS. Following the publication of GAO–21–361 in July 2021, which identified areas for improvement in military vehicle safety, the Army proactively established an Operational Planning Team (OPT) in November 2021 to address the GAO report's recommendations. The OPT is spearheading significant updates to driver and operator training programs. A major revision to Army Regulation (AR) 600–55, The Army Driver and Operator Standardization Program, is currently in the final stages of publication at the Army Publishing Directorate. This revision focuses on bolstering training, licensing, and performance standards to reduce accident risk. In addition to OPT recommended improvements, revisions to AR 350–1, which are pending publication, moved Driver's Training within the top 4 of 17 common mandatory tasks for all Soldiers, and included it under warfighting skill sustainment and proficiency. Furthermore, the Army is comprehensively updating motor vehicle Training Circulars to include enhanced safety awareness training, particularly regarding vehicle rollover prevention, more challenging driver training scenarios, and integration of standardized Training Support Packages for consistent instruction. To ensure effective implementation, the Unit Safety Officer Course has also been updated to reflect the latest safety protocols and risk mitigation strategies.

Admiral KILBY. As a learning organization, the Navy utilizes command investigations, mishap and hazard reports, and near-miss reporting as opportunities to identify latent organizational causality and develop recommendations leading to changes in doctrine, organization, training, materiel, leadership and education, personnel, facilities, and policy (DOTMLPF-P). These corrective actions across the DOTMLPF-P spectrum are performed to drive residual risk as low as reasonably achievable. Training is but one aspect for how the Navy implements continuous improvement.

Examples:

- In October 2021, while sailing in the Pacific Ocean on patrol, USS *Connecticut* hit an uncharted seamount. Based on that investigation, the Navy made changes to the submarine operations manual and improvements to the training curriculum for all facets of the submarine navigation team, to include additional emphasis on proper risk management during navigation planning and execution, as well as enhancements to understanding chart pedigree.
- In September 2013, the Navy tragically lost 2 aviators while conducting helicopter operations on USS *William P Lawrence.* The Navy implemented a wide host of improvements because of that mishap. Over the course of the subsequent years while monitoring the effectiveness of those mitigations, the Navy assessed that the controls were neither as enduring nor effective as needed. While there have been no fatal mishaps since 2013 involving wave incursions, the Navy documented several follow-on minor mishaps and near-misses. Accordingly, the Navy developed further solutions which include radar improvements to predict wave height and exposing ship's bridge teams to the wave incursion hazard in high fidelity ship handling simulators so the watch teams could experience the challenges in a controlled training environment to better understand how to mitigate the issue.
- In 2018, the Navy tragically lost a young surface warfare officer during small boat operations in the U.S. 5th Fleet Area of Operations. As a result of this mishap, the Navy implemented several policy changes and engineering controls to reduce the likelihood of a sailor being ejected from small boats. Over the course of subsequent years, the Navy assessed that the controls implemented were stovepiped into addressing risk only for our surface fleet; however, several communities within the Navy operate small boats and were thus exposed to similar risks. Based on that assessment, within the last 18 months, the Navy developed a standardized small boat coxswain curriculum and piloted a Basic Small Craft Operator Course. The Navy is continuing to develop a continuum of training across the career of our small boat coxswains to ensure competency and pro-

ficiency, as well as to align all small boat operations policy for training, certification, and operations at the echelon I level to drive consistency across the entire Navy enterprise.

- Following the tragic loss of two SEALs in the Arabian Sea, Naval Special Warfare partnered with the United States Coast Guard to assess and improve equipment, proficiency and maintenance of flotation devices used by Special Warfare Sailors and more specifically in visit, board, search and seizure (VBSS) operations. As a result, the Navy has procured the MD1250 Personal Flotation Device (PFD) and is in the process of testing the RATIS life-preserving unit (LPU) for increased survivability in case of unintentional or incapacitated water entry. The MD–1250 offers automatic activation through water pressure sensors, enhancing operator safety in the event of unintentional water entry. In addition, the Force Training Readiness Manual was updated and signed by Commander, Naval Special Warfare Command in October 2024 and incorporates several critical changes to include mandatory gear checks, platform safety briefs, and specific buoyancy tests with operational gear prior to every maritime mission.

General MAHONEY. As a learning organization, the Marine Corps uses investigations, reports, and near-miss reporting to drive continuous improvement through changes to doctrine, training, equipment, leadership, and policy, aiming to minimize risk. The Marine Corps has implemented targeted aviation, ground, and Amphibious Combat Vehicle (ACV) training changes over the past 2 years to reduce accidents and enhance operational readiness.

- *Aviation:* The Aviation Training and Readiness (T&R) Program Manual, setting training standards for aircrews and support personnel, is continuously refined (20 revisions across 33 manuals in 2 years). Examples include:
  - *C–40A T&R Manual (Oct 2023):* Improved proficiency tracking when marine pilots fly with the Navy. The update allows for accurate logging and tracking of Navy training events, previously done manually and prone to error, ensuring pilots remain proficient when operating with either service. This reduces workload and errors, leading to safer joint operations.
  - *F–35B/C T&R Manual (June 2024):* Standardized minimum requirements for conversion pilots to become flight leaders (section or division leaders). This change provides objective training standards, replacing previously subjective qualifications, aligning with the Aviation Training and Readiness Program Manual, and enhancing both training quality and safety.
  - *CH–53K T&R Manual (Jan 2025):* Enhanced tracking of carrier qualification environments. The update separates day and night qualifications (previously undifferentiated) to provide commanders with better visibility into pilot qualifications for shipboard operations. This supports improved validation and safer execution of those operations.
  - *Marine Sierra Hotel Aviation Readiness Program (M-SHARP)* Enhancements: This training management system has been improved with:
    - *Daily/Weekly Flight Schedule Validation:* M-SHARP generates validation reports based on flight schedules, considering crew rest, crew day, crew pairing, and flight profiles. The system verifies compliance with DOD, Department of the Navy (DoN), and USMC requirements, identifying risks that might otherwise go unnoticed, significantly reducing human error and providing commanders better information for risk decisions.
    - *Rule Book Manager:* This tool allows units to input their own specific safety rules into M-SHARP to enhance the validation process, imposing more stringent requirements on crew rest, flight time, etc. Training and Education Command (TECOM) Aviation Standards Branch has implemented rules to notify units if a pilot is carrier qualified before deploying to Navy ships.
    - *Read and Initial Board Module:* This module automates the Read and Initial (R&I) board process for safety notifications, enabling the Department of Safety and Standardization to track, manage, and log completion of required R&I postings for the entire squadron, reducing human error and improving monitoring.
- *Ground:* The Motor Transport T&R manual was updated to reduce the sustainment interval for incidental operators from 12 to 6 months, enhancing both effectiveness and safety. Current initiatives being developed focus on increasing incidental operator proficiency, standardizing assistant driver training, and developing driver simulators for deployment throughout the Fleet Marine Force.

- *ACV:* The Marine Corps has implemented several key changes to improve the ACV's training, safety, and operational effectiveness:
  - Revised training procedures standardized training and certification, by billet, for all ACV operators and maintainers, outlined in the Assault Amphibian Training Operations Procedures Standardization and updated Navy Marine Corps (NAVMC) 3500.2D Assault Amphibian Training and Readiness manual.
  - The use of driver simulators, mandatory Water Safety Instructor and Shallow Water Egress Trainer qualifications.
  - MCBul 3502's standardized surf observation reporting.
  - Fielding of the Assault Amphibian Safety Boat providing dedicated waterborne support, aligning with naval safety practices.
  - A "leader to led" initiative reduced ACV formation size ratio from 1:9 to 1:4, improving leadership oversight and mitigating risk.

General GUETLEIN. The Space Force continually evaluates training programs are to provide the most effective and safest environment along with the most realistic training possible. We have made multiple changes to the curricula of our Space Mishap Investigation Course and the annual training for Investigating mishap officers to improve training content and relevancy. Additionally, the USSF brought on a Highly Qualified Expert (HQE) with an extensive space safety and operations background to better incorporate risk management, system safety, and safety policy within our service. Last, our Space Safety Division is helping to create a Unit Risk Forecasting tool. This tool will enable leaders at all levels to see real-time risk assessments of units based on current data and how that data relates to risk indicators from years of mishap investigations.

Lieutenant General SPAIN. Training programs are continually evaluated to ensure the most effective and safest environment possible while garnering the maximum benefit of realistic training to participants. The Chief of Staff of the Air Force recently implemented his Integrating Risk and Readiness campaign to bolster the integration and application of risk management throughout the force. Our efforts will increase the use of tools to assess and manage risk while enhancing decision making on mitigation strategies at lower supervisory levels to enhance readiness, lethality, and combat capability.

In addition, the implementation of virtual reality simulations in aviation, maintenance, and vehicle operations provides trainees enhanced realism and a greater understanding of the risks associated with their assigned tasks. Virtual reality increases training effectiveness while reducing exposure to real-world hazards and risks inherent in military training.

The Air Force, in concert with the Joint Safety Council's Motor Vehicle Working Group, is also exploring a study to better understand motorcycle rider behavior. The results will inform changes to how services train motorcycle riders to safely operate in the dynamic traffic environment.

QUESTIONS SUBMITTED BY SENATOR TED BUDD

HUMAN PERFORMANCE REQUIREMENTS

28. Senator BUDD. General Mingus, Admiral Kilby, General Mahoney, and Lieutenant General Spain, how does the DOD use wearable technology and biometric health data to measure servicemember heart rate, blood pressure, heart rate variability, blood oxygen, respiratory rate, blood glucose and body temperature?

General MINGUS. The Army is actively evaluating the operational use of wearable technology and biometric monitoring to improve Soldier health, performance, and readiness. Ongoing assessments led by the U.S. Army Center for Initial Military Training (CIMT) are focused on the feasibility and value of commercial-grade wearables in Basic Combat Training and operational environments. These wearables currently track metrics such as heart rate, heart rate variability, respiration, sleep, and skin temperature, offering a continuous, real-time view of physiological status.

Although some measures like blood glucose and continuous blood pressure monitoring are not yet widely reliable in commercial devices, the Army is closely tracking technological advancements and preparing for future integration. These early efforts aim to inform scalable solutions that enhance injury prevention, optimize training, and support performance-based decision making across Army formations.

Admiral KILBY. The Surface Force has several ongoing research efforts that use wearable technology (e.g., Oura ring, Garmin watches) to collect biometric data to measure servicemember heart rate, heart rate variability, blood oxygen, respiratory rate, skin temperature, and activity.

The Surface Force's most advanced R&D effort is the Command Readiness, Endurance, and Watchstanding (CREW) Program, which is a shipboard sensor suite that leverages Commercial-Off-The-Shelf (COTS) sleep tracking wearable technology (e.g., Oura Ring) to collect objective sleep data and a secure, offline shipboard data architecture that provides Commanders with objective data to inform operational fatigue risk management decisions. While still in advanced development, CREW is a shipboard tactical warfighting solution that the Navy is considering transitioning to a Program of Record in future budgets. The CREW system is being developed to be device agnostic and may be able to collect additional biometric health data in the future.

In addition to developing the CREW system, the Surface Force is evaluating the feasibility and efficacy of using wearable technology to collect biometric health data at scale for additional use cases.

General MAHONEY. The Marine Corps has not implemented service-wide wearable technology for tracking servicemember health data. However, research into potential applications is ongoing. For example, the Marine Corps, in collaboration with the U.S. Army Research Institute of Environmental Medicine, has tested a Heat Illness Prevention System designed to reduce heat-related injuries during entry-level training.

The Marine Corps integrated bioelectrical impedance analysis (BIA) devices into its body composition program in 2022. This ongoing investment enables commanders to assess marines with greater accuracy, while allowing marines to track their critical biomarkers such as lean body mass and basal metabolic rate—metrics that directly contribute to their overall health and fitness.

The Marine Corps will continue assessing our programs, policies, and requirements to determine if there are wearable solutions that are valid, cost effective, and can be implemented at scale.

Lieutenant General SPAIN. The Department is increasingly leveraging wearable technology and biometric health monitoring systems to track a broad spectrum of physiological metrics in servicemembers. These tools are central to advancing force readiness, optimizing performance, and enabling early detection of illness or injury—ultimately enhancing operational effectiveness.

Wearable and biometric technologies fall into two main categories: those focused on readiness and fitness monitoring, and those approved by the Food and Drug Administration (FDA) for medical use. Regardless of their classification, all systems must comply with applicable DOD cybersecurity standards, Federal regulations, and medical data protection requirements, including HIPAA, protections for personally identifiable information (PII), and encryption protocols for use in secure environments.

The Air Force continues to evaluate wearable technologies that balance the dual imperatives of operational readiness and cybersecurity. While adoption remains limited to small-scale trials, promising results are emerging. For example, Air Mobility Command (AMC), in collaboration with the Defense Innovation Unit (DIU), is piloting wearable systems designed to help commanders and aircrews monitor real-time readiness indicators during max endurance operations in the Pacific.

These efforts are driven by a clear need: commanders and crew members want real-time, data-driven insights into fatigue levels and early signs of infectious disease, tailored to individual biometric profiles. This capability was recently showcased during the Air Force's Mobility Guardian exercise, where wearable technologies demonstrated both operational utility and the ability to safeguard sensitive health data. Such initiatives reflect growing interest across the service in scalable, secure, and mission-aligned wearable solutions that support the health and effectiveness of the force.

29. Senator BUDD. General Mingus, Admiral Kilby, General Mahoney, and Lieutenant General Spain, how does your service view the utility of servicemember biometric health data to improve individual health readiness metrics?

Admiral KILBY. The Surface Force is conducting multiple longitudinal research efforts to evaluate the utility of collecting servicemember biometric health data to improve individual health readiness metrics. While the studies are ongoing and final analysis will not be completed for several years, preliminary and anecdotal evidence suggests using wearable technology to provide sailors with biometric health data has a positive effect on individual health behaviors. For example, data from deployed Naval warships indicated that approximately 22 to 40 percent of sailors issued a wearable device self reported improvements in their sleep, physical activity, nutrition habits, and mental well being.

General MINGUS. The Army views biometric health data as a transformative tool to enhance individual readiness and optimize human performance. Metrics such as

heart rate variability, sleep quality, and movement patterns can be used to monitor stress, recovery, fatigue, and overtraining. These insights enable commanders and human performance teams to proactively manage workloads, personalize training, and reduce preventable injuries.

When integrated into the Holistic Health and Fitness (H2F) Management System (H2FMS), this biometric data supports a shift from reactive care to predictive readiness management. By enabling real-time, data-informed adjustments across the five H2F domains—physical, nutritional, mental, sleep, and spiritual—the Army aims to improve Soldier resilience, maximize performance, and reduce long-term healthcare costs.

General MAHONEY. The Marine Corps does not currently track servicemembers' health data outside of semiannual body composition assessments. BIA devices employed in the Marine Corps' body composition program provide individual health readiness metrics to influence physical fitness training and health decisions to increase warfighter readiness.

