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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

Highlights

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

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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.

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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

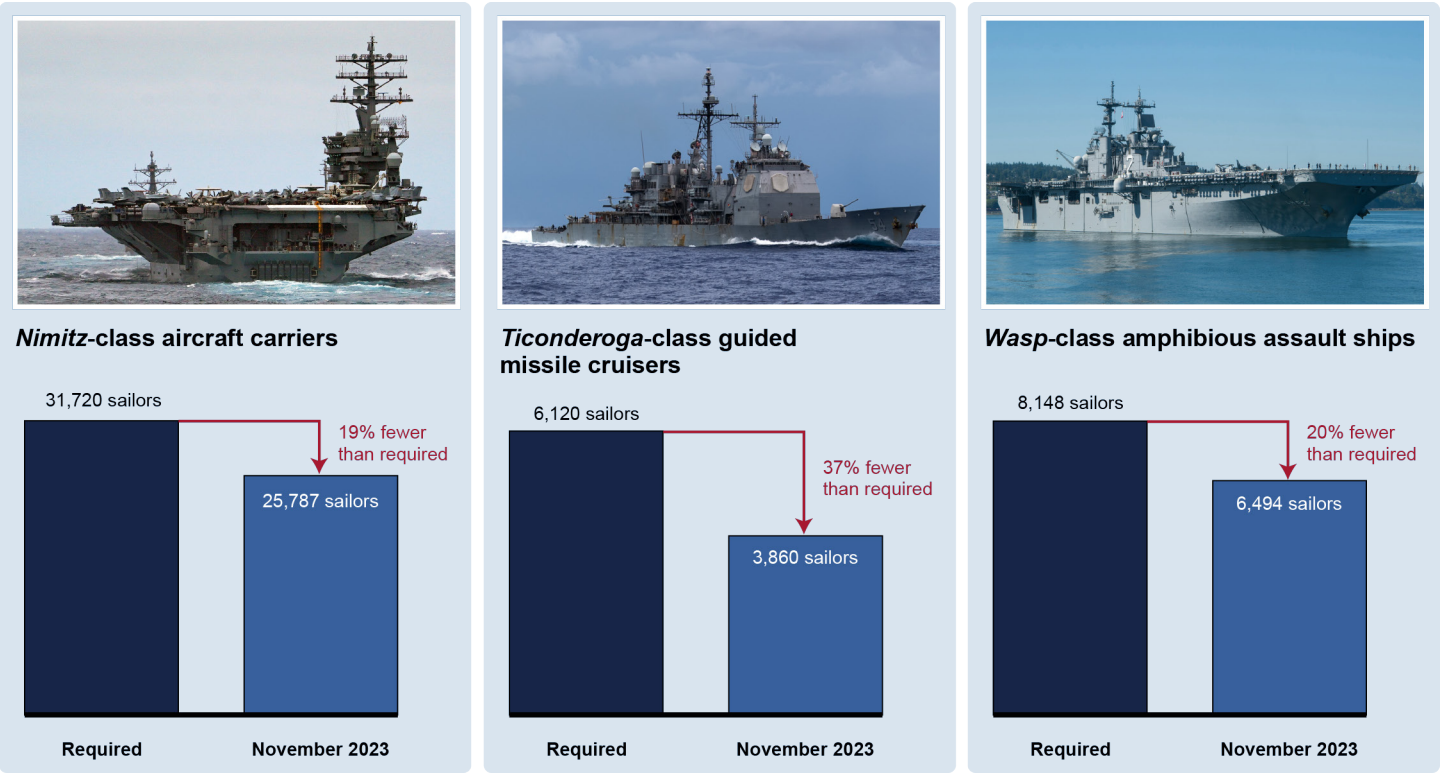
[3]The mission-capable rate—the percentage of total time when the aircraft can fly and perform at least one mission—is used to assess the health and readiness of an aircraft fleet. See GAO, *Weapon System Sustainment: Aircraft Mission Capable Goals Were Generally Not Met and Sustainment Costs Varied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

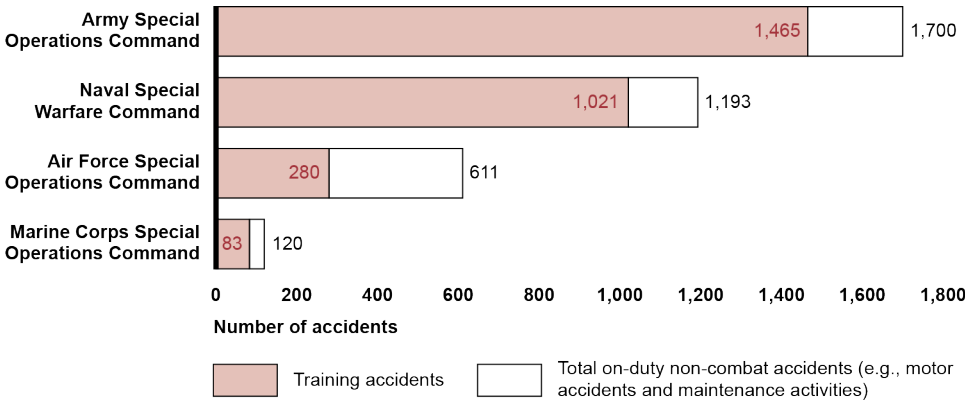
[8]We reported on the extent of sailor fatigue and made four recommendations for the Navy to more effectively manage fatigue. See GAO, *Navy Readiness: Additional Efforts Are Needed to Manage Fatigue, Reduce Crewing Shortfalls, and Implement Training*, GAO-21-366 (Washington, D.C.: May 27, 2021). In 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.

