

**UNITED STATES NAVY AND MARINE CORPS
READINESS**

HEARING

BEFORE THE

SUBCOMMITTEE ON SEAPOWER

AND

SUBCOMMITTEE ON READINESS AND
MANAGEMENT SUPPORT

OF THE

**COMMITTEE ON ARMED SERVICES
UNITED STATES SENATE**

ONE HUNDRED FIFTEENTH CONGRESS

SECOND SESSION

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UNITED STATES NAVY AND MARINE CORPS READINESS

WEDNESDAY, DECEMBER 12, 2018

U.S. SENATE,
SUBCOMMITTEE ON SEAPOWER AND
SUBCOMMITTEE ON READINESS
AND MANAGEMENT SUPPORT,
COMMITTEE ON ARMED SERVICES,
Washington, DC.

The Subcommittees met, pursuant to notice, at 9:35 a.m. in Room SD-G50, Dirksen Senate Office Building, Senator Roger F. Wicker (chairman of the Subcommittee on Seapower) presiding.

Subcommittee Members present: Senators Wicker, Rounds, Ernst, Sullivan, Shaheen, Blumenthal, Hirono, Kaine, and King.

OPENING STATEMENT OF SENATOR ROGER F. WICKER

Senator WICKER. This joint meeting of the Senate Armed Services Subcommittees on Seapower and Readiness and Management Support convenes this morning to examine Navy and Marine Corps readiness.

We welcome our four distinguished witnesses: the Honorable Richard V. Spencer, Secretary of the Navy; General Robert B. Neller, Commandant of the Marine Corps; Admiral William F. Moran, Vice Chief of Naval Operations; and Mr. John H. Pendleton, Director of Defense Capabilities and Management at the Government Accountability Office (GAO).

Let me begin by expressing my deepest condolences to the families and friends of the six marines who died after a mid-air collision last Thursday near Japan. This tragedy serves as a reminder of the constant dangers those in uniform face on a daily basis.

I thank Chairman Sullivan and Ranking Members Hirono and Kaine for agreeing to hold this hearing jointly—this rescheduled hearing. We will discuss a range of important issues today that cross subcommittee jurisdictions, such as equipment modernization and funding for spare and repair parts. Although there is plenty to discuss regarding Navy and Marine Corps readiness, I will focus my opening remarks on the readiness of the Navy surface ships.

This February, the late Senator John McCain and I introduced legislation to help the Navy restore its surface force readiness. The Surface Warfare Enhancement Act of 2018 sought to address some of the root causes of declining readiness, which were outlined in the Secretary of the Navy's Strategic Readiness Review (SRR) and the CNO's [Chief of Naval Operations] Comprehensive Review.

In the aftermath of the tragic USS *Fitzgerald* and USS *John S. McCain* collisions, in which 17 sailors lost their lives, our commanders and sailors called for meaningful reform. Navy and Government Accountability Office reviews cited over-extended and undermanned ships, overworked crews, a decline in naval mastery, and confusing chains of commands as contributing factors to the Navy's readiness problems.

Our legislation, based on the Navy's own recommendations, was specifically designed to address these and other challenges. Although I have confidence in the Navy's leadership, I believe Congress must continue to play an active role in ensuring the right long-term corrective actions are successfully implemented.

The John S. McCain National Defense Authorization Act (NDAA) for fiscal year 2019, which President Trump signed into law in August, includes 11 provisions derived from our original legislation. These reforms required the Navy to review its chains of command, ensure that the ships home-ported overseas rotate back home, and keep formal watchstanding records, among other several other provisions. We must learn the hard lessons of the past 2 years and get meaningful reforms implemented.

I look forward to receiving an update on the progress of implementing these reforms for our surface ships.

There will be several other topics which will be highlighted in our witnesses' prepared testimony, but in the interest of time, I will conclude my opening remarks.

By agreement, we are now to recognize Senator Kaine for whatever opening remarks he might have. Senator Kaine?

STATEMENT OF SENATOR TIM KAINE

Senator KAINE. Thank you, Mr. Chairman. Thanks to the witnesses for being here today, to my colleague, Senator Hirono, and all who are here.

This is an important hearing. I appreciated the opportunity to meet in the office to talk a little bit about it. It is rare to have a hearing of two of the Subcommittees jointly, but it is very appropriate to talk in this joint Subcommittee hearing about readiness in both the Marine Corps and the Navy.

I will also echo what Senator Wicker said. Our prayers go out to the family members affected in the Marine family by the mid-air collision. One of those killed was a marine, Kevin Herman from Fredericksburg, Virginia. Thinking about Kevin and his family.

I am going to keep my remarks brief as well because we want to get into the Q&A.

First, on readiness recovery, I am encouraged by Secretary Mattis' expressed goal of an 80 percent readiness figure. That is a lofty goal, a stretch goal, a gasp goal, but it is the kind of goal you need to do good work. While I support the goal, I do have concerns about how we come up with and then allocate the resources that we need to meet it.