Lieutenant General SPAIN. The integration of biometric health and fitness data with advanced machine learning has the potential to act as a powerful force multiplier for the Armed Forces. When implemented with clearly defined parameters around security, privacy, and authority, this fusion of technology can deliver real-time, actionable insights into both individual and unit-level health and readiness.

For military operations, this translates into earlier detection and more effective management of injuries such as concussions, improved triage accuracy, and faster, more informed medical decisions. It also enables a reduction in training time lost to illness through predictive health monitoring and facilitates swift containment of infectious disease outbreaks in high-density environments like dorms, aircraft, or forward-operating bases. Ultimately, this leads to a measurable enhancement in overall force health, resilience, and operational readiness.

30. Senator BUDD. General Mingus, Admiral Kilby, General Mahoney, and Lieutenant General Spain, what is the feasibility and advisability of developing a data collection and tracking system to provide commanders with insights into servicemembers' readiness and well-being, incorporating biometric health data for descriptive analysis and accessibility to servicemembers?

General MINGUS. The development of such a system is both feasible and already underway through the H2FMS. The H2FMS is being built to securely aggregate biometric, behavioral, cognitive, and training data to create individual Soldier readiness profiles. These profiles are accessible through role-based dashboards that support commanders, human performance teams, and Soldiers themselves in making evidence-based decisions.

The H2FMS includes embedded tools to deliver configurable training plans, targeted education, and tailored interventions across all five H2F domains. To ensure long-term scalability and impact, the Army is aligning H2FMS implementation with full strategic integration, ensuring that the capability is embedded across Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, Facilities, and Policy (DOTMLPFP). As H2FMS and technology continue to evolve, it will incorporate artificial intelligence and machine learning to generate predictive and prescriptive insights that support early intervention and individualized readiness optimization strategies.

Admiral KILBY. The Surface Force's primary program measuring near-real time servicemember readiness is the Command Readiness Endurance and Watchstanding (CREW) Program. CREW is a shipboard sensor suite that leverages Commercial-Off-The-Shelf (COTS) wearable technology (e.g., Oura Ring) to collect objective sleep data and a secure, offline shipboard data architecture that provides Commanders with objective biometric data, providing insights into sailors' readiness and well-being. By providing these data to operational Unit Commanders, these leaders can make holistic tactical warfighting decisions that integrate metrics related to both (a) materiel readiness and (b) personnel readiness of the unit.

CREW feasibility testing has been ongoing since 2020 with operational demonstrations including 39 units (surface and aviation), two joint international exercises (i.e., Talisman-Sabre 23, RIMPAC 24), two Carrier Strike Groups, and more than 5000 sailors and marines. Results indicate that the availability of biometric data to Unit Commanders improves unit readiness and Operational Risk Managment decisions. While still in advanced development, CREW as a shipboard tactical warfighting solution is being considered to transition to a Program of Record in future budgets.

General MAHONEY. The Marine Corps currently uses two systems, the Marine Corps Training Information Management System and Command Individual Risk and Resiliency Assessment System), which collect different aspects of readiness and

well-being data. By leveraging these systems, the Marine Corps can gain insights into servicemember readiness and well-being. However, implementation must address critical concerns to include maintaining separation between Protected health information and personally identifiable information, preserving the security strengths of current systems, ensuring regulatory compliance, and providing appropriate servicemember access to their own data.

Lieutenant General SPAIN. Commanders and first sergeants are entrusted with access to servicemembers' health data to maintain unit readiness and ensure operational effectiveness. This access, however, must be governed by strict safeguards to protect against potential exploitation by adversaries, prevent the misuse or misinterpretation of sensitive data, and shield personnel from inappropriate or punitive actions stemming from inaccurate conclusions.

Any health monitoring systems deployed must fully comply with Department of Defense (DOD) cybersecurity standards, ensuring data integrity, confidentiality, and controlled access. Broader implementation across the force will require robust, scalable infrastructure capable of securely supporting millions of users. Such infrastructure must be interoperable with existing military health record systems, maintain continuous data protection, and ensure compliance with privacy and authority protocols.

While commercial health and performance monitoring products—such as those used by major corporations or professional sports teams—may offer valuable capabilities, their adoption in a military context will depend on their ability to meet stringent DOD requirements. These systems must not only align with military security and interoperability standards but also uphold the overarching goal: enhancing mission readiness while safeguarding the health, privacy, and trust of the force.

31. Senator BUDD. General Mingus, Admiral Kilby, General Mahoney, and Lieutenant General Spain, does your service have an office that specifically provides oversight on the human performance (HP) initiatives throughout the service, from mental to physical with the authority?

General MINGUS. Yes. Oversight of human performance initiatives resides with the U.S. Army Center for Initial Military Training (CIMT), which serves as the specified Force Modernization Proponent for H2F, as outlined in AR 5–22. CIMT leads the development and synchronization of human performance doctrine, capability requirements, standards, and modernization strategies across the Army.

Through H2F, the Army embeds multidisciplinary human performance teams in brigade formations and aligns efforts to the H2F Strategic Objectives: reducing injuries, improving performance, accelerating rehabilitation, increasing multi-domain readiness, and optimizing cost-effectiveness. CIMT works in coordination with the Army Commands, Program Executive Office Soldier—Project Manager Soldier Survivability, HQDA G1 and HQDA G9 to ensure integrated, accountable, and scalable execution of human performance initiatives across all components and readiness domains.

Admiral KILBY. Human Performance (HP) in the Navy is not overseen by a single office. Multiple commands manage HP based on their operational needs. The Office of Naval Research Warfighter Protection and Applications Division leads HP research and technology efforts focused on health, survival, and performance of Navy personnel. Naval Education and Training Command and Bureau of Naval Personnel supports HP through training programs and personnel policy.

Along these lines, I am investigating an opportunity to consolidate sailor optimization programs akin to the Army Holistic Health And Fitness Program. The Navy's effort in this area is in the early stages of development and I am committed to maximizing our sailors health and productivity.

General MAHONEY. The Marine Corps has two entities that share jurisdiction over human performance initiatives. The Deputy Commandant for Manpower and Reserve Affairs, Marine and Family Programs Division serves as Marine Corps lead for the Marine Corps Total Fitness program policy, resourcing, integration, and delivery. The commanding general, Training and Education Command is responsible for standardization of service requirements.

Lieutenant General SPAIN. Currently, human performance initiatives, from mental to physical, fall under A3 (aircrew), A1 (fitness), and Surgeon General (Integrated Operational Support, mental health, etc). Regarding wearable technology for human performance improvements, there is no single DAF office with oversight of all human performance initiatives. For the subset of such activities which constitute human research, DAF has one oversight office within the Air Force Surgeon General's Office: the Component Office of Human Research Protections (COHRP). Each

Service has their own COHRP IAW DODI 3216.02, Protection of Human Subjects and Adherence to Ethical Standards in DOD-Conducted and—Supported Research.

QUESTIONS SUBMITTED BY SENATOR MAZIE K. HIRONO

SPACE READINESS

32. Senator HIRONO. General Guetlein, Space Force is increasing in size to address the significant threats posed by China and Russia. However, your service is faced with challenges to grow beyond the roughly 10,000 Guardians and 5,000 civilians it has today. While your current retention rate may be high, what challenges are you experiencing with growing the Space Force, and how can Congress better support your force structure and training efforts?

General GUETLEIN. Funds in the Space Force's MILPERS, Operations & Maintenance (O&M), and military construction (MILCON) appropriations are necessary to support space-focused training, education, manpower, and infrastructure needed to sustain growth. Congressional support for the President's Budget will allow the Space Force to continue to grow in order to meet expanding mission demands and enable credible force presentation in the space domain.

33. Senator HIRONO. General Guetlein, how are you ensuring your ground-based capabilities and infrastructure to support space assets are more energy and water-resilient?

General GUETLEIN. Investments in installation energy programs are critical to the success of operational missions and the effectiveness of our warfighter capabilities. These programs provide enduring mission capabilities through energy resilience, by deploying innovative technologies and alternative generation sources to protect against failures caused by commercial power grid outages or disruptions.

The USSF adopts a mission-centric approach to enhance the security of energy and water systems by conducting Energy Resilience Readiness Exercises (ERREs) and Water Resilience Readiness Exercises. These exercises simulate emergency scenarios to identify and mitigate vulnerabilities in critical assets. We have completed ERREs at Vandenberg, Schriever, Peterson, Buckley, and Patrick, Space Force Bases (SFBs) and at Clear, Cape Cod, and Cape Canaveral Space Force Stations (SFSs). The USSF is installing microgrids with onsite energy generation capacity at Vandenberg and Buckley SFB, and Cape Cod SFS.

Additionally, resilience threats to mission continuity are assessed through Installation Energy Plans. This strategic planning process provides a comprehensive roadmap for future energy and water needs, enabling proactive investments that align with shifting priorities.

OPERATIONAL ENERGY DEMAND REDUCTION

34. Senator HIRONO. General Mingus, Admiral Kilby, General Mahoney, General Guetlein, Lieutenant General Spain, and Ms. Maurer, energy demand reduction extends operational reach for warfighters and enables our military's lethality and readiness. Hybrid vehicles lower costly fuel consumption and offer longer operational duration. This saves the U.S. military time, money, and most importantly—servicemembers' lives. Can each of you briefly talk about how your operational and installation energy programs support the warfighter and base resiliency and why they are worth funding?

General MINGUS. The Army is transforming how the Army sources, stores, distributes, converts, and manages battlefield energy to provide resilient, assured power at the tactical edge. The Army is exploring hybrid powertrains for the XM30 Infantry Combat Vehicle and M1E3 Abrams. Besides potentially lower fuel consumption, hybrid vehicles could have extended silent watch capabilities.

The effort to reduce sustainment demands extends beyond investing and deploying technologies and practices that reduce fuel consumption. Reducing the demand for supplies and services or providing Soldiers the means to meet that demand at or closer to their point of need, reduces the frequency of logistics operations. Such efforts reduce Soldier exposure to enemy action, extend the range and endurance of the formation, and provide commanders greater flexibility and freedom of action.

For our installations, the Army continues to explore all power generation assets that can be combined with specific circuity to allow the islanding of our installations, which provides resilient energy for critical functions. Areas under consideration include investment in two key advanced technologies: nuclear energy and microgrids. Currently the Army has 31 operational microgrids deployed across 24 installations worldwide. Additionally, the Army plans for and measures installa-

tions' energy resilience through black start exercises. These exercises test our energy generation and distribution systems to ensure mission continuity is not interrupted when the commercial grid on which they rely is disrupted.

Admiral KILBY. The Navy's installation energy programs prioritize reliable energy access, minimize vulnerable fuel supply chains, lower utility costs, mitigate cyber threats, and enhance mission execution through resilient infrastructure. We conduct regular assessments and exercises to improve adaptability and long-term operational effectiveness to support the warfighter with the delivery of critical energy loads on time and on target, including mitigating any loss of productivity in our four Navy shipyards from power outages. Resilient installations are crucial for projecting power, defending national interests, and sustaining warfighting operations.

The Navy's operational energy investments target a 15 percent operational efficiency improvement across platforms, increasing time-on-station and availability of precision fires for strike groups and fleet commanders. We've already achieved an 8 percent efficiency improvement in destroyers, demonstrating tangible progress toward our goal. Our research investments, including autonomous refueling and advanced battery technology, directly support warfighter lethality and readiness by maximizing available power in contested environments and enabling future platforms to field directed energy technology. Continued funding is crucial to maintaining energy dominance and meeting evolving threats.

General MAHONEY. For the Marine Corps, supporting the Fleet Marine Force and ensuring the resiliency of our installations means preparing for a future where reliable power, both in the field and at our bases, is increasingly contested. Our energy programs directly support the warfighter by:

- *Extending Operational Reach:* By investing in efficient power generation and advanced battery storage, we reduce our reliance on vulnerable fuel convoys, increasing the operational range and endurance of our units. This allows us to operate in austere environments for longer periods, maintain battlefield superiority, and achieve mission objectives with less logistical burden.
- *Enhancing Base Resiliency:* Our installations are critical nodes for power projection. We are hardening our bases against a growing range of threats, both physical and cyber, that could disrupt power supply. Resilient bases mean resilient warfighters.
- *Increasing Lethality & Readiness:* Reliable power is the backbone of modern warfare. Our programs ensure that our weapons systems, communication networks, and critical infrastructure remain operational, giving our marines the edge they need to prevail in any conflict.

To achieve these goals, we leverage available congressional authorities like Energy Savings Performance Contracts, Utility Energy Service Contracts, and Enhanced Use Leasing agreements, in conjunction with appropriated funding. These strategic investments in energy resilience are not just about saving money; they are about saving lives and ensuring the Marine Corps remains the Nation's premier fighting force. Continued funding for these programs is critical to maintaining our competitive advantage and fulfilling our commitment to the warfighter.

General GUETLEIN. Uninterrupted and reliable electric power is a mission-critical necessity for the USSF. We rely on dependable power to perform our core functions—e.g., space control, global mission operations, space access, and enterprise functions.

The USSF is making investments in energy infrastructure and initiatives that fund microgrids, onsite generation projects, battery energy storage systems, basewide energy efficiency programs, advanced controls, and distribution networks. In particular, the USSF is installing microgrids with onsite energy generation at Vandenberg and Buckley SFBs, and Cape Cod SFS. Electric power also supports space launch facilities, ground control stations, autonomous data and artificial intelligence processes, all vital to maintaining national security and overseeing global military and space operations. To ensure resilience in a contested environment, the USSF prioritizes against cyber threats and physical disruptions to power infrastructure, enabling continuous and secure operations.

Lieutenant General SPAIN. Our operational energy efforts are focused on increasing capability and lethality per gallon and minimizing impacts to our airmen who deliver fuel in the battlespace to support operations. Initiatives such as legacy aircraft drag reduction, mission planning software improvements, and focused training/behavior changes are increasing combat capability per gallon, and saving service member lives.

Our recent efforts have resulted in $222 million in fuel cost avoidance, with $64 million of prior year expired funds recouped and reinvested to further enhance combat capability and mission assurance.

Our vision of "Mission Assurance through Energy and Water Assurance" focuses on sustaining warfighting capabilities through advanced planning, innovative technology, and process enhancements. We evaluate both near-and long-term energy and water requirements, emphasizing resilience, cost effectiveness, and streamlined deployment of domestic energy sources to ensure secure, reliable, and affordable power for our installations.

The DAF is spearheading several initiatives to harness domestic energy resources. For example, the Department is piloting advanced geothermal projects to deliver consistent, around-the-clock power, increase installation readiness and resilience, and bolster behind-the-fence capabilities for emergency responses. Geothermal energy, a domestic and abundant resource, offers the dual benefit of potential revenue generation while utilizing existing equipment and expertise from the oil and gas industry.

Ms. MAURER. GAO has recently reported on Department of Defense (DOD) efforts to support the warfighter via operational and installation energy programs.