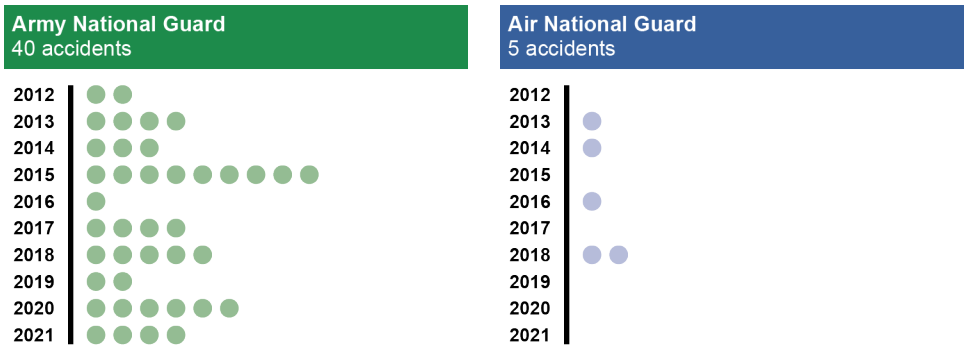
In our November 2024 report, we made six recommendations to DOD including that SOCOM analyze safety data to identify high-risk training

[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

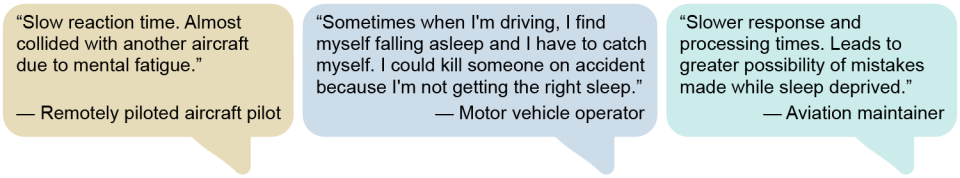
[12]GAO-21-361.