Operational Energy

With respect to operational energy, GAO currently has ongoing work looking at DOD's supply and distribution of fuel during a contested Indo-Pacific conflict, with a classified report expected to be delivered to the Congress by June 2025. While DOD works on energy demand reduction, the use of fuel remains important during operations.

GAO also reported in 2020 on the Navy's hybrid electric drive (HED) program. In 2009, the Secretary of the Navy established goals that, in part, focused on reducing the energy consumption of the Navy's forces. Two years later, the Navy initiated a program to develop and install HED systems on its fleet of *Arleigh Burke*-class (DDG 51 Flight IIA) destroyers. The Navy's HED system is designed to save fuel by using excess power from the ship's electrical system to propel the ship. In October 2018, the Navy completed installation of one of the systems on the USS *Truxtun*. Senate Report 115–262 accompanying the National Defense Authorization Act for Fiscal Year 2019 asked the Navy to submit a report on the HED system installed on the USS *Truxtun* and asked GAO to review the Navy's report.

We issued a report in 2020 in which we (1) assessed the extent to which the Navy's report on the USS *Truxtun* included information regarding the assessment areas as requested by Congress, and (2) described the Navy's decision to suspend the HED program and use the systems for a different effort.[1] We found that the Navy did not include a summary of the investment planned for the HED system installed on the USS *Truxtun* in its January 2020 report to Congress, as requested by Congress. Specifically, the Navy's report on the HED system installed on the USS *Truxtun* did not contain an assessment of the costs and benefits of the HED system or an assessment of the funding needed to execute the program. We also found that the Navy's report on the HED system installed on the USS *Truxtun* provided some performance information that was not based on comprehensive testing. We did not make any recommendations in this report.

Installation Energy

With respect to installation energy, GAO issued a report in 2023.[2] GAO found that DOD had efforts underway to achieve sustainability goals associated with greenhouse gas emissions reductions, energy and water efficiencies, and waste reduction in the December 2021 Executive Order 14057. Specifically, DOD had (1) established an organizational structure that supports implementation of the order, (2) developed some implementation plans, (3) started dedicating staff to support implementation of the order, and (4) increased funding and updated guidance for key energy resilience and conservation installation projects.

GAO has also reported in 2016 on DOD's Energy Resilience and Conservation Investment Program (ERCIP), then known as the Energy Conservation Investment Program (ECIP).[3] In that report, GAO noted that, while DOD and the military services made use of several different programs to accomplish their energy goals, ECIP was DOD's primary source of directly appropriated military construction funding for energy conservation projects. DOD is required to notify congressional committees of the ECIP projects that it plans to construct, although it is not required by either law or its own guidance to include in its project notifications information on the an-

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[1] GAO, Arleigh Burke Class Destroyers: Observations on the Navy's Hybrid Electric Drive Program, GAO–21–79R, Washington, DC, Nov.. 5, 2020).

[2] GAO, Environmental Sustainability: DOD Should Identify Workforce Capacity Needed to Achieve Goals," GAO–23–105239 (Washington, DC. May 31, 2023).

[3] GAO, Defense Infrastructure: Energy Conservation Investment Program Needs Improved Reporting, Measurement, and Guidance, GAO–16–162 (Washington, DC, Jan. 29, 2016).

ticipated performance of those projects, including the anticipated returns on investment, estimates of the energy or water savings, or renewable energy production. However, providing project notifications without including performance information reduced Congress's ability to review in a single source what to expect from the ECIP program, such as whether DOD components expect their respective overall portfolios to meet the minimum return on investment. Further, anticipated performance information would provide a baseline from which DOD and the committees could later evaluate ECIP program implementation. GAO recommended that the Secretary of Defense should review the strategic goals for the ECIP program and make any needed adjustments to reflect current DOD priorities to help improve DOD's ability to report on and measure anticipated and actual savings from ECIP projects and to provide guidance to inform further project selection.

DOD concurred with and implemented GAO's recommendation. Specifically, DOD updated the "Strategic Vision for the Program" section in the ECIP annual guidance for fiscal years 2019 and 2020 to reflect current DOD priorities. Additionally, DOD's proposed funding allocation for Fiscal Year 2021 aligned with its strategic vision to boost energy resilience and met the intent of our recommendation.

QUESTIONS SUBMITTED BY SENATOR ELIZABETH WARREN

PRICE GOUGING

35. Senator WARREN. General Mingus, Admiral Kilby, General Mahoney, General Guetlein, and Lieutenant General Spain, do you support efforts to ensure contracting officers have the cost and pricing data they need to negotiate fair deals for taxpayers?

General MINGUS. I fully support all efforts by Army contracting officers to obtain the necessary cost and pricing data required to establish a fair and reasonable price as it is in the best interest of both the Government and the U.S. taxpayer. Any exceptions for certified data must be approved by the Head of the Contracting Activity, and any exceptions for other than certified cost or pricing data must be approved by the Senior Contracting Official. Requiring exceptions to be approved at these senior levels demonstrates the Army's strong commitment to requiring cost and pricing data whenever it is necessary and appropriate to do so.

Admiral KILBY. Yes. The Navy will leverage Commercial and Competitive procedures wherever possible and appropriate. When those procedures are not possible, access to cost and pricing data is critical in determining the fair and reasonable price of products and services.

General MAHONEY. Yes. DOD has established comprehensive resources to support contracting officers' decision making process with establishing a fair and reasonable cost or price for contracts. Specifically, from an enterprise perspective, resources include field pricing team support from Defense Contract Management Agency (DCMA). DCMA support includes proposal review, overhead should-cost reviews and negotiation support; Contract Business Analysis Repository a tool maintained by DCMA which provides Contracting Officers with negotiation data for Defense contractors across the DOD; Navy Price Fighters, who support providing cost and price analysis, should-cost amounts, commercial price analysis, commerciality reviews and market analysis. Additionally, Defense Acquisition University provides a baseline of training for contracting officers and continuous learning on a cadre of functional areas relating to cost and pricing to equip the contracting workforce with the skill set to be successful in negotiating fair and reasonable contracts.

General GUETLEIN. Yes. Space Force Contracting Officers (COs) must have current, complete, and accurate cost and pricing data, to obtain fair deals for our taxpayers. The USSF employs several strategies to negotiate fair and reasonable prices on sole-source contracts for the required products and services we use. Our COs use statutory and regulatory authority to secure and analyze data to determine and negotiate fair and reasonable prices to the best of their ability.

Lieutenant General SPAIN. Yes. Ensuring Air Force Contracting Officers (COs) have access to current, complete, and accurate cost and pricing data is integral to having negotiation parity to obtain fair deals for our taxpayers.

36. Senator WARREN. General Mingus, Admiral Kilby, General Mahoney, General Guetlein, and Lieutenant General Spain, the Government Accountability Office's 2023 High-Risk Report identifies vulnerabilities in DOD's contracting processes, emphasizing systemic risks of fraud, waste, and abuse. Notably, it highlighted that sustained leadership commitment and robust internal controls are critical for addressing contractor misconduct and preventing overcharges in government con-

tracts. In light of the steps laid out in this GAO report and the scale at which defense contractors are fleecing the Pentagon and taxpayers, what measures is your service implementing to ensure contractors do not engage in price gouging of your service and U.S. taxpayers?

General MINGUS. The Army takes overcharging and price gouging very seriously. The Army conducts regular training on best practices to recognize and address these issues and utilizes the Army's peer review process to obtain insights into potential systemic or material challenges across the acquisition enterprise. Contracting officers rely upon the guidance provided by the Federal Acquisition Regulation and its DOD and Army supplements, along with input from technical teams, in reviewing cost/price proposals. Additionally, the Army collaborates with the Defense Contract Audit Agency when a contract is determined to be at risk for potential overcharging or price gouging to request a Truth in Negotiations Act audit, otherwise known as a defective pricing audit.

Admiral KILBY. In order to ensure the Navy obtains fair and reasonable pricing for products and services, the Navy leverages competition and commercial procurement practices as appropriate. If neither competition nor commercial practices are appropriate for the procurement in question, the Navy will ensure that it obtains whatever cost and pricing data is necessary to support meaningful analysis and establish a fair and reasonable price. Additionally, the Navy will utilize organizations like Defense Contract Management Agency (DCMA) and Defense Contract Audit Agency (DCAA) to assist in both pre-award reviews and post-award monitoring.

General MAHONEY. The DOD takes the GAO's 2023 High-Risk Report seriously and is committed to addressing the vulnerabilities identified in our contracting processes. The Marine Corps recognizes the importance of preventing fraud, waste, and abuse, and we are actively implementing measures to ensure contractors do not engage in price gouging. These measures are grounded in the Federal Acquisition Regulation (FAR) and are designed to strengthen our internal controls and promote accountability. One key area of focus is:

- *Rigorous Cost and Price Analysis (FAR 15.404):* We are reinforcing our commitment to thorough cost and price analysis, including the use of appropriate techniques like price comparisons, parametric estimating, and cost realism analysis. This helps us determine fair and reasonable prices and identify potential overcharges. We are also ensuring our contracting officers receive appropriate training and support in these areas.

We recognize this is an ongoing effort that requires continuous improvement. We are committed to working with all stakeholders to strengthen our contracting processes and ensure that we are getting the best value for taxpayer dollars.

General GUETLEIN. The DOD has made significant strides addressing systemic risks identified in the 2023 GAO review. With the establishment of policies, boards, and regular reviews of service contracts, GAO assessed that DOD met all Operational Contract Support criteria and improved to meeting three of five service contract criteria. The Space Service Acquisition Executive initiated annual service contract requirement reviews for accountability. The Space Force continues to support efforts and use tools such as the Contractor Responsibility Watch List, a tool provided by Congress, to hold contractors accountable for delivering on commitments. Additionally, the U.S. Space Force continues to look for opportunities to foster competition, which reduces the probability of price gouging.

Lieutenant General SPAIN. The DAF utilizes existing regulatory and statutory authorities that permit Contracting Officers (COs) to request data needed to determine fair and reasonable prices. The DAF has published training and guidance to reinforce the CO's authority to obtain the necessary data to ensure they can determine a fair and reasonable price. The DAF also conducts training for its Major Defense Systems' Multi-Functional Teams. This training provides in-depth analysis of industry trends, market dynamics, and major vendor financial strategies to inform our acquisition and negotiation strategies to obtain fair and reasonable prices.

The DAF also supported DOD's work with Congress to strengthen the Department's ability to obtain pricing data for commercial subsystems, subcomponents, and spare parts. In commercial acquisitions when other than cost and pricing data is not provided, DAF COs follow data denial procedures while elevating through DAF and vendor leadership to seek resolution. Unresolved data denials are reported to the Office of the Undersecretary of Defense (Acquisition & Sustainment), Defense Pricing, Contracting, and Acquisition Policy (DPCAP) for congressional reporting.

37. Senator WARREN. General Mingus, Admiral Kilby, General Mahoney, General Guetlein, and Lieutenant General Spain, have you identified any methods your service can use to enhance competition in the defense industrial base?

General MINGUS. A healthy and competitive defense industrial base (DIB) is crucial and enhancing competition within the DIB is a critical priority. Market research has always played a vital role in achieving this goal. Market research helps us identify existing and emerging technologies, products, and services that can meet the Army's needs in potentially more efficient and cost-effective ways. This can lead to the adoption of cutting-edge solutions that might not have been considered otherwise.

Army reviews requirements that are currently met using a sole source (vendor locked) solution. Acquisition plans and requested approvals for sole source contracts are required include a plan to compete the requirement in the future. Additionally, the acquisition planning process must include a review of the Army's needs for data rights and access to a contractor's intellectual property to ensure the Army is able to compete future requirements to the maximum extent possible.

Admiral KILBY. The current industrial base is designed for efficient peacetime production of ships and munitions. Historic underinvestment and industry consolidation following the end of the cold war have reduced competition and capacity at the Tier 1 shipyards and their suppliers, leading to workforce-constrained build schedules that do not meet Navy targets. In response to these challenges, the Navy recently stood up the Maritime Industrial Base Office, which is charged with addressing, developing, integrating, and managing enterprise maritime industrial base efforts. MIB's six lines of effort are focused on having dedicated teams and initiatives for the major issues that are impacting our industry partners and the ability of our shipbuilding programs to deliver ships on time and on budget: workforce, supplier development, shipbuilder infrastructure, strategic outsourcing, advanced manufacturing, and government oversight. These efforts include identifying opportunities to increase competition by increasing overall industrial base capacity, which also lowers barriers to entry for small businesses, and other innovative and non-traditional suppliers.

General MAHONEY. Yes. Improving communication and relationships with our industry partners has been a goal for the Department. Our contracting offices hold contracts and small business industry days, and the Director of Contracts has recently instituted reverse industry days to listen to challenges and opportunities from our DOD industry partners, so we can better define our requirements and communicate upcoming procurement opportunities.

General GUETLEIN. The USSF is always looking for opportunities to leverage our domestic suppliers in our acquisition mission. Our Service is implementing the DOD Commercial Space Integration Strategy and the USSF Commercial Space Strategy to enhance competition in the defense industrial base.

Our space acquisition Program Executive Officers and program offices are actively seeking every option to use domestic commercial products in their technical baselines. They submit requests for proposal (RFPs) to industry to solicit innovative warfighting capabilities to meet program requirements as well as directly and in partnership with the Defense Innovation Unit (DIU) utilizing Other Transaction Authority. These advanced technologies will be cross-cutting, meaning that they will affect multiple mission areas across the Space Enterprise. For our more traditional space programs, the Service has pursued acquisition strategies that provide for competition to the maximum extent possible.

The NSSL Phase 3 dual-lane acquisition strategy enables USSF to grow the industry base by onboarding new launch service providers, put capabilities on orbit more efficiently, and enhance resiliency while decreasing costs. Phase 3 Lane 1 allows the USSF to flexibly contract launch services for more risk-tolerant commercial-like payloads, putting more capabilities into orbit when needed for national security. Phase 3 Lane 2 provides the full complement of mission assurance for our Nation's most critical warfighting space assets.

Our most recent initiative, the Commercial Space Office, looks to incorporate small businesses into capabilities through the Space Systems Command Front Door, SpaceWERX, and DIU, which not only increases our domestic industrial capacity, but also creates more jobs across the country.

In addition, the USSF is an active member of the Space Industrial Base Working Group and collaborates with other mission partners like National Reconnaissance Office, National Aeronautics and Space Administration, and Missile Defense Agency to address joint space issues and work with industry to mitigate risks, adding resiliency to our defense industrial base.

Lieutenant General SPAIN. The Air Force can enhance competition within the defense industrial base by promoting a clear and consistent demand signal for industry, incentivizing capital investment in key industrial capabilities, and promoting multiple competitive opportunities throughout the lifecycle of its programs. This approach, coupled with strategic efforts to lower barriers to entry for non-traditional

contractors and new acquisition pathways such as the Software Acquisition Pathway and utilizing Other Transaction Authority, will help foster a more robust and diverse industrial base. Additionally, prioritizing direct engagement with contractors at all levels of the supply chain, including small businesses, will help us understand and mitigate risks and constraints. By proactively addressing potential bottlenecks and shaping incentives for innovation and production, the Air Force can ensure a healthy and competitive industrial base capable of meeting current and future national security needs.

38. Senator WARREN. General Mingus, Admiral Kilby, General Mahoney, General Guetlein, and Lieutenant General Spain, should your service's contracting officers have more access to cost and pricing data for sole source contracts?

General MINGUS. The Army fully supports gaining access to better and more thorough cost and pricing data. Actual costs on both fixed and cost type contracts provides valuable cost and pricing data and will help the Army better negotiate a fair and reasonable price. This data is valuable at the whole contract level but individual cost element data it is highly preferred. Cost performance on a contract has influence beyond just a fair and reasonable determination; it informs the Army of the overall risk to the contractor, which can shape the contract type and be factored in the overall negotiated profit.

Admiral KILBY. Yes. The Navy will leverage Commercial and Competitive procedures to the maximum extent, which obviates the need for cost and pricing data. However, when those procedures are not possible, access to cost and pricing data is critical in determining the fair and reasonable price of products and services for sole source contracts.

Providing, in a consistent manner, greater access to cost and pricing data to the DOD would assist in speed to award at fair and reasonable prices.

General MAHONEY. Yes, contracting officers should have access to cost and pricing data for sole-source contracts, when applicable. Contracting officers currently have access to cost and pricing data in support of sole source contracts exceeding $2 million. The FAR emphasizes the importance of obtaining cost and pricing data to determine fair and reasonable prices, especially in sole-source situations where the usual market forces of competition are absent. With the implementation of AI tools, we believe the speed of access will continue to improve.

General GUETLEIN. For sole-source contracts, our contracting officers seek to obtain certified cost or pricing data or other than certified cost or pricing data as required and appropriate. DAF COs use the statutory language in 10 U.S. Code § 3455 to pursue product technical and pricing data to ensure accurate commercial product and price reasonableness determinations for sole-source, military unique major weapon subsystem, components, and spare parts. The DAF works actively to expand competition across the Defense Industrial Base (DIB) as competition is a powerful tool critical to gaining the best value for the taxpayer and our warfighters as one of our best methods of proving prices fair and reasonable. The DAF holds our prime contractors accountable for pursuing competition to the maximum extent possible and ensuring fair prices at the subcontract and vendor levels. Congress can help by maintaining and strengthening the ability of the DAF acquisition workforce to gain insight into contractors' cost and pricing data so that we can effectively evaluate industry's proposals.

Lieutenant General SPAIN. Yes. Ensuring Air Force Contracting Officers (COs) have access to current, complete, and accurate cost and pricing data is integral to having negotiation parity to obtain fair deals for taxpayers.

39. General Mingus, Admiral Kilby, General Mahoney, General Guetlein, and Lieutenant General Spain, does getting better access to a program's cost or pricing data help enhance your service's readiness?

General MINGUS. Better access to a program's cost or pricing data has the potential to help enhance readiness. The Army may, through a better understanding of actual costs, achieve cost savings, which could be allocated to procurement of additional goods and services or enhance the Army's efficiency in meeting its objectives and requirements.

Admiral KILBY. Yes. If neither competition nor commercial practices are appropriate for the procurement in question, the Navy will ensure that it obtains whatever cost and pricing data is necessary to support meaningful analysis and establish a fair and reasonable price. Ensuring fair and reasonable pricing is critical to being a good steward of the taxpayer's funding and executing programs in accordance with their budgets. Ensuring access to adequate cost or pricing data is a critical enabler to protecting limited resources and being able to maximize the goods and services the Navy can procure to improve readiness and availability.

General MAHONEY. Yes. Speed of access will assist in improved negotiation positions and access to detailed cost data strengthens the government's negotiating position. Contracting officers can leverage this data to challenge unreasonable costs, negotiate fairer prices, and avoid overpaying for goods and services. This directly impacts readiness by freeing up funds for other critical requirements. This also allows for better contract performance; by tracking actual costs against proposed costs, the government can identify potential cost overruns or inefficiencies early on and take corrective actions. This helps ensure programs stay on track and deliver the required capabilities to support readiness.

General GUETLEIN. Yes, understanding cost or pricing data can help enhance a Service's readiness. Depending on the capability and acquisition strategy, there may be several ways a Service can obtain cost or pricing data. As a service, we are implementing the DOD Commercial Space Integration Strategy and USSF Commercial Space Strategy. By increasing competition, leveraging commercial capabilities, and using firm-fixed price contracts where appropriate, the USSF is benefiting from a competitive environment to understand market prices. Expanding competition across the DIB is a powerful tool critical to gaining the best value for the taxpayer and our warfighters since competition is one of our best methods of proving prices fair and reasonable. Paying fair and reasonable prices ensures each dollar spent on readiness is enhancing the personnel, training, equipment, and sustainment to accomplish our missions in anticipated threat environments.

Lieutenant General SPAIN. Being able to project costs helps us to program and budget more effectively, which allows us to gain and maintain readiness through efficient resourcing of our programs. Improving access to a program's cost and pricing information will significantly boost our service's readiness. While we have decent access to the cost and pricing data already, enhancing visibility into cost and pricing data will further improve the DAF's ability to negotiate better prices. The savings achieved through more advantageous procurement can be allocated to additional end items or other critical procurements. Furthermore, the availability of spare parts directly influences our operational mission effectiveness and readiness. With improved pricing, our program offices will have the capacity to acquire more parts, thereby enhancing our operational readiness.

RIGHT-TO-REPAIR

40. Senator WARREN. General Mingus, Admiral Kilby, General Mahoney, General Guetlein, and Lieutenant General Spain, your testimoneys highlighted servicemembers' ability and willingness to defend our Nation even when facing increasing sustainment and maintenance challenges. For instance, Admiral Kilby discussed a focus on reducing maintenance delays and procuring spare parts earlier; General Mahoney pointed to lack of amphibious ship availability; and Lieutenant General Spain cited prioritization of parts and supply in the Flying Hour program. As Chairman Sullivan said during the hearing, half of the Navy's amphibious warfare ships are in unsatisfactory condition, and the KC–46 and KC–135 tanker fleets are available less than 60 percent of the time. Do provisions in procurement contracts that restrict servicemembers' ability to repair services' own equipment contribute to these readiness challenges?

General MINGUS. Yes, provisions in procurement contracts that restrict Servicemembers' ability to repair their own equipment can contribute to readiness challenges. Such restrictions and dependency on external contractors can lead to increased maintenance delays, which in turn can result in longer equipment downtimes and reduced availability. To mitigate these challenges, Army contracting works closely with Army programs to ensure that the included provisions are based on the needs of the program office as outlined in the product support strategy and lifecycle sustainment plan. Carefully negotiating these provisions is critical to enabling sustainment and ensuring readiness.

Admiral KILBY. Access to technical data is a key enabler in assuring the Navy has the ability to procure the products and services needed to support the warfighters and certain technical data is needed to perform organic repair.

The Navy continually assesses the feasibility and business case for procurement of technical data packages and associated license rights throughout the program's life cycle in an effort to reduce sustainment and repair costs and to improve operational availability.

The Navy continuously considers repair costs attributable to lack of access to technical data or limited rights in delivered technical data associated with weapon systems in its mandatory sustainment reviews and assessments of life cycle sustainment plans.

General MAHONEY. The Marine Corps fully supports initiatives that speed maintenance and procuring of spare parts. Additive manufacturing, 3D printing, and the owning of technical data rights for its platforms play a key role in accelerating this process. To ensure marines can effectively repair equipment, the program office must, from the very beginning of the procurement process, clearly identify and prioritize the need for organic repair capabilities when defining the requirements.

General GUETLEIN. Possibly; however, it's worth noting that many commercial components that support space capabilities include warranties that would be voided should a Guardian attempt to repair the equipment. This indeed can increase readiness challenges. The Lifecycle Sustainment Management Plan or similar documents help space systems and programs align repair risks to maintain readiness and ensure Guardians are focused on their warfighting and Joint Force contribution.

Lieutenant General SPAIN. Yes, provisions in procurement contracts that restrict the Air Force's ability to repair its own equipment can contribute to readiness challenges. The Air Force has a skilled workforce of maintenance personnel who are capable of accomplishing maintenance tasks both in the field and in the depots. This workforce cannot be used effectively when contractual limitations preclude these personnel from access to technical data, the associated Intellectual Property (IP), and the rights to use them, to support maintenance.

41. Senator WARREN. General Mingus, Admiral Kilby, General Mahoney, General Guetlein, and Lieutenant General Spain, in the hearing, Director Maurer discussed the need for DOD to "ensure maintainers have access to the technical data they need to meet operational mission needs." Do you believe ensuring your service has access to the technical data rights needed for servicemembers to repair the service's own equipment could advance your service's sustainment and readiness?

General MINGUS. Yes, ensuring that Servicemembers have access to the necessary technical data and license rights to repair equipment is crucial for advancing the Army's sustainment and readiness. Having the necessary technical data and license rights allows for timely and efficient maintenance and repairs, reducing downtime and dependency on external contractors. This capability enhances operational readiness by ensuring that equipment is in optimal condition and can be quickly returned to service when needed.

Admiral KILBY. Yes. The Navy is actively working through our program managers to ensure we are procuring the technical data packages and obtaining associated data rights necessary to support efficient and affordable sustainment of our weapons systems.

General MAHONEY. Yes, in most cases, enabling Service members to access the technical data package to conduct repairs themselves would significantly enhance the Marine Corps' ability to sustain the weapons systems and maintain higher readiness rates.

General GUETLEIN. Yes, access to technical data rights is helpful for those capabilities that a Space Force Guardian might be able to repair. As the smallest service, our Guardians are focused on developing their proficiency, skillsets, and readiness in space warfighting and contributing as part of the Joint Force.

Lieutenant General SPAIN. Yes. Ensuring the Air Force has access to necessary technical data, the associated IP, and the rights to use them, is essential for enhancing sustainment and readiness. Empowered maintainers who have access to the data they need, translate to reduced downtime, increased equipment availability, and improved responsiveness to mission needs. The Air Force's organic maintenance capability strengthens our resilience and agility, ultimately contributing to a more ready and capable force and our national security.

42. Senator WARREN. General Mingus, Admiral Kilby, General Mahoney, General Guetlein, and Lieutenant General Spain, do you believe ensuring your service has access to the technical data rights needed for servicemembers to repair the service's own equipment could help reduce your service's repair and sustainment costs?

General MINGUS. Yes, ensuring that Servicemembers have access to technical data and license rights to repair equipment can help reduce sustainment costs. By leveraging organic maintenance and repairs, the Army can avoid the high costs associated with outsourcing these tasks to contractors. Additionally, timely access to technical data and license rights can lead to quicker repairs, reducing equipment downtime and associated costs. Overall, this approach promotes cost-efficiency and enhances the Army's ability to maintain operational readiness.

Admiral KILBY. Yes. Access to technical data is a key enabler in assuring the Navy has the ability to procure the products and services needed to support the warfighters. Access to technical data enables organic repair capability or to have a vendor perform the required efforts on the Navy's behalf.

General MAHONEY. Yes. Having the right technical data package and rights needed for Service members to repair Marine Corps equipment would reduce repair and sustainment costs.

General GUETLEIN. Yes, access to technical data rights could help reduce costs for those capabilities that a Space Force Guardian might be able to repair.

Lieutenant General SPAIN. Yes. The Air Force believes that outfitting our skilled maintainers with technical data, the associated IP, and the rights to use them, are essential to repairing our own equipment and cost-effective sustainment. The Air Force's dedicated maintenance workforce, both in the field and at depot-level facilities, represent a valuable and often more affordable alternative to relying solely on contractor support.

43. Senator WARREN. General Mingus, Admiral Kilby, General Mahoney, General Guetlein, and Lieutenant General Spain, do you believe ensuring your service has access to the technical data rights needed for servicemembers to repair the service's own equipment could help improve servicemember proficiency, skillsets, and readiness?

General MINGUS. Yes, ensuring that Servicemembers have access to the technical data and license rights needed to repair their own equipment can significantly improve their proficiency, skillsets, and readiness. Access to products, such as technical manuals, allows Servicemembers to gain hands-on experience and develop a deeper understanding of the equipment they operate and maintain. This knowledge enhances their technical skills and problem-solving abilities, leading to more effective and efficient maintenance practices. Additionally, it empowers servicemembers with the knowledge and skills required to address technical issues independently, fostering a more self-reliant, ready, and capable force.

Admiral KILBY. Ensuring the Navy has access to technical data packages under the appropriate data rights licensing agreements , especially early in the acquisition lifecycle of our programs, affords the acquisition workforce the ability to execute maintenance planning and task analysis to ensure informed decisionmaking and business case analysis to select the most effective product support strategy for a weapons system. It will help ensure that the Navy can meet its core logistics capabilities requirements to ensure a ready and controlled source of technical competence per 10 USC 2464. Additionally, assured access provides the Navy the opportunity to standardize maintenance procedures and practices, which can accelerate diagnostics and repairs. In short, servicemembers would be better able to develop and refine their expertise and skillsets if the Navy is assured access to technical data packages needed to repair their equipment.

General MAHONEY. Yes, ensuring our service has access to the necessary technical data rights is essential to enhancing servicemember proficiency, skillsets, and overall readiness. When Service members are empowered with the technical information required to maintain and repair equipment, they not only develop deeper operational understanding but also foster a more resilient and self-sufficient force. This access directly contributes to faster maintenance cycles, reduced downtime, and more mission-capable units in both training and operational environments.

General GUETLEIN. Yes, access to technical data rights for those capabilities that a Space Force Guardian might be able to repair could help improve Guardians' proficiency, skillsets, and readiness. While the Space Force is unique because many of our capabilities cannot be serviced once launched, our Guardians are focused on developing their proficiency, skillsets, and readiness in space warfighting and contributing as part of the Joint Force.

Lieutenant General SPAIN. Yes. Ensuring access to technical data, the associated IP, and the rights to use them, is essential for improving Service member proficiency, skillsets, and overall readiness. Hands-on maintenance experience, enabled by access to and the right to use the necessary data, provides invaluable training and development opportunities for Air Force maintainers while they provide life cycle support.

44. Senator WARREN. General Mingus, Admiral Kilby, General Mahoney, General Guetlein, and Lieutenant General Spain, how will you ensure servicemembers who are stationed abroad repair equipment that is damaged, in a timely and cost-effective fashion, especially in a contested logistics environment?