[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

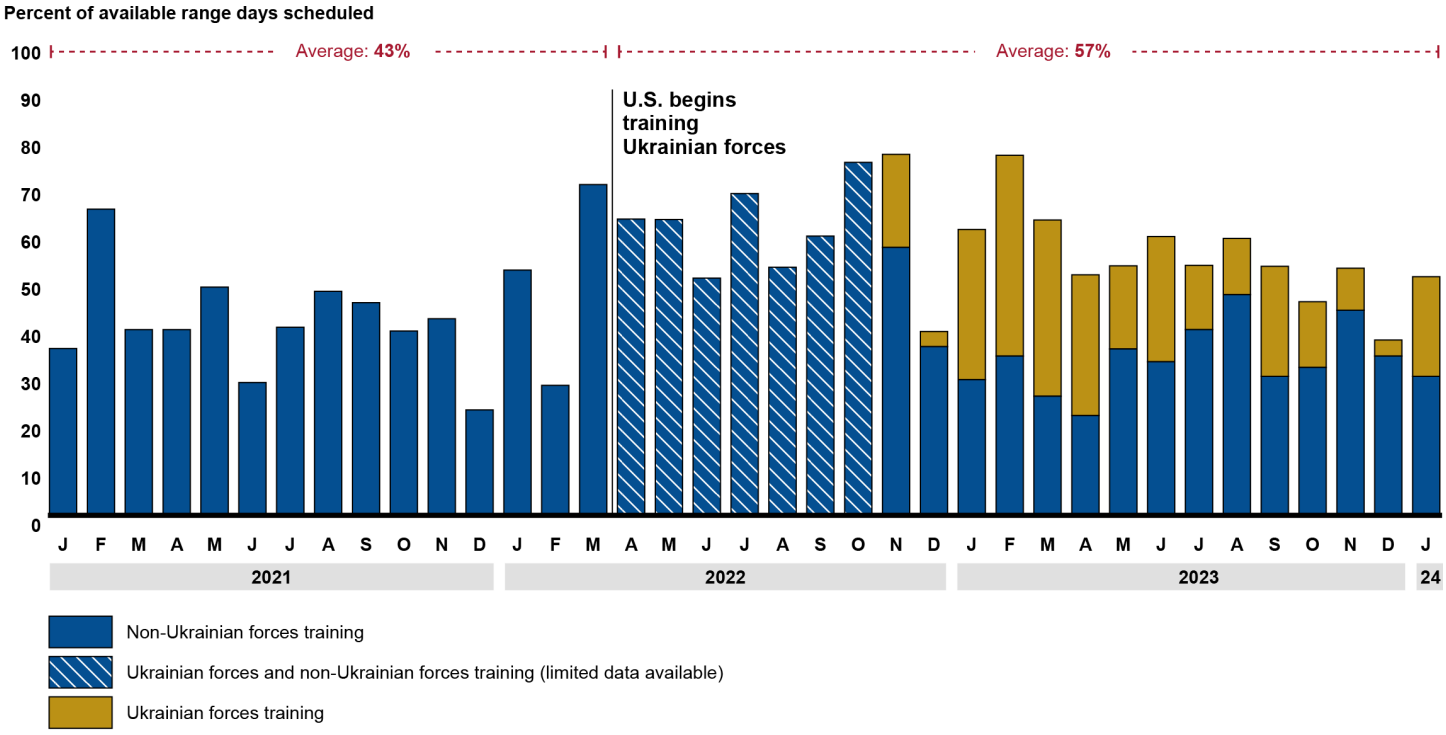
Ukraine Security Assistance

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

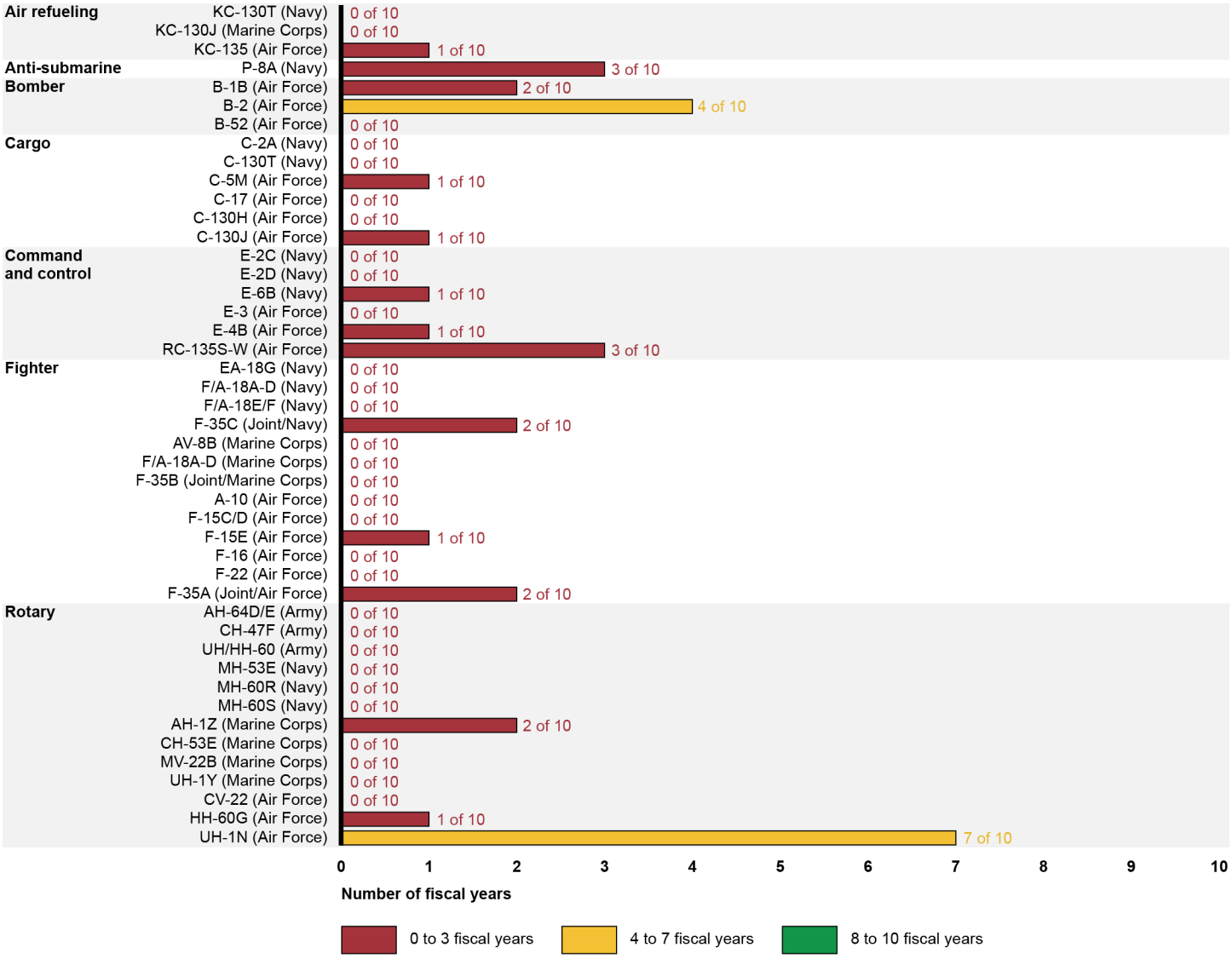
DOD did not meet its mission capable rate goals for fiscal year 2024 for 42 of the 45 DOD aircraft that support military-related missions, based on updated analysis from November 2022.[22] Additionally, for fiscal year 2024

- 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

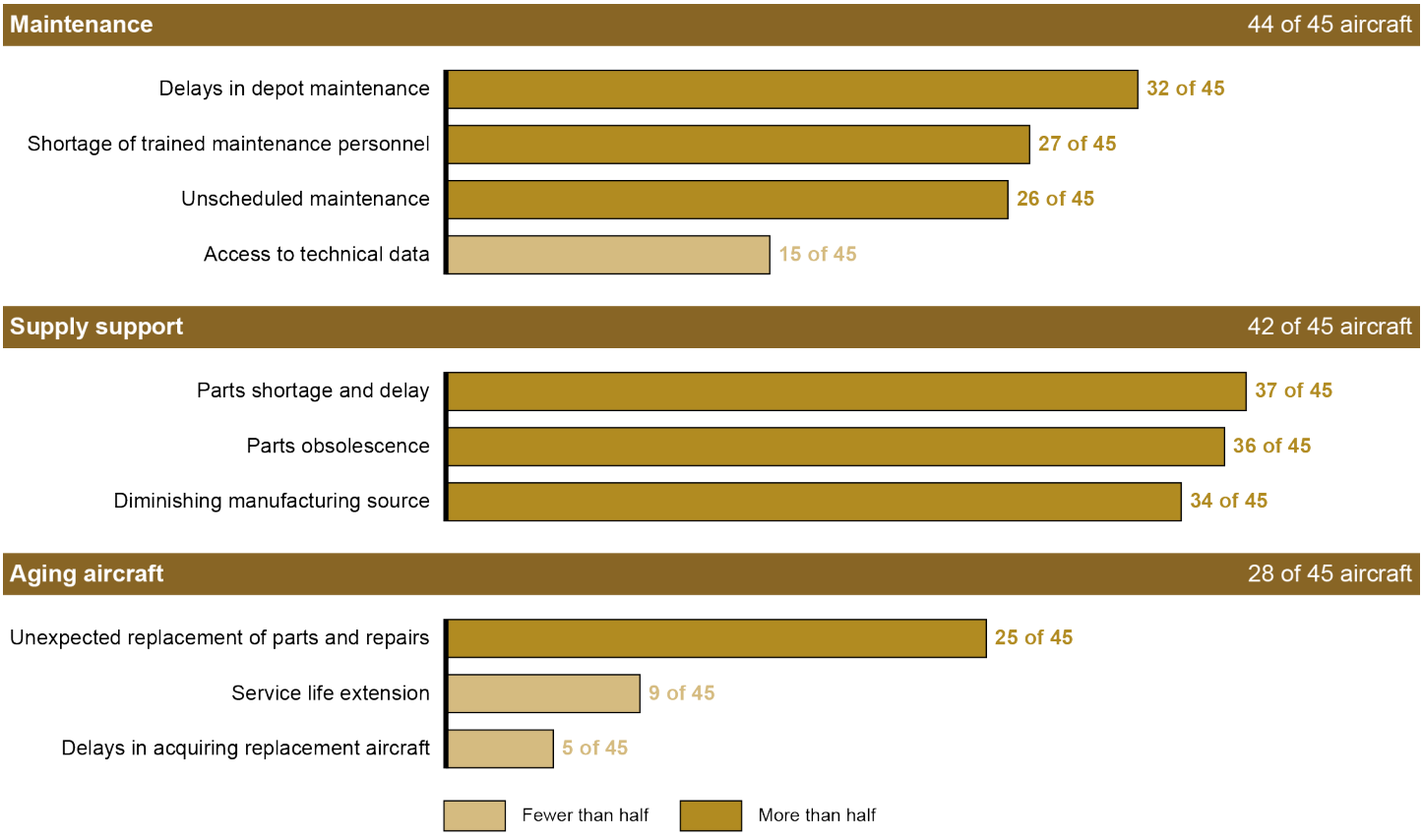


Source: GAO analysis of Army, Navy, and Air Force data. | GAO-25-108104

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.

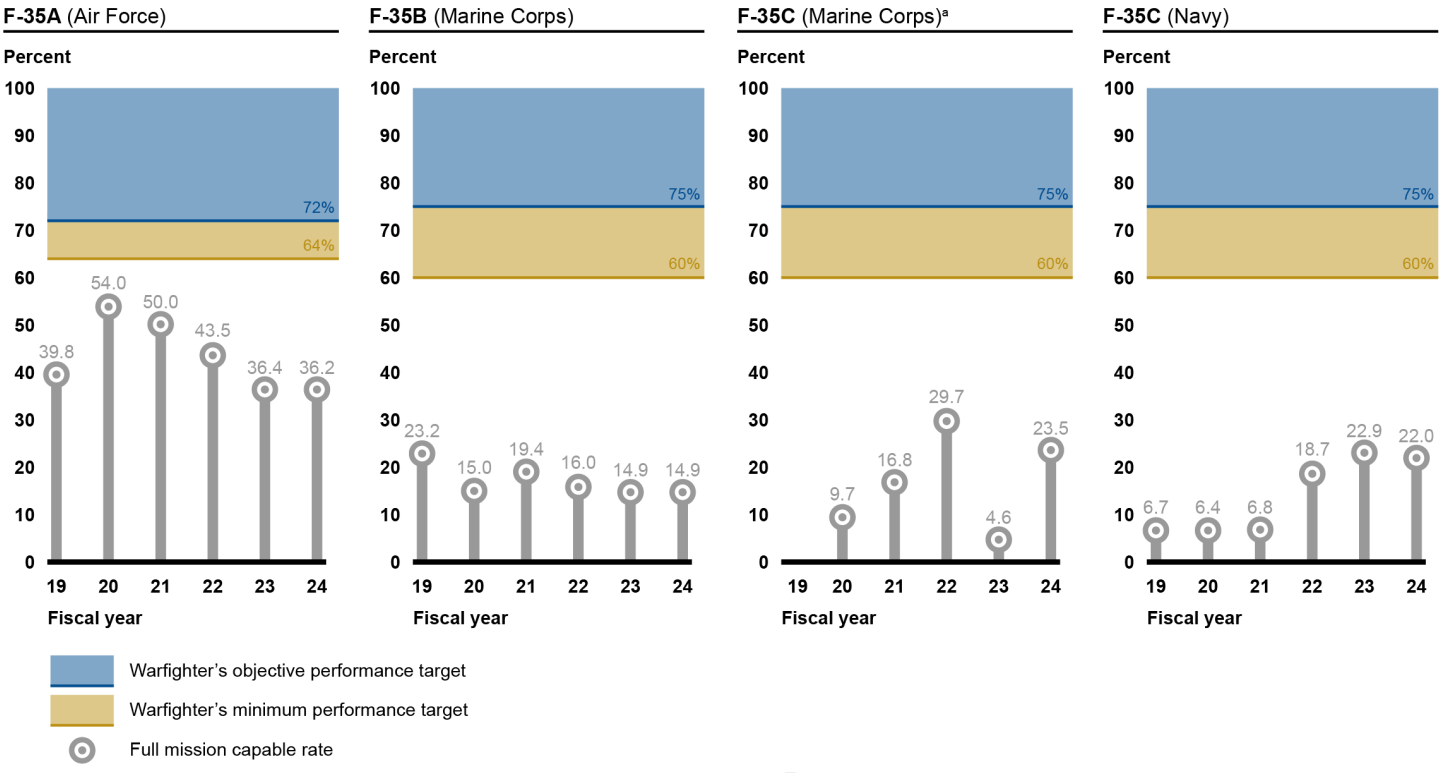
Actions Needed to Address F-35 Sustainment and Operational Challenges