General MINGUS. The Army remains focused on conducting repairs forward, reducing reliance on reconstitution or sending unserviceable weapon systems and parts to Continental United States industrial base facilities for repair. The Army employs expeditionary maintenance teams and advanced manufacturing capabilities to theaters to assist units with repairs and sustainment actions. In addition, the Army is planning to establish theater distribution centers to increase logistics ca-

pacity in austere locations. Our goal is to leverage in-theater capabilities, with allies and partners, to reduce maintenance costs, reduce repair times, and increase readiness at the point of need. We also conduct periodic reviews of theater authorized stockage lists to ensure adequate levels of repair parts are available to support units.

The Army recognizes the value of advanced manufacturing (AM) at the point of need and is scaling AM capabilities at echelon. US Army Tank Automotive and Armaments Command's Joint Manufacturing and Technology Center at Rock Island Arsenal, Illinois is leading this effort for our organic industrial base. Further fielding of the Metal Working and Machine Shop Set positions the Army to conduct AM in large scale combat operations.

The Army increasingly leverages tele-maintenance to assist units—through virtual contact with assistance representatives and technicians—with fault isolating and troubleshooting equipment failures for corrective action. The knowledge transfer from equipment manufacturers and depot level experts to maintainers at forward locations enables rapid repair in real-time, reduces downtime, and increases readiness. The Army continues to balance the need for commercial expertise with the necessity to sustain a capable organic workforce.

Finally, the Army maintains the inherent right to repair equipment in contested environments leveraging battle damage and repair authorities.

Admiral KILBY. The maintenance capability provided by servicemembers is integral to ensure damaged equipment can be repaired in a contested logistics environment. Therefore, service members are trained and equipped to conduct organizational and intermediate maintenance actions abroad.

The Surface Training Advanced Virtual Environment (STAVE) program provides surface enlisted apprentice, journeyman, and master level training to increase sailor's capability to conduct organizational and intermediate maintenance actions. Additionally, through the Navy Afloat Maintenance Training Strategy (NAMTS), sailors are trained by utilizing I-Level hands-on maintenance production to "forge maintenance warriors," who can maintain and repair shipboard equipment.

The Navy's capital ships, such as aircraft carriers and amphibious assault ships, have significant repair capability and use the Strike Force Intermediate Maintenance Activity, to pull damaged parts from nearby activities to repair them in-theater. These platforms also have synthetic and metal advanced manufacturing (AM) equipment and even smaller Navy platforms are being outfitted with limited AM equipment to increase self-sufficiency. The Navy is also increasing investments for spares and repair parts for ships and aircraft to increase onboard inventories and sustain operations at sea. In addition, forward deployed maintenance activities assist service members in conducting repair requirements at oversees locations.

General MAHONEY. The ability to repair equipment in a contested environment is just as critical as the ability to find, fix, and destroy adversary formations. To ensure persistence in such environments, the Marine Corps is shifting from traditional supply chains to a more resilient sustainment web. Marine Forces Pacific's operational concept—designed to deter conflict and, if necessary, fight and win—is reliant on the integration of maneuver, mobility, and sustainment accomplished through, in part, the Global Positioning Network, the Global Resiliency Initiative, and the Regional Sustainment Framework:

- *Global Positioning Network*—A logistics concept designed to provide sustainable logistics in a contested environment by integrating pre-positioned stocks into diversified distribution models, resourcing and improving sustainment capabilities, and ensuring resilient installations.
- *Global Resiliency Initiative*—DOD's efforts to enhance the resilience of its forces, infrastructure, and operations against a wide range of threats and disruptions, both physical and cyber. Key aspects of the DOD's Global Resiliency Initiative include:
  - *Cybersecurity:* Protecting DOD networks and systems from cyber attacks.
  - *Infrastructure Resilience:* Hardening military bases and critical infrastructure against natural disasters, terrorist attacks, and other threats.
  - *Supply Chain Security:* Ensuring the reliability and security of the DOD's supply chains.
  - *Energy Resilience:* Improving the resilience of military energy systems to ensure reliable power for critical operations.
  - *Personnel Resilience:* Enhancing the physical, mental, and emotional well-being of military personnel and their families.
  - *Operational Resilience:* Developing redundant systems and procedures to ensure that critical missions can continue even if some systems are disrupted.

- *Regional Sustainment Framework*—The DOD's Regional Sustainment Framework contributes opportunities for greater allied burden sharing by focusing on bi-lateral agreements to ensure the highest-level combat readiness and lethality in a contested logistics environment, representing a global advancement in DOD's sustainment strategy. Prior sustainment strategies relied on the ability to return materiel to the Continental United States (CONUS) for repair, retrograde, and replenishment and then send back outside the Continental United States (OCONUS) for the end user, costing considerable amounts of time in priority theaters such as the Indo-Pacific. By developing distributed co-sustainment capabilities, such as maintenance, repair and overhaul, supply, and storage capabilities, closer to the warfighter's point of need with allies and partners, RSF seeks to decrease sustainment timelines, improving readiness and helping to reestablish deterrence.

These three undertakings tie service operating concepts to joint sustainment efforts and leverage commercial partners, as well as allied sustainment capabilities, to enable the operations of Combatant Commanders.

General GUETLEIN. Most USSF assets are deployed-in-place at respective bases. For deployed assets, the Space Force is heavily reliant on Contract Logistics Support (CLS) to repair equipment. CLS provides onsite technical support, onsite sparing, routine preventative maintenance activities, depot field teams, and subject matter expertise reach-back support as required to support warfighter demands. Depot Field teams provide onsite scheduled and unscheduled depot maintenance of weapon systems to include emergency/urgent type repairs as required.

Lieutenant General SPAIN. Repairing aircraft in a timely and cost-effective fashion, especially in a contested logistics environment requires skilled maintainers who combine the use of established procedures and guidance with constant assessment to ensure that policy, training and resources support rather than hinder our Airmen. It requires Proactive Logistics, a Regional Sustainment Framework, prepositioning, Inter-service operability agreements/processes, and exploration of new and unconventional concepts to ensure rapid access to parts and expertise.

It also requires the forward deployment and posturing of Aircraft Battle Damage Repair and Depot Field Teams who bring technical assistance and specialized repair capabilities forward when and where required. And finally, it requires Tech-Enabled support and Augmented/Virtual Reality applications to connect maintainers with Subject Matter Experts and to obtain real-time expertise and guidance. This multi-faceted approach—emphasizing agile logistics and emerging technology—maximizes aircraft availability, even in challenging environments.

45. Senator WARREN. General Mingus, Admiral Kilby, General Mahoney, General Guetlein, and Lieutenant General Spain, how would including a right-to-repair or technical data rights clause (that provides fair and reasonable access to technical data rights to repair and maintain equipment) in your services' acquisition contracts benefit your service?

General MINGUS. Including appropriate contract language and Defense Federal Acquisition Regulation Supplement clauses in acquisition contracts benefits the Army by facilitating access to the necessary technical data and license rights for equipment repair and maintenance. These help to provide Servicemembers with the needed technical data and license rights to perform timely and efficient repairs, reducing reliance on external contractors and associated costs. As a result, the Army enhances operational readiness by minimizing equipment downtime and ensuring that maintenance can be conducted by servicemembers.

Admiral KILBY. Access to technical data is a key enabler in assuring the Navy has the ability to procure the products and services needed to support the warfighters. Access to technical data enables organic repair capability or to have a vendor perform the required efforts of the Navy's behalf.

General MAHONEY. Including right-to-repair and technical data rights clauses in our service's acquisition contracts offers significant advantages in terms of cost, readiness, and operational flexibility. These clauses directly benefit the Marine Corps by:

- *Reducing Lifecycle Costs:* By securing access to technical data, we can perform repairs and maintenance in-house or through competitive bidding, rather than being locked into sole-source contracts with the original equipment manufacturer. This dramatically reduces the long-term costs of owning and operating our equipment.
- *Improving Readiness and Sustainment:* With the ability to repair equipment ourselves or through multiple vendors, we can minimize downtime and ensure that our warfighters have the equipment they need, when they need it. This enhances readiness and improves our ability to sustain operations in the field.

- *Promoting Competition and Innovation:* Right-to-repair clauses foster a more competitive marketplace for maintenance and repair services. This encourages innovation and drives down costs, as multiple vendors can compete for our business.
- *Enhancing Operational Flexibility:* Access to technical data allows us to modify and adapt equipment to meet specific operational needs. This gives us greater flexibility and agility in responding to evolving threats.

The Marine Corps uses the appropriate FAR and DFARS clauses, like DFARS 252.227–7013 and others, to carefully manage technical data rights and ensure we get what we need without infringing on legitimate proprietary rights. We ensure that we secure the necessary data rights prior to contract award by including these requirements in the contract's terms, documented in the Contract Data Requirements List (CDRL) and Data Item Description (DID).

In short, right-to-repair and technical data rights clauses are not just about saving money; they are about empowering our service to be more self-sufficient, resilient, and adaptable. They are a critical investment in our long-term readiness and operational effectiveness. This is a strategic advantage that pays dividends in terms of cost savings, improved readiness, and enhanced warfighting capabilities.

General GUETLEIN. Including a right-to-repair or a similar technical-data-rights clause would allow the Service to solicit third parties for equipment maintenance but may drive additional costs to obtain such data rights.

Lieutenant General SPAIN. The Air Force strongly supports the concept of a "right to repair" and believes Air Force personnel should be able to repair their own equipment. For certain weapon systems, lack of access to technical data and the associated IP, and rights to use them, has forced the Air Force to rely on prime contractors for maintenance services, stifling competition and hindering the use of organic maintenance capabilities. A carefully crafted right-to-repair clause has the potential to ameliorate these issues.

46. Senator WARREN. General Mingus, Admiral Kilby, General Mahoney, General Guetlein, and Lieutenant General Spain, how do you ensure contractors deliver technical data rights to your service when a contract requires or allows it?

General MINGUS. The Army requires activities to identify the minimum needs for technical data and license rights and consider availability and delivery of the identified data and rights during source selection. To ensure contractors deliver technical data and license rights, it is essential to include clear and specific language in the contract that outlines the delivery requirements. Regular monitoring and compliance checks should be conducted to verify that contractors are adhering to these requirements. Additionally, establishing a robust contract management process with defined milestones and deliverables can help track the progress and ensure timely delivery of technical data. Effective communication and collaboration with contractors are crucial to addressing any issues or discrepancies promptly.

Admiral KILBY. The Navy ensures that all requirements of contracts have been satisfied and delivered with the appropriate markings. Navy is working with industry to include data rights in our contracts to enable Navy to repair equipment and not be reliant upon contractors for technical assistance and repair. If contractors are not delivering the technical data required by the contract, the Navy has mechanisms to support enforcement of data delivery such as withholding of financing payments or termination of the contract. Navy appreciates the support of Congress for "right to repair."

General MAHONEY. The solicitation and resulting contract would include CDRLs and DIDs which would define what and when the data is required.

General GUETLEIN. Our acquisition community, under the authority of the Assistant Secretary of the Air Force for Space Acquisition and Integration, ensures our contracts include Contract Data Requirements Lists for delivering technical data rights when required or allowed. The Service provides intellectual property resources such as the DAF Intellectual Property Cadre, a multi-functional team of intellectual property experts, that assist with acquisition strategy planning, negotiation, and execution.

Lieutenant General SPAIN. We anticipate delivery of technical data and the associated IP, and rights to use them, based on specified contract terms. Unfortunately, we routinely encounter data and IP rights controversies, often involving contractors failing to provide the government with the actual deliverable, technical data and the associated IP, and/or the rights to use them. This occurs even when the Air Force has paid for such deliverables. The only recourse is for the Air Force to issue a Contracting Officer's Final Determination and await contractor-initiated litigation at the Court of Federal Claims or Armed Services Board of Contract Appeals. However, those tribunals do not have the statutory authority to order contractors to deliver

mission-critical data needed by the warfighter; the relevant statute provides for only monetary relief and contract interpretation (i.e., declaratory relief), which take years to resolve. Sometimes, the failure to deliver is a result of the prime contractor not properly requesting or obtaining the necessary rights from its subcontractor. If delivered, the Air Force can only use the deliverable according to the markings placed on the data, which may not accurately reflect the rights granted in the contract. If improperly marked, the Air Force must seek to have the contractor delete the marking or change it to the marking required by the contract, thereby allowing the Government the ability to use the deliverable as contracted.

47. Senator WARREN. General Mingus, Admiral Kilby, General Mahoney, General Guetlein, and Lieutenant General Spain, does your service have an assessment that outlines the costs incurred due to lack of access to technical data rights needed for your servicemembers to repair or sustain equipment? If yes, what did the assessment conclude?

General MINGUS. The Army does not currently have an assessment that specifically outlines the costs incurred due to lack of access to technical data and license rights. However, the Army assesses operations and sustainment costs with a focus on identifying contributing factors to cost growth during Sustainment Reviews. Sustainment decisions related to technical data and license rights are program dependent and may change over the weapon system's life cycle.

Admiral KILBY. The Navy continuously considers repair costs attributable to lack of access to technical data or limited rights in delivered technical data associated with weapon systems in its mandatory sustainment reviews and assessments of life cycle sustainment plans. To date, there is not a single Navy-wide assessment. However, the Navy looks forward to discussing the results of any assessment performed in this area with Congress.

General MAHONEY. We are unaware of any service-level assessment capturing incurred costs due to lack of technical data rights.

General GUETLEIN. While the USSF does not have a single, comprehensive assessment that quantifies all costs associated with limited technical data rights across every system, we recognize limited technical data rights is an issue. Each program tracks sustainment costs, including those driven by reliance on Original Equipment Manufacturers (OEMs); however, compiling a service-wide assessment is difficult because isolating the specific cost premium attributable solely to data rights, as opposed to other sustainment factors, is challenging.

However, the data we have consistently demonstrate that insufficient technical data rights lead to higher sustainment costs, longer downtimes, and reduced competition.

We are working to include stronger data rights provisions into our contracts up front, learning from past challenges. Where feasible, we are investing in training and facilities to allow for more in-house maintenance and repair, reducing reliance on OEMs, and we are developing a comprehensive data strategy to better manage technical data throughout a system's lifecycle.

Lieutenant General SPAIN. While a formal assessment specifically focused on the costs incurred due to a lack of access to technical data, the associated IP, and the rights to use them, has not been conducted, the Air Force recognizes the impact this lack of access can have on lifecycle support and sustainment costs while negatively impacting overall readiness.

48. Senator WARREN. General Mingus, Admiral Kilby, General Mahoney, General Guetlein, and Lieutenant General Spain, if your service does not have such an assessment, would you commit to ensuring an assessment is conducted and the results of that assessment are made public?

General MINGUS. I commit to ensure that the Army continues to review the operational limitations, challenges, and obstacles our Soldiers face with maintenance of our equipment. I also will ensure that such information is conveyed up the chain-of-command so Army Senior Leaders have the details necessary to tackle these issues properly. It is vital that the proper data is conveyed in a manner which fully supports the continued development of our systems and our Soldiers. Promptly addressing any issues or discrepancies which present themselves is crucial to the Army's continued success.

Admiral KILBY. Yes, the Navy is committed to continually conducting necessary assessments to fully understand the costs associated with not having technical data. This analysis would further improve the Navy's ability to assess the value of technical data delivery requirements during contract formation.

General MAHONEY. Yes. The Marine Corps, through our acquisition activities, would support such an assessment to the maximum extent possible.

General GUETLEIN. Yes, we will conduct a cost-benefit analysis to evaluate the financial implications of limited technical data rights across the USSF. We believe this assessment would provide valuable insights to guide future policy and acquisition decisions we. We are committed to transparency and will share the results of this assessment with Congress with appropriate safeguards for classified data.

Lieutenant General SPAIN. The Air Force strives to ensure its programs deliberately assess their long-term technical data needs and execute acquisition strategies that provide for the necessary technical data rights, required IP, and the rights to use them for sustainment. The Air Force is focused on empowering our skilled maintainers with the technical data and the associated IP and rights to use them as necessary to repair our own equipment and plans to continue working to achieve optimal outcomes in this area. The Air Force will continue to work with the Office of the Secretary of Defense's Defense Pricing, Contracting, and Acquisition Policy (DPCAP) IP Cadre for assessments and make any results public.

49. Senator WARREN. General Mingus, Admiral Kilby, General Mahoney, General Guetlein, and Lieutenant General Spain, the Navy has the Taxpayer Advocacy Project to ensure cost-efficiency in the service. What programs or initiatives does your service have to protect taxpayer dollars from contractor tactics that drive up costs, such as right-to-repair restrictions?

General MINGUS. The Army takes measures to protect taxpayer dollars and avoid excessive costs associated with contractor dependencies, including those stemming from right-to-repair restrictions and has initiatives to address these challenges.

The Army is refining its intellectual property (IP) policy on planning, acquiring, and managing IP, emphasizing a tailored approach and early consideration of technical data and license rights in the acquisition life cycle. The policy includes defining required data deliverables in solicitations and negotiating favorable license terms for maintenance and repair flexibility. Additionally, the Army is investing in workforce training on IP management, including contract requirements, cost-effective pricing, data rights assertions, and licensing agreements.

The Army promotes the use of Modular Open Systems Approach (MOSA) principles to reduce the reliance on single-source vendors and proprietary systems. MOSA encourages the use of open standards and interoperable components, enabling greater competition and maintenance flexibility.

The Army actively adopts refined acquisition and sustainment policies to emphasize early planning for product support analysis necessary for sustainment planning, data rights acquisition, and life cycle cost considerations.

Admiral KILBY. The Taxpayer Advocacy Project (TAP) was developed by the Navy to ensure that the taxpayer gets the best value for their investment by providing Program Executive Officers, Program Managers, Contracting Officers, and Attorneys with legal tools and strategies to improve and enhance negotiations with the industrial base. TAP's goal was accomplished through an updated and implemented matrix of legal authorities, public engagement with other agencies and Congress, analysis of contractor financial data, and analysis of contract deliverables. TAP initially focused on contractors' refusal to deliver technical data despite statutes and regulations allowing for such delivery and contract clauses mandating delivery. Original Equipment Manufacturers (OEMs) refused to agree to deliver complete Technical Data Packages (TDPs) to the Navy, or expressed concern over what is necessary to constitute a complete TDP that would enable the Navy to operate, maintain, and sustain deliverables. When the Navy attempted to include such technical data delivery requirements in contracts, the OEMs declined to bid on these requirements, holding up contract award. The OEMs characterized the Navy's delivery requirements as an attempt to force the OEMs to relinquish their intellectual property rights. This was inaccurate. The Navy was willing to accept the level of license rights to which it would be entitled by operation of the technical data statutes, regulations, and clauses. Eventually, the Navy was successful in negotiating a special license agreement to define TDP requirements such that the OEM's most significant intellectual property concerns were addressed while ensuring that the Navy was able to use the delivered technical data to sustain and maintain weapons systems.

General MAHONEY. In addition to ensuring the service remains on track for another successful audit opinion, the Marine Corps has also taken a multifaceted approach to reducing sustainment costs through service level guidance and adoption of key programs to improve operational readiness and availability through more cost-effective means. Marine Corps Order (MCO) 4700.4 Advanced Manufacturing directs commanders at all levels to employ additive manufacturing to fullest extent possible to increase readiness in support of operations, and MCO 4151.22 Condition Based Maintenance Plus (CBM+) direct the integration of predictive maintenance capabilities to reduce life cycle sustainment costs over time and increase lethality

through improved operational readiness. In support of implementation, Marine Corps Systems Command (MARCORSYSCOM) has delivered to DASN(S) their CBM+ Strategic Implementation Plan for ground acquisitions and is coordinating with Deputy Commandant for Combat Development and Integration (DC CD&I) on the development of a service level CBM+ implementation strategy.

General GUETLEIN. Through the Assistant Secretary of the Air Force for Space Acquisition and Integration, acquirers are implementing nine (9) space acquisition tenets focused on best practices to ensure taxpayer dollars are providing warfighter capabilities. Thank you for the authorities in the Fiscal Year 2025 National Defense Authorization Act (FY25 NDAA) that elevated the Contractor Responsibility Watch List (CRWL) from Space Systems Command to the Service Acquisition Executive.

The CRWL provides a unique authority for holding contractors accountable for performance, including by managing costs. Additionally, by increasing competition, leveraging commercial capabilities, and using firm-fixed price contracts where appropriate, the USSF is benefiting from a competitive environment to reduce the probability of price gouging and vendor-lock.

Lieutenant General SPAIN. While the Air Force does not have a similar project to the one described, we are committed to making sound sustainment strategy decisions and are continuing work to ensure that the right-to-repair resides with the Air Force to avoid readiness delays and single-source repairs. Therefore, the Air Force's Intellectual Property (IP) Cadre is working with acquisition leadership to develop an IP pricing "tiger team" to support programs in the IP valuation team. The aim is to acquire the necessary IP license rights, technical data, and software (IP) at reasonable prices in order to specifically repair our weapons systems when needed, and more generally to be better able to compete or in-source future sustainment efforts for our mission critical platforms, thereby protecting taxpayer dollars.

50. Senator WARREN. General Mingus, Admiral Kilby, General Mahoney, General Guetlein, and Lieutenant General Spain, what is your service's strategy to reduce acquisition and sustainment costs?

General MINGUS. Early and continuous planning throughout the acquisition life cycle can significantly reduce acquisition and sustainment costs. First, we consider sustainment as a performance parameter and consider tradeoffs early in system design to improve durability and reduce future operations and maintenance costs. Second, we encourage competition to the maximum extent practicable and use commercial technology when available to drive down acquisition and procurement costs. Finally, we design our systems to incorporate a modular open system approach to enable iterative upgrades, enable continuous competition, and incorporate new technology to keep systems relevant over the long term.

Admiral KILBY. The Navy follows statute and policy focusing on reducing acquisition and sustainment costs. The Independent Logistics Assessment (ILA) is directed by Title 10 U.S.C. § 4325, and policy is provided in DODI 5000.91. ILAs are conducted on all major weapon systems through the acquisition process in order to analyze product support outcomes as identified by the product support strategy, as well as identifying features that are likely to drive future operating and support costs. Recommending changes to a system design or support concept could reduce costs. During sustainment, Title 10 U.S.C. 4325 requires periodic reviews of sustainment costs of major weapon systems after such systems achieve initial operational capability. This enables the program to identify and address factors resulting in growth in sustainment costs and adapt support strategies to reduce such costs. Title 10 U.S.C. 4323 requires Sustainment Reviews (SR) for covered systems beginning 5 years after achieving iniital operation capablity and every 5 years thereafter. SRs examine sustainment cost drivers, and programs must provide remediation plans if cost growth has occurred.

General MAHONEY. The Marine Corps strategy for reducing acquisition and sustainment costs is multifaceted. MCO 4700.4 Advanced Manufacturing and MCO 4151.22 CBM+ both establish programs to address key tenants necessary for the reduction of acquisition and sustainment costs. MARCORSYSCOM recently delivered to DASN(S) their CBM+ Strategic Implementation Plan for ground acquisitions. Concurrently, DC CD&I is developing the service level CBM+ implementation strategy.

Multiple MARCORSYSCOM orders are in the process of being established or updated to address improvements to sustainment and readiness at an affordable cost. MARCORSYSCOM Order 4105.2, Product Support Strategy (PSS), requires program managers (PMs) to develop a robust PSS based on analyses conducted with vendors, program office representatives, and subject matter experts from the Fleet Marine Force. MARCORSYSCOM Order 4151.22, Reliability Centered Maintenance, emphasizes the requirement for Fleet Marines to provide subject matter expertise in the

execution of this analysis to ensure increased readiness at an affordable cost. These lines of efforts between Headquarters Marine Corps and MARCORSYSCOM will directly increase readiness in support of our Nation's warfighters.

General GUETLEIN. The USSF implemented a Commercial Space Strategy with four guiding principles of balance, interoperability, resilience, and responsible conduct. This strategy supports a robust industrial base where competition drives down costs. Additionally, the Assistant Secretary of the Air Force for Space Acquisition and Integration has implemented nine (9) tenets for space systems and programs to improve acquisition outcomes by delivering programs on cost and schedule through rigorous program management discipline and execution.

Lieutenant General SPAIN. Operations and Sustainment (O&S) costs are the largest cost for programs and our military understands the importance of bringing those costs down as much as possible. Throughout the acquisition lifecycle process, and even in the early stages, we look for efficiencies to reduce those costs prior to entering O&S. One of the primary objectives of the DAF is to decrease cost for both acquisition and sustainment, as highlighted in several initiatives and strategies. This involves leveraging partnerships and commercial solutions, providing opportunities for rapid prototyping and experimentation, enhancing production capabilities and capacity, and adopting strategies such as digital engineering to promote efficiency and reduce costs in acquisition. Further, the DAF has prioritized life-cycle costs by improving reliability, availability, maintainability, and supportability to achieve reductions in sustainment expenses.

51. Senator WARREN. General Mingus, Admiral Kilby, General Mahoney, General Guetlein, and Lieutenant General Spain, Director Maurer stated that at least one service "needs an industrial base strategy to help get better results from the private companies that repair ships," and for at least one program, "DOD needs to reassess the balance of sustainment responsibilities between contractors and services." Please provide an example of when your service did not have the technical data rights needed to repair or sustain a piece of equipment and describe any resulting wasted time, extra costs, or reduced readiness.

General MINGUS. There are instances by which the Army may choose not to procure the technical data rights needed to repair or sustain a piece of equipment. Specific example is with centrally purchased or non-centrally managed equipment, information technology assets, and commercial off the shelf equipment with vendor or manufacturer warranties. The Army uses this strategy in accordance with Federal acquisition regulation and only when the benefits to be derived from a warranty are commensurate with the cost of the warranty.

Admiral KILBY. OEMs for programs such as F/A–18 and JSF have in the past refused to agree to deliver complete technical data packages or, like on MQ–25, expressed concern over what is necessary to constitute a complete TDP that would enable the government to operate, maintain, and sustain the aircraft. This can generate significant contracting delays while negotiations endure, ultimately impacting Fleet readiness.

One example involving sustainment of a system is the Main Rotor Actuator (MRA) for AH–1Z (Viper)/UH–1Y(Venom), managed by PMA–276.

These components have sporadically been responsible for requests for priority assistance over fiscal year 24. There was an uptick in demand while the OEM (Woodward) had issues with their sub-vendor that produces manifolds for the MRA. This caused delays and increased turnaround time. This drove cannibalization actions to prevent readiness impacts. NAVSUP and Woodward have worked with the sub-vendor to remedy the issues.

General MAHONEY. The ACV Family of Vehicles (FoV) was procured as a Commercial Off the Shelf (COTS)/Non-Developmental Item (NDI) vehicle. As such the U.S. Government had not funded the initial development of the vehicle offered by the Original Equipment Manufacturer, but did opt to incorporate critical survivability needs, resulting in extended maintenance periods and increased costs. This experience highlights the critical importance of securing adequate technical data rights, even for COTS acquisitions, to ensure timely, cost-effective sustainment and maintain operational readiness.

General GUETLEIN. Director Maurer raises an important issue that resonates with the USSF as well. Access to technical data rights is essential for effective and affordable sustainment of space systems. The service has encountered challenges with programs where limited access to proprietary technical data held by the OEM created sustainment obstacles. This experience underscored the criticality of securing appropriate technical data rights up front in the acquisition process. We are taking steps to prevent similar situations in the future.

Lieutenant General SPAIN. The Air Force awarded a contract to modernize a sensitive sensor system. The contract required delivery of firmware and software in appropriate detail to ensure operational needs were met. Unfortunately, some subsystems were delivered without this required information. When challenged, the vendor stated the items were considered firmware and therefore did not meet the definition of "computer software." After multiple engagements, this issue was finally resolved with the program deciding to buy all the components in the sub-system with firmware pre-installed. While this satisfied the immediate need, it unfortunately will cost the Air Force the ability to have additional suppliers for these items in the future and allows the contractor to charge other government entities for the same units.

52. Senator WARREN. Ms. Maurer, you testified during the hearing that GAO's "independent nonpartisan role" is to "help improve the government." What additional information would be helpful in order to continue assessing to what degree failure to access technical data rights harms our military readiness?

Ms. MAURER. Our work has shown that the Department of Defense's (DOD) access to intellectual property or technical data—such as user manuals, engineering design data, models, and computer software—has been a long-standing issue negatively affecting the ability of maintainers to conduct maintenance on weapon systems, limiting the availability of those systems to the warfighter. Acquiring and licensing technical data is critical for ensuring weapon systems and equipment remain functional, sustainable, upgradable, and affordable.

We have generally been provided the necessary information by the Department of Defense (DOD) and the military services to conduct our work on this issue. However, DOD and the military services have not taken action to fully implement our recommendations. For example:

- In 2022 (GAO–23–106217), we reported that access to technical data posed sustainment challenges for 15 of 45 aircraft, having an effect on the availability of the aircraft and costs required to sustain those aircraft according to program officials. There are a variety of reasons across military aircraft programs that result in access to technical data being a limiting factor in sustaining those systems. For example, in 2014 (GAO–14–778), we found that DOD had not fully addressed access to technical data for the F–35 aircraft, which has impacted affordability and operational readiness of the aircraft. We recommended that DOD develop a long-term Intellectual Property Strategy to include, but not be limited to, the identification of (1) current levels of technical data rights ownership by the Federal Government and (2) all critical technical data needs and their associated costs. Over a decade later—as of May 2025—this recommendation has not been implemented by DOD. In part due to this, DOD and the military services continue to struggle in its efforts to sustain the F–35 and meet availability goals of the military services.
- In 2020 (GAO–20–2), we reported on 11 different shipbuilding programs—including the Arleigh Burke (DDG 51), Wasp (LHD 8), America (LHA 6), San Antonio (LPD 17), Gerald R. Ford (CVN 78), and Virginia (SSN 774)—and found that nearly all of them experienced sustainment issues due to a lack of technical data that resulted from poor planning in the early stages of the acquisition process. Specifically, the Life Cycle Sustainment Plan (LCSP) for these ships did not consistently address the full spectrum of potential intellectual property and technical data related issues, such as attaining the technical data needed to repair and replace ship systems. Nearly all of the LCSPs we reviewed stated, in general terms, that the Navy would obtain the technical data to which it had rights. However, in these LCSPs, the Navy did not address how this strategy met the Navy's needs for competitive and affordable acquisition and sustainment over the life cycle of a ship class, such as to ensure maintenance could be carried out as planned by a ship's crew. We made 11 of recommendations to the Navy to improve sustainment planning for ships, including addressing deficiencies in LCSPs and sustainment risks associated with the lack of technical data. However, only 1 of the 11 recommendations are fully implemented, as of May 2025.