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

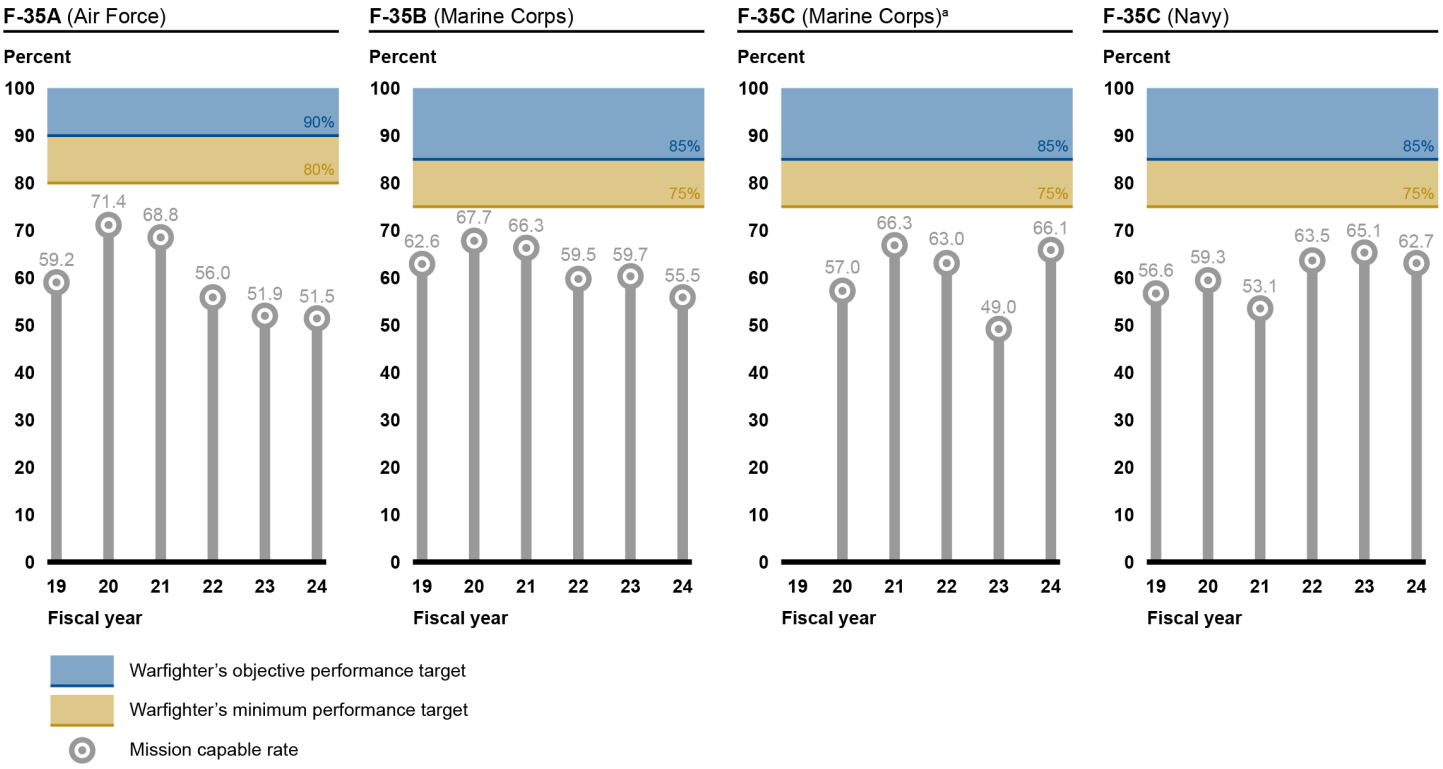


Source: GAO analysis of Department of Defense and Lockheed Martin information. | GAO-25-108104