In addition, we have an on-going review examining DOD weapon system programs in sustainment and their planning for intellectual property acquisition, efforts to ensure data procured is received and reviewed for accuracy by DOD, and challenges faced by weapon systems in sustainment due to data rights shortfalls. We plan to report on the results of that work later in 2025.

MODULAR OPEN SYSTEM APPROACH

53. Senator WARREN. General Mingus, Admiral Kilby, General Mahoney, General Guetlein, and Lieutenant General Spain, how will a Modular Open System Approach (MOSA) to contracts for equipment benefit your service?

General MINGUS. The Army values the MOSA as it provides important development benefits throughout the lifecycle of the program. One, it enhances competition as individual subcomponents can be recompeted as it avoids long-term vendor lock and allows opportunity for industry partners to enter into the space. Second, it improves interoperability with other systems as hardware and software can be changed out independently to coincide with both legacy systems and that of partner nations. Third, it allows the Army to incorporate innovation at a higher speed as the flexibility with MOSA allows for easier reconfiguration as new technology becomes available. Fourth, it provides cost savings/avoidance as the Army is not locked into one vendor should supply chain or cost becomes an issue.

Admiral KILBY. A Modular Open Systems Approach (MOSA) enables our equipment to be adapted, updated and modernized to the needs of our operational forces in a more cost-effective manner. By rapidly fielding emerging technologies, we ensure our warfighting forces remain the strongest and most lethal in the world. By designing and acquiring our systems to be modular and open, we both support the revival of the industrial base where vendors can compete in areas that were once more challenging to gain footing, as well as enable new partners who can offer unique solutions to address our needs. Finally, a MOSA supports incorporation of cost-effective and efficient solutions that are vetted, tested and fielded more quickly than traditional acquisition methods.

General MAHONEY. The Modular Open System Approach (MOSA) encourages the development of open, standardized system architectures that enable flexibility in integrating emerging technologies, evolving requirements and advanced capabilities without the need for a full system redesign. MOSA is particularly crucial in a dynamic defense environment, where the ability to quickly adapt to changing threats and operational needs is vital for mission success. By leveraging modularity in system architecture, the Marine Corps can ensure that different modules (hardware and software) can be swapped in or upgraded independently. This reduces time to field capability while promoting the reuse of design elements across multiple platforms. An open system architecture allows for increased competition among vendors and broadens the Industrial Base, making it easier to incorporate solutions from a range of suppliers while maintaining interoperability. This also minimizes dependency on specific vendors, creating a more resilient and competitive procurement environment and enabling a more sustainable, cost-effective procurement processes.

Incorporating MOSA requirements into contracts helps align system development with operational needs, ensuring systems remain agile and adaptable. By focusing on architectural flexibility and standardization, the Marine Corps gains the ability to stay ahead of technological advances, enhance mission readiness and respond to evolving threats effectively. This results in faster modernization and more timely responses to operational challenges, keeping the Marine Corps ready and capable.

General GUETLEIN. Embracing MOSA in our acquisition strategies is not simply a technological shift, it's a strategic imperative for the USSF. MOSA provides enhanced competition and innovation, improved affordability and lifecycle costs, and increased flexibility and resilience. MOSA also fosters collaboration and interoperability because it shifts the Space Force from expensive, proprietary systems to a more agile, affordable, and adaptable approach to space acquisition. This is crucial for the Space Force to maintain technological superiority and address the evolving challenges in the space domain.

Lieutenant General SPAIN. A Modular Open System Approach (MOSA) provides an important benefit for the DAF, enabling us to reduce costs and risk associated with technology refresh and system capability upgrades. MOSA provides a unified framework enabling interoperability among systems to achieve joint and coalition missions. MOSA also increases opportunities for competition and innovation from industry by opening up systems that have traditionally been vendor locked.

54. Senator WARREN. General Mingus, Admiral Kilby, General Mahoney, General Guetlein, and Lieutenant General Spain, does your service provide any justification or analysis to back up the determination that a MOSA is not practicable in a contract?

General MINGUS. The Army values the MOSA as it provides important development benefits throughout the lifecycle of the program, however, sometimes it's not feasible to be required in a contract agreement. For example, as we look to leverage buying commercial off the shelf capabilities, utilizing MOSA may not be available

at the speed to which we are procuring a system or simply an option based on the technology.

Admiral KILBY. Our teams have been working to develop guidance for programs on the business case and value proposition of MOSA. Dictating how a contractor applies a MOSA for a given system may be limiting and stifle innovative approaches. Instead, our goal is to ensure strategies for system acquisition, design, and sustainment to support a MOSA that enables interoperability, reusability, and open standards The guidance we provide to programs for use in their statements of work and solicitation requirements will be aimed at showing how a MOSA can benefit the full system lifecycle, from development through sustainment. This comprehensive approach enables and empowers programs to craft requirements and contracts that best align to their acquisition strategy, strengthens the industrial base, and provides best value to the Government.

General MAHONEY. MARCORSYSCOM (MCSC) is contributing a representative to the Naval MOSA Working Group, under the Office of the Deputy Assistant Secretary of the Navy for Research, Development and Engineering. The goal is to ensure that system acquisition and sustainment strategies align with MOSA principles that promote interoperability and reusability. Guidance to Program Management Offices will include business case and contract considerations to demonstrate how MOSA implementation can benefit the full system lifecycle.

General GUETLEIN. The USSF understands the long-term benefits of open systems and only pursues a non-MOSA approach in limited circumstances, supported by rigorous analysis. Our default position is to incorporate MOSA to the maximum extent practicable while recognizing that a tailored approach is sometimes necessary. If a program determines that MOSA is not suitable for a specific contract or subsystem, they are required to provide a clear and compelling justification. We are dedicated to ensuring our decisions are driven by data, analysis, and a focus on mission effectiveness.

Lieutenant General SPAIN. In accordance with DOD and DAF MOSA policy and standard engineering practice, all programs evaluate their architectures at the technical, programmatic, and contractual levels to ensure maximum value from MOSA. These findings directly inform acquisition, support, and modernization contract strategies and are documented in engineering artifacts. MOSA is a core element of DAF Digital Materiel Management.

55. Senator WARREN. General Mingus, Admiral Kilby, General Mahoney, General Guetlein, and Lieutenant General Spain, what challenges is your service facing in implementing MOSA requirements?

General MINGUS. The Army has embraced implementing MOSA as it brings needed flexibility to the development of our systems, but it doesn't come without its challenges. For example, depending on the resources, schedule and requirements, implementing MOSA either partially or entirely for the system may not be a feasible option. The Army also has to be mindful of negotiating IP rights that allow modular system design that recognizes industry investment while also allows the government to maintain flexibility to meet its needs.

Admiral KILBY. We identified several challenges in implementing MOSA requirements, including awareness of the requirement, the breadth of considerations when developing a MOSA, a trained and equipped workforce, and implementation guidance from both technical and business perspectives. We recently developed and released the Naval Open Systems Implementation Guidebook Version One to bring awareness and guide the workforce on the scope and elements of MOSA. Presently, an update of the Guidebook is underway and scheduled to be released later this year with additional guidance for requirements development, business case analyses, the importance of system architectures, and how MOSA can be leveraged for different acquisition pathways. Finally, the Navy is reviewing training material, such as courses and webinars, and developing new training where it would most benefit the workforce.

General MAHONEY. Determining what constitutes acceptable MOSA compliance is often a gray area, and with few successful examples to learn from make it harder to build a clear path forward.

The urgency of meeting operational timelines can often clash with the time required to fully integrate MOSA principles, leading to tradeoffs in both design and implementation. The imperative to rapidly field systems, particularly in high-stakes, high-risk scenarios, creates pressures that hinder the depth of analysis necessary for robust MOSA implementation, such as modularity decomposition and ensuring appropriate data rights.

To address these challenges, MARCORSYSCOM is contributing a representative to the Naval MOSA Working Group, under the Office of the Deputy Assistant Sec-

retary of the Navy for Research, Development and Engineering. A key step in this effort has been the release of the Naval MOSA Guidebook Version 1.0, signed by the Assistant Secretary of the Navy for Research, Development and Acquisition in January 2025, which provides introductory guidance in implementing MOSA from both technical and business perspectives. MARCORSYSCOM is also participating in updating the Naval MOSA Guidebook, incorporating additional support tools and resources for workforce development.

General GUETLEIN. While the USSF is fully committed to implementing MOSA, transitioning to a MOSA-driven architecture takes time and presents challenges. The Space Force is working to overcome these challenges to ensure our systems are affordable, adaptable, and resilient for the future. The challenges include:

1. *Legacy Systems and Culture:* Many of our existing systems were designed before MOSA became a priority. Retrofitting them for modularity is complex, expensive, and sometimes impossible. Shifting from traditional "build-to-spec" acquisition to a more modular approach requires cultural change both within the Space Force and across our industry partners.

2. *Defining and Enforcing Standards:* Establishing clear, consistent, and enforceable MOSA standards across various domains (e.g., software, hardware, interfaces) is an ongoing effort. Balancing flexibility for innovation with standardization for interoperability requires careful consideration.

3. *Workforce Expertise:* Developing and acquiring systems built on MOSA principles demands a workforce proficient in these concepts. We are working to establish training and education to address this gap.

4. *Ensuring Security:* Modularity can introduce new attack surfaces and vulnerabilities. We are meticulously addressing cybersecurity concerns associated with MOSA implementation.

5. *Measuring Success:* Quantifying the benefits of MOSA—such as reduced costs, increased competition, and faster technology insertion—can be challenging. We are developing metrics to track our progress and demonstrate value.

The USSF initiatives to address these challenges include investing in research and development of MOSA standards and technologies, partnering with industry leaders to foster a robust and competitive MOSA ecosystem, implementing robust cybersecurity measures designed for modular systems, and developing clear metrics to track our progress and demonstrate the value of MOSA.

Lieutenant General SPAIN. MOSA implementation is unique to every program and there are varying degrees of modularity, openness, and approaches. We are continuing to strengthen our governance of open architecture standards and government reference architectures (GRAs) to efficiently use DAF resources to address the opportunity cost associated with a long-term MOSA framework. Key to the long-term strategy is commitment and continued adoption of the state-of-the-art within both the public and private sectors.

56. Senator WARREN. General Mingus, Admiral Kilby, General Mahoney, General Guetlein, and Lieutenant General Spain, what guidance does your service have when deciding whether to include MOSA in a request for proposals?

General MINGUS. The Army's guidance on incorporating MOSA into solicitations is aligned with DOD's policies to enhance flexibility, competition, and innovation in system design and acquisition in accordance with Title 10 U.S.C. 4401 and DOD Instruction 5000.02, "Operation of the Adaptive Acquisition Function Framework." The Army adopts MOSA into solicitations and tailors MOSA requirements to individual programs with comprehensive consideration of IP requirements, including MOSA objectives and the support of operational and lifecycle needs. Army Directive 2020–06, Modular Open Systems Approach" and the Army Federal Acquisition Regulation Supplement (AFARS) Appendix AA—The Army Source Selection Supplement (AS3) Appendix E—Intellectual Property (updated Sep 2024) reinforces DOD policies and provides specific MOSA implementation guidance for Army programs.

Admiral KILBY. Our approach has been to require the addition of MOSA into solicitation requirements and allow the contractors to offer solutions on how they intend to provide the Navy with solutions that meet our requirements using MOSA approaches. The Navy developed sample language for programs to use in solicitations and is continuing to engage with partners to ensure the Navy is best positioned to develop and field rapidly adaptable, lethal systems. The Navy will continue to aggressively pursue incorporation of MOSA into solicitations for systems design and development.

General MAHONEY. The Marine Corps is planning to leverage broader Department of the Navy efforts, particularly the initiatives of the Naval MOSA Working Group, under the Office of the Deputy Assistant Secretary of the Navy for Research, Development and Engineering. These efforts include the development and refinement of

MOSA-related guidance, best practices and tools to facilitate better integration of MOSA into both Navy and Marine Corps acquisition processes.

As an initial step, the Naval MOSA Guidebook Version 1.0 was signed and released by the Assistant Secretary of the Navy for Research, Development and Acquisition in January 2025 and provides a process for implementing MOSA applicable to all Naval acquisition programs across the Naval Systems Commands (including MARCORSYSCOM). The Naval MOSA Working Group plan of action involves creating a collaborative digital environment for MOSA, updating acquisition processes to incorporate MOSA principles and capturing MOSA training, with MARCORSYSCOM contributing a representative to these efforts.

General GUETLEIN. The USSF is fully committed to leveraging the advantages of MOSA in our systems and acquisitions. Our guidance for including MOSA in RFPs hinges on a few key principles, including mission need and suitability, cost-effectiveness and sustainability, risk management, and collaboration and interoperability.

We are focused on implementing MOSA principles in a way that maximizes operational effectiveness and long-term value for the Space Force. We have taken concrete steps to integrate MOSA into our acquisition process, such as incorporating MOSA principles into our acquisition guidance to incorporate and engage with industry to foster a robust and competitive MOSA ecosystem.

Lieutenant General SPAIN. In accordance with DOD and DAF MOSA policy and standard engineering practice, all programs evaluate their architectures at the technical, programmatic, and contractual levels to ensure maximum value from MOSA. The DAF MOSA Guidebook provides decision support and management of open architecture standards and GRAs. Program managers, contracting officers, and systems engineers use this guidance to craft Requests for Proposals that include compliance with MOSA-enabling interfaces, identify appropriate data rights, and use business models that allow for system components to be severable.

V–22 OSPREY SAFETY

57. Senator WARREN. General Mingus, Admiral Kilby, General Mahoney, General Guetlein, and Lieutenant General Spain, would you support keeping information about witnesses to investigations confidential but sharing overall conclusions of Safety Investigation Boards to enhance congressional oversight and identify problems that need to be fixed?

General MINGUS. I fully support protecting the confidentiality of witness information. I also welcome the opportunity to work with this Committee to identify problems and develop solutions to fix those problems. The lessons learned from safety investigations help inform us on how to not only fix, but prevent, mishaps. I look forward to collaborating with Congress, the Secretary, and the Chief on ways to ensure our force is safer and stronger as our warfighter needs continue to evolve.