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

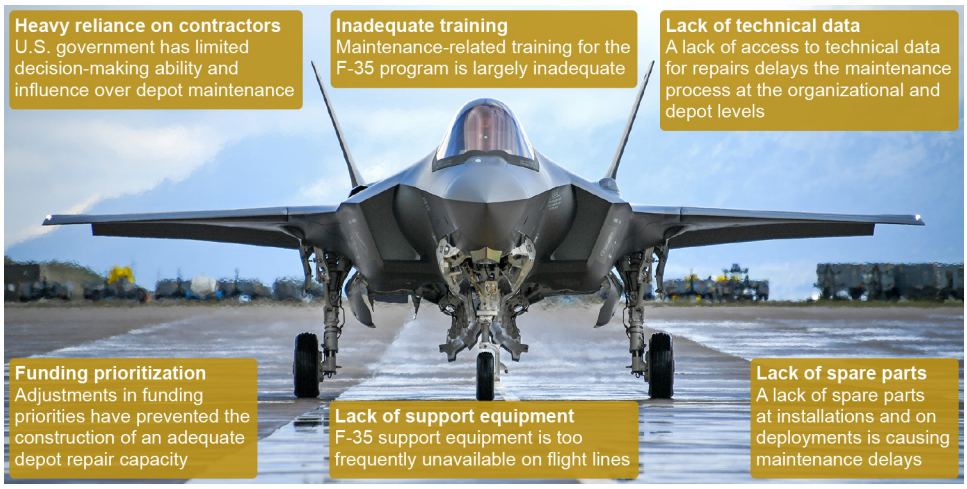
Note: The mission capable rate assesses only aircraft that are in the possession of F-35 units. It measures the percentage of time during which these aircraft are safe to fly and able to perform at least one tasked mission. The warfighter's minimum and objective performance targets are those requirements 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.

[a]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

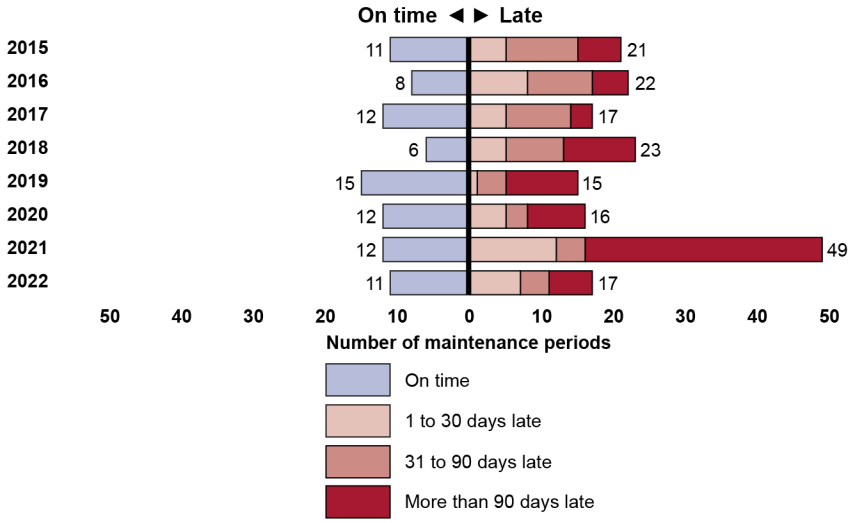
Source: GAO analysis of Navy information. | GAO-25-108104

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

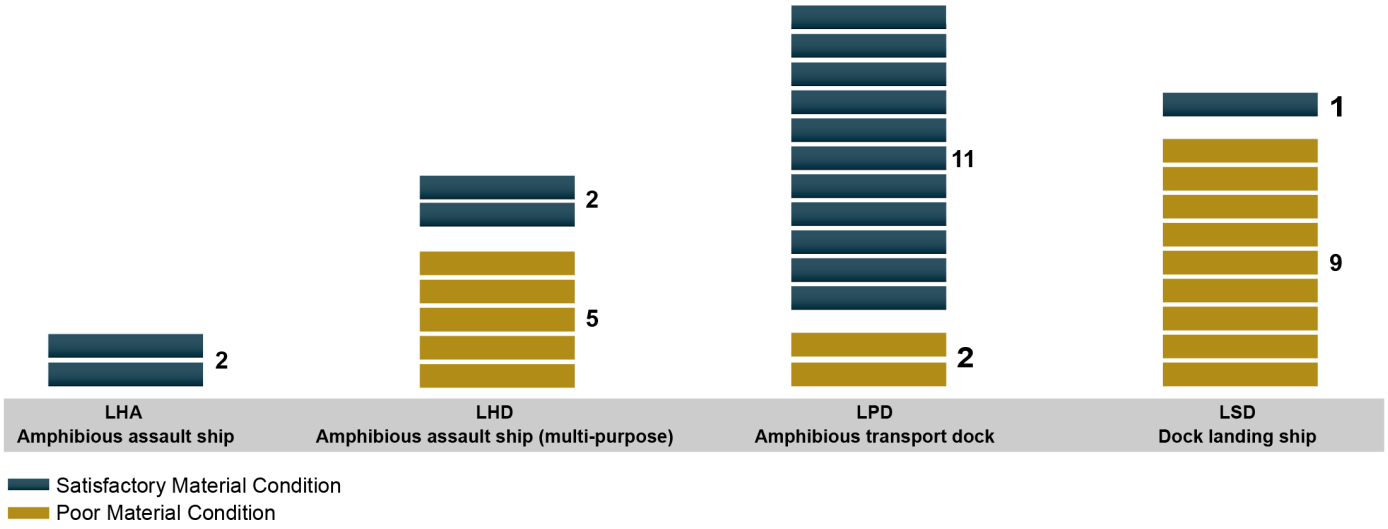
[33]GAO-24-106525.