Admiral KILBY. It is executive branch policy to protect Department of Defense personnel from accidental death, injury, or occupational illness; to protect the public from risk of death, injury, illness, or property damage caused by Department activities; and to protect Department property from damage. Military safety investigations are conducted solely to support this policy.

The Department recognizes that there are other compelling needs for transparency in the event of most serious mishaps, so each Service also conducts a separate independent legal investigation for those other purposes, including public release and preservation of evidence for use in litigation, claims, disciplinary action, and adverse administrative action. Of note, all non-privileged evidence gathered by a safety investigation is handed over to and included in the associated legal investigation.

The cornerstone of the safety investigation is the military safety privilege, recognized in U.S. case law since 1963. That privilege is the crown jewel in the Department's efforts to prevent mishaps, saving lives and treasure. It is so effective not only because certain safety investigations can offer confidentiality to witnesses, but also because of the candid analysis of investigators and privileged technical evaluations. The military safety privilege fosters their unsparing candor, secure in the knowledge that the resulting analysis will be used solely within the Department to prevent future mishaps. Those aspects of the safety investigation are not releasable outside of the Department, and even within the Department may not be used for any other purpose, including disciplinary or adverse administrative actions, contract actions, or claims for or against the United States. Compromising that assurance that investigators' privileged analysis will remain in-house would most assuredly devaState that candor and result in cautious, measured analysis intended for public distribution.

The Department also respects the congressional oversight role. To that end, the Department and the Armed Services Committees agreed on a procedure to discuss certain privileged safety information with the Chair and Ranking Member of the SASC and HASC, memorialized in the Aspin-Rice Agreement.

General MAHONEY. The Marine Corps respects the congressional armed services oversight role. To that end, the DOD and the Armed Services Committees agreed on a procedure to discuss certain privileged safety information with the chairman and ranking member, memorialized in the Aspin-Rice Agreement. The Marine Corps will comply with the current policy.

It is executive branch policy to protect DOD personnel from accidental death, injury, or occupational illness; to protect the public from risk of death, injury, illness, or property damage caused by Department activities; and to protect Department property from damage. Military safety investigations are conducted solely to support this policy.

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Lieutenant General SPAIN. It is executive branch policy to protect DOD personnel from accidental death, injury, or occupational illness; to protect the public from risk of death, injury, illness, or property damage caused by Department activities; and to protect Department property from damage. Military safety investigations are conducted solely to support this policy.

The Department of the Air Force recognizes there are other compelling needs for transparency in the event of most serious mishaps, so each Service also conducts a separate independent legal investigation for those other purposes, including public release and preservation of evidence for use in litigation, claims, disciplinary action, and adverse administrative action. Of note, all of the non-privileged evidence gathered by a safety investigation is handed over to and included in the associated legal investigation. Similarly, a report redacted of safety privilege information can be made available.

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58. Senator WARREN. General Mingus, Admiral Kilby, General Mahoney, General Guetlein, and Lieutenant General Spain, have your service's policies or procedures changed based on findings or recommendations released by the Joint Safety Council? If so, please describe which policies.

General MINGUS. The Army does not fly or maintain the V–22 Osprey. However, the Joint Safety Council (JSC) is taking an opportunity to review select completed Service or Joint mishap investigations, such as mishaps involving the V–22, to provide lessons learned that inform actions and recommendations to improve policy, streamline systems and processes, identify resources, and refine overall support mechanisms to the investigative process. As this process matures, we can expect the JSC to establish routine sharing of the results, trends, and lessons learned from key mishap investigations and discuss mishap data, information, and products that enable informed mishap prevention strategies across the DOD.

Admiral KILBY. The Defense Analytics Working Group (DAWG) under the auspices of the Joint Safety Council (JSC) officially stood up on 22 April 2024 to establish consistent cross-service analytical initiatives that help drive proactive measures to identify factors that positively affect the cross-service safety missions of safeguarding our Warfighters, protecting resources and improving readiness. Jointly led reviews enabled insightful discussions across the services regarding mishap types/rates as well as solutions in-work and safety processes in place which would not have been possible otherwise due to current data sharing limitations

Additionally, the Department and the Joint Safety Council undertook an initiative to create service-level operational mishap information sharing forums for communities of interest. In July 2023, the U.S. Army shared several mishap events with U.S. Air Force, U.S. Navy, U.S. Marine Corps, and U.S. Coast Guard aviation leaders at the general officer/flag officer level. Although platform specific, the key causalities of the presented mishaps were of universal applicability. The operational aviation leaders were extremely receptive to the brief and found value in sharing.

The Joint Safety Council has also worked with the services to develop a process to debut and share standardized executive summaries of major Service mishaps to increase cross-service visibility and awareness of mishaps to address a National Commission on Military Aviation Safety recommendation. The executive summaries allow for quick, concise information sharing to identify trends and opportunities for Services to work collaboratively to solve common causal factors influencing multiple mishaps. The Joint Safety Council has reviewed Comprehensive Review safety findings for the V–22 program which has enhanced sharing of lessons learned across the Services. During 2025, this process will continue to mature allowing opportunities for the Joint Safety Council to work across the services to develop mitigations for common hazards and causalities through the establishment of ad-hoc working groups.

General MAHONEY. The Marine Corps, in close coordination with the other Services and under the leadership of the JSC, has participated in several efforts shaping the way we share safety data, identify trends, and implement solutions. Rather than acting independently, the Marine Corps has prioritized joint approaches to safety policy development that reflect shared risks and lessons learned. These cross-service collaborations are already informing internal practices and will be further codified into policy by the end of 2025.

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Additionally, the Department and the JSC undertook an initiative to create service-level operational mishap information sharing forums for communities of interest. In July 2023, theU.S. Army shared several mishap events with U.S. Air Force, U.S. Navy, U.S. Marine Corps, and U.S. Coast Guard aviation leaders at the general officer/flag officer level. Although platform specific, the key causalities of the presented mishaps were of universal applicability. The operational aviation leaders were extremely receptive to the brief and found value in sharing. The JSC adopted a plan to codify service-level aviation, space, ground (e.g., troops, armor, and government motor vehicles), and maritime (e.g., ships, small craft, and barges) communities of interest to provide a cross-service operational safety information forum. The JSC expects to codify these forums in policy by the end of 2025.

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General GUETLEIN. In calendar year 2022, the newly established Joint Safety Council (JSC) commenced collaborative actions to enhance the effectiveness and synergy of multiple operational safety efforts across all the Services, encompassing safety analysis, information sharing, protection of safety information, and standardization of mishap report information, with the ultimate aim to further improve mishap prevention across the entire DOD.

The JSC accomplished a number of joint initiatives that enhanced mishap prevention. Through the JSC, the services work together to establish data standards and provide data streams to DOD's FR2 System. This effort not only baselined data categorization and requirements, but it also bolstered Force Support and Occupational Health office's ability to conduct oversight of service safety organizations. The JSC provided a unique opportunity to identify information-access needs across the services and a forum for seamlessly increasing access to joint Privileged Safety Information, through a JSC-sponsored Memorandum of Agreement.

Additionally, the JSC provided a unique joint forum to share mishap lessons on joint systems. Since services investigate their own mishaps, relevant information was not guaranteed to flow in a timely manner to other service safety teams whose service may also operate that system. The JSC institutionalized a joint mishap review working group to cull relevant mishap prevention data from joint platform mishaps. This working group also extracts mishap investigation best practices and opportunities for improvement it can share with service safety organizations.

Last, the JSC is uniquely positioned to determine shared issues that could be better addressed through research and studies. The JSC is able to leverage its relationship with the Defense Safety Oversight Council governance structure to seek advocacy and funding for studies. The joint equity ensures a large return on investment, and it expands the stakeholder perspectives involved in the study. The results of the studies are shared across the services, and the JSC has an opportunity to shape and implement recommendations for the DOD.

Lieutenant General SPAIN. Yes. The Joint Safety Council (JSC) accomplished a number of joint initiatives that enhanced mishap prevention. Through the JSC, the services worked together to establish data standards, and to provide data streams to DOD's Force Risk Reduction system (FR2). This effort not only baselined data categorization and requirements, but it also bolstered Force Support and Occupa-

tional Health's office ability to conduct oversight of service safety organizations. The JSC provided a unique opportunity to identify a need for better information access across the services and a forum by which they could seamlessly execute the increased access to joint Privileged Safety Information through a JSC-sponsored Memorandum of Agreement.

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PROGRAM MANAGEMENT

59. Senator WARREN. General Mingus, Admiral Kilby, General Mahoney, General Guetlein, and Lieutenant General Spain, when a program has a significant cost overrun, does that hurt military planning and readiness?

General MINGUS. Cost overruns create a cascading effect on military planning and readiness. It impacts the availability of modernized capabilities and disrupts equipment fielding timelines which are synchronized with leader development, unit training, and deployment timelines. Units maintain older or obsolete equipment longer than anticipated impacting readiness of the organizations and overall modernization of the force.

The Army is not interested in any unanticipated costs as it prevents flexibility in budget execution. The Army programs and estimates cost to the best of its ability in a volatile and challenging environment. Cost over-runs, either due to inflationary pressures, technological volatility or evolving requirements, always place pressure on the prioritized investments within the Secretary's budget. The Army regularly works to create opportunities for budgetary flexibility and resilience to mitigate the threat of cost over-runs and still deliver the necessary resources to support plans and highly prioritized readiness.

Admiral KILBY. Significant cost overruns in Navy programs are a serious concern that triggers extensive review and consideration. They can have cascading negative effects on military planning by creating budgetary pressures, delaying crucial capabilities, and ultimately impacting the readiness of the armed forces to meet their missions. The Navy constantly seeks strategies to prevent and mitigate cost overruns to ensure efficient resource allocation and maintain a strong and ready military.

General MAHONEY. Program cost overruns are a serious challenge that requires a multifaceted approach to address. They can significantly impact the ability to maintain operational readiness, diverting funds from other critical programs, delaying planned modernization efforts, and compromising the ability to meet operational requirements.

General GUETLEIN. Yes, every dollar spent on an overrun is a dollar less that could be spent on another warfighter priority.

Lieutenant General SPAIN. These cost overruns can significantly affect our ability to plan, prepare, and execute missions effectively, potentially leading to gaps in readiness and capability. For example, cost overruns can: 1) force reallocation of funds from other areas, potentially affecting programs that deliver equipment, supplies and other technologies essential to military readiness 2) disrupt long term strategic planning, which can effect execution of critical mission threads and kill-chains 3) cause delays in getting the latest technology deployed to our troops, leaving them at a significant disadvantage.

60. Senator WARREN. General Mingus, Admiral Kilby, General Mahoney, General Guetlein, and Lieutenant General Spain, what do you consider the role of independent analysis in program management?

General MINGUS. The role of independent analysis in program management is to provide DOD leadership, Service leadership, and program management with independent perspectives on program performance through the lens of the overarching

strategic defense posture. Organizations like OSD Defense Cost Assessment and Program Evaluation, the Director Operational Test and Evaluation, Defense Contract Audit Agency, and OSD analysts provide valuable updates and feedback to ensure programs are providing the best capability to our warfighters at the best value to the taxpayer to ensure national security.

Admiral KILBY. Independent analysis acts as a vital check and balance within the complex landscape of DOD program management. It fosters objectivity, rigor, and informed decisionmaking, ultimately contributing to more effective and efficient use of resources in support of national security. Furthermore, independent analysis plays a critical role across the spectrum of Navy program management, extending beyond just programs with overruns or delays. It serves to provide objective insights, challenge assumptions, and ultimately improve the efficiency and effectiveness of defense acquisitions and operations.

General MAHONEY. Independent analysis ensures analytic rigor in a program's cost position/baseline by removing bias through leveraging cost and schedule experiences from analogous historical program acquisitions and applying the lessons learned to their cost estimates. Incorporating a best practice would then involve a reconciliation between the PM's cost estimate and the independent analysis.

General GUETLEIN. Independent analysis is an essential tool in program management, serving as an objective and unbiased reality check throughout a projects lifecycle. It helps validate initial assumptions, identify hidden risks and opportunities, and provide an accurate measurement of progress, all while enhancing credibility and trust with stakeholders. By offering a fresh perspective and expert insights, independent analysis empowers program managers to make informed decisions, mitigate potential problems, and ultimately increase the likelihood of achieving successful outcomes.

Lieutenant General SPAIN. Independent data-based studies outside the program manager's chain of command can augment specific analysis goals to assist in setting cost and schedule baselines that are executable to be able to plan effectively and deliver the capability to the warfighter. Also, strategic, long-term planning depends on successful program management since military readiness is directly affected by the ability of individual programs to deliver on schedule.

61. Senator WARREN. General Mingus, Admiral Kilby, General Mahoney, General Guetlein, and Lieutenant General Spain, what do you consider the role of independent analysis in reviewing a program with significant cost overruns or schedule delays?

General MINGUS. The role of independent analysis in reviewing a program with significant cost overruns or schedule delays is to provide DOD leadership, service leadership, and program management with independent perspectives on the impact to cost and delivery schedules as weighed against the national security need. Organizations like the OSD Cost Assessment and Program Evaluation and the Deputy Assistant Secretary of the Army for Cost & Economics help assess if the capability the materiel solution is providing is commensurate with the investment of resources, time, and criticality to national defense. Similarly, organizations like Army G–8 and Army G–3/5/7 provide independent insight into the impact of weapon systems' fielding delays on the Army's readiness and defense posture.

Admiral KILBY. Independent analysis serves as a crucial mechanism for ensuring responsible stewardship of taxpayer dollars and effective program management within the Department of the Navy. By providing objective assessments, alternative perspectives, and enhanced transparency, it empowers our decisionmakers to address costly overruns and schedule delays and to improve the overall acquisition process going forward.

General MAHONEY. The role of independent analysis is to ensure bias for the program is removed while reviewing significant cost overruns and schedules. Independent analysis provides analytical rigor by leveraging cost and schedule experiences from historical analogous program acquisitions and then applies the lessons learned to the cost and schedule estimating methodologies.

General GUETLEIN. Independent analysis is crucial for reviewing programs facing cost or schedule overruns. It provides an objective perspective, free from internal biases, to uncover the root causes of problems, whether poor planning, unrealistic goals, or technical issues. This analysis helps determine if overruns stem from internal or external factors. Independent analysis rebuilds stakeholder trust through transparency and informs critical decisions like course correction or program termination, ensuring responsible resource use and successful project delivery.

Lieutenant General SPAIN. Programs troubled with cost overruns and schedule delays can significantly benefit from independent analysis, especially when an additional perspective is required to determine root causes and assess a realistic cost

and schedule to accurately re-baseline the program. This independence builds credibility and transparency, augmenting the assessment of whether the current program should continue or if a different approach would be more effective. Analysis performed outside the Program Executive Office chain of command allows the right balance of optimism and realism for these programs so that leadership can make data-driven decisions about the most effective solution for the warfighter.