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.

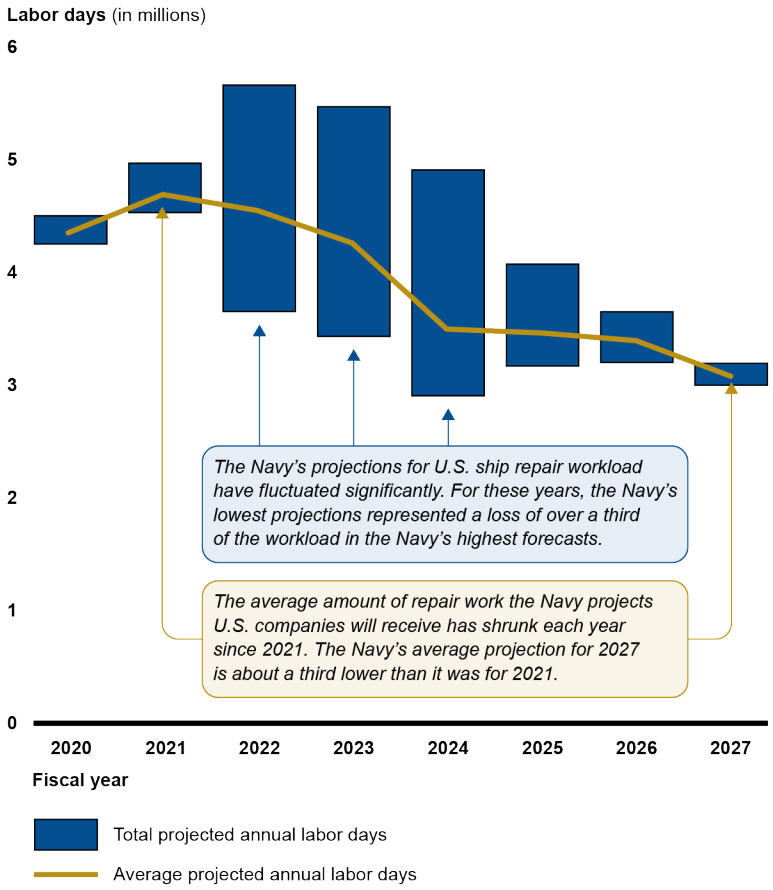
[43]As we previously reported, the Navy's current contracting strategy allows for bundling multiple repair periods together under a single contract. The Navy intends this approach to increase contractors' visibility into and confidence regarding future ship repair workloads. See GAO, *Navy Ship Maintenance: 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.

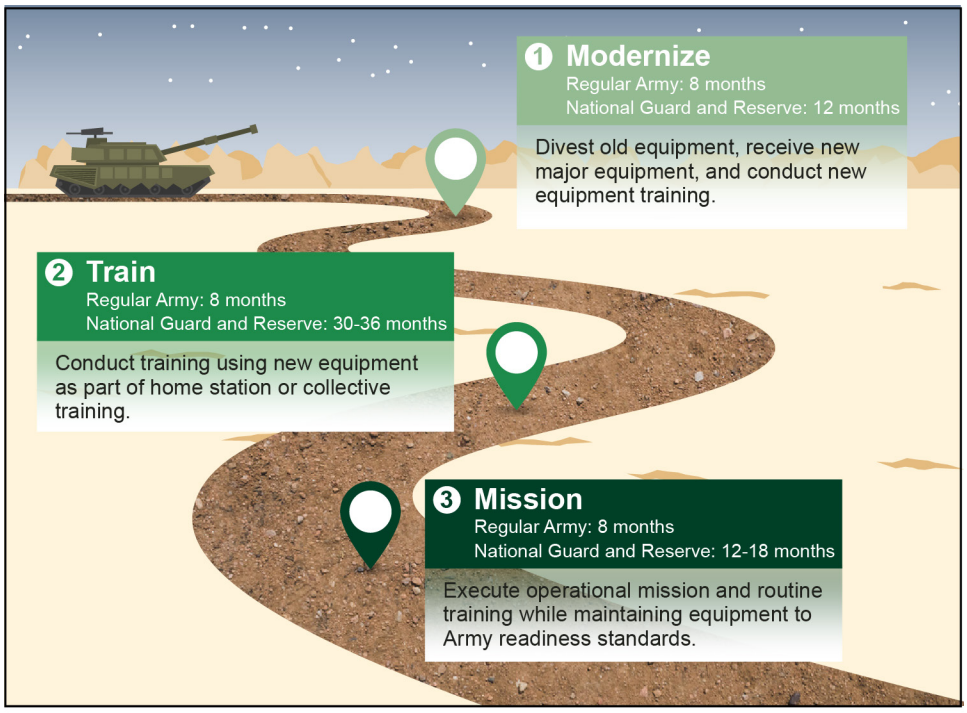
Ground Domain

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.

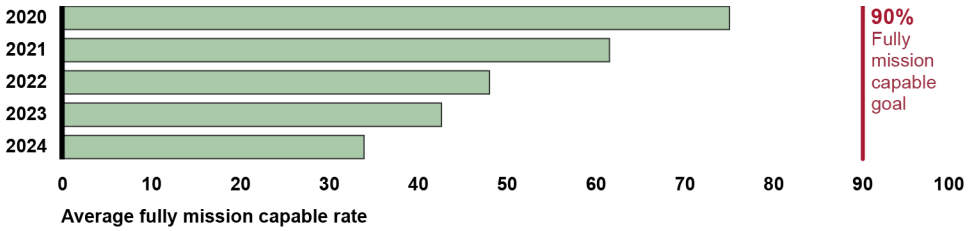
However, we reported in October 2024 that the Army has identified significant capability gaps in its watercraft fleet. Concurrently, the Army has increased its use of watercraft, and plans to increase the use of its fleet, especially in the Indo-Pacific theater. The Army plans to address these capability 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.

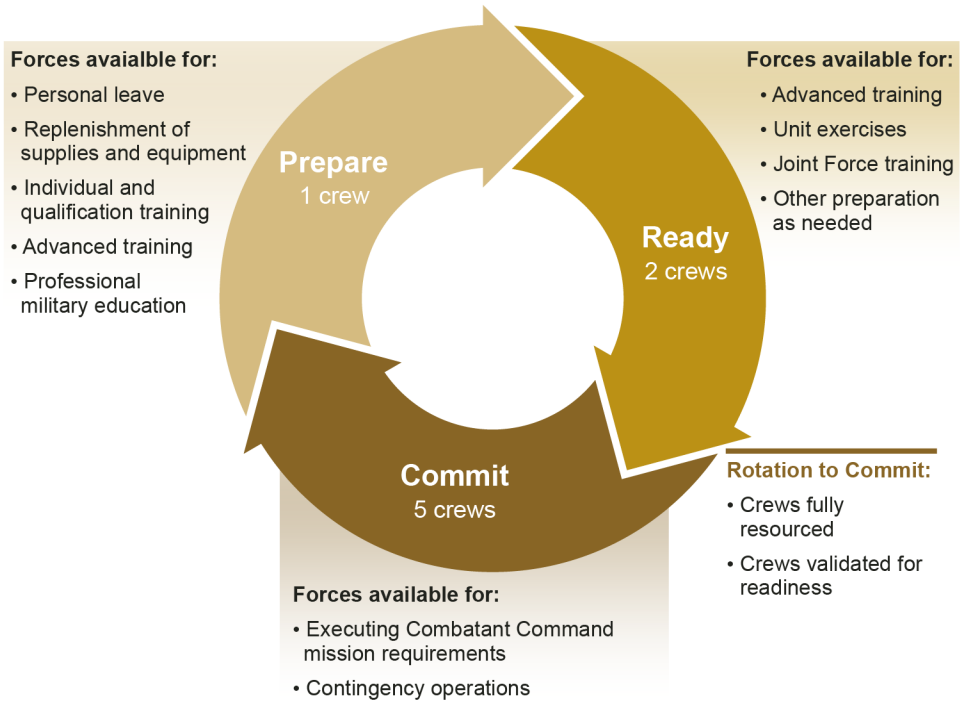
The Space Force Faces Current and Future Force Generation Challenges

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.

National Guard Helicopters: Additional Actions Needed to Prevent Accidents and Improve Safety. GAO-23-105219. Washington, D.C.: March 14, 2023.

Weapon System Sustainment: Navy Ship Usage Has Decreased as Challenges and Costs Have Increased, GAO-23-106440. Washington, D.C.: Jan. 31, 2023.

Weapon System Sustainment: Aircraft Mission Capable Goals Were Generally Not Met and Sustainment Costs Varied by Aircraft. GAO-23-106217. Washington, D.C.: November 10, 2022.

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.

U.S. Space Command: Air Force Should Develop Guidance for Strengthening Future Basing Decisions. GAO-22-106055. Washington, D.C.: June 2, 2022.

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

Military Depots: DOD Strategy for Addressing Deteriorating Facilities and Equipment Is Incomplete. GAO-22-105009. Washington, D.C.: May 9, 2022.

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.

Combat Helicopters: Actions Needed to Fully Review Readiness Goals and Address Long-Standing Maintenance Challenges, GAO-22-104607SU Washington, D.C.: Feb. 15, 2022.

Defense Acquisitions: DOD Should Take Additional Actions to Improve How it Approaches Intellectual Property, GAO-22-104752. Washington, D.C.: November 30, 2021.

Defense Transportation: The Army Should Take Action to Better Ensure Adequate Rail Support to Combatant Commanders. GAO-21-411. Washington, D.C.: August 23, 2021.

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.

Navy Readiness: Additional Efforts Are Needed to Manage Fatigue, Reduce Crewing Shortfalls, and Implement Training. GAO-21-366. Washington, D.C.: May 27, 2021.

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).