The GAO found just last month the Navy spent about \$1.5 billion since 2008 to support submarines that were not able to be deployed. I am very interested to hear from the witnesses how the Navy can best use both public and private shipyards to ensure

readiness goals are met and taxpayer dollars are used wisely. I know you are prepared to testify about that.

Second, infrastructure challenges. I am encouraged by the Navy's shipyard optimization plan. The plan has an estimated cost of \$21 billion over the next 20 years, which would be nearly three times what the Navy has historically spent on capital shipyard investment. If we are going to get to the 355-ship Navy, we need to make those investments, but that will be challenging. I am interested to hear from the witnesses today on how exactly they plan to achieve this amount of investment. Obviously, Congress has a huge role in that. So you will be giving us a challenge as well as you describe it.

An additional concern I have about infrastructure, especially just following the fall that we have been through, is climate change. Hurricane Florence did significant damage to North Carolina, and the costs at Lejeune to the Marine Corps could be significant. This is not an Air Force hearing, but Tindall in Florida also suffered significantly, and there will be costs connected with it.

The GAO recently found, quote, DOD [Department of Defense] acknowledges that the potential impacts of weather effects associated with climate change pose operational and budgetary risk to our military installations. We are seeing examples of that.

Notably, the Fiscal Year 2018 NDAA required DOD to report on vulnerabilities to installations from climate-related events. It could be a hurricane. It could be flooding. It could be drought, depending on the part of the country, wildfires—including the top ten most vulnerable installations in each military service. The report is due this month, and I will ask both the Navy and Marine Corps for their top ten today, either for verbal testimony or testimony for the record. I am not expecting each of you to pound the table about debating about climate change and the causes of it, but we do need to know, coming up with the NDAA and prepping for it for next year, what we need to build in to deal with those vulnerabilities.

With that, Mr. Chairman, thanks for calling this joint hearing, and I appreciate the opportunity to dialogue with our witnesses today.

Senator WICKER. Thank you, Senator Kaine.

Before moving to the other two opening statements, you mentioned your constituent. Let me just say that we now have the names of four of the five marines who have been declared dead after the crash of the two war planes. Family members of the fallen marines identified their loved ones to Stars and Stripes. In addition to Major Kevin Herman of Fredericksburg, Virginia, who Senator Kaine has already mentioned, Staff Sergeant Maximo Flores of Litchfield Park, Arizona; Corporal Carter Ross from Hendersonville, Tennessee; and Corporal Daniel Baker of Tremont, Illinois have been identified as deceased by their loved ones. And the fighter pilot involved in the crash who died was identified last week as Captain Jahmar Resilard of Miramar, Florida. We mention all of those names with our thoughts and prayers to their families and our appreciation for their service and sacrifice to our country.

Senator Sullivan?

STATEMENT OF SENATOR DAN SULLIVAN

Senator SULLIVAN. Thank you, Mr. Chairman. I want to thank all the members for being here for this important hearing that really kind of emphasizes that modernization and readiness go hand in hand. I know that our full Committee Chairman, Senator Inhofe, is committed to ensuring that we continue down the path to readiness and recovery while we still prioritize modernization.

I want to thank the witnesses for being here today. It has been over 6 months since we received testimony from the Navy and Marine Corps on their current posture in support of the fiscal year 2019 budget. Much has happened since then.

I am going to try to keep my opening remarks short, but like Senator Kaine, I want to highlight a couple areas that I hope our witnesses can address for us.

First, the readiness issues with regard to the Navy and the Marine Corps, importantly within the context of the new National Defense Strategy (NDS) and the recent National Defense Commission report, which was mandated by this Committee and the Congress—the leaders of that commission testified recently, and I thought they did a very good job. All of this within the context of the great power competition with China and Russia that are the highlights and emphasis in the National Defense Strategy.

As Senator Kaine mentioned, I also want to get a sense from our witnesses on the laudable but, let us say, as he said, stretch goal with regard to 80 percent mission-capable by the year end with regard to Navy and Marine Corps aircraft. The readiness issues in terms of naval aviation has been a big challenge and continues to be.

I am also curious to get an assessment from, Mr. Secretary, you and General Neller and Admiral Moran on how you plan to get to the 80 percent capable mission for those airframes while keeping training up, which has been a big problem, and not degrading readiness capabilities.

On the topic of modernization, I am concerned about a significant burden that we are seeing on sustainment. Last month, Vice Admiral Moore stated that only 35 percent of the ships that he had in maintenance availabilities would move on time. This again is an area where maintenance and sustainment of our fleet has typically been a strategic comparative advantage of the United States Navy relative to other countries, particularly China and Russia. I want to get a sense from our witnesses on how we make progress on that. Those numbers are concerning.

I also want to get a sense, in light of the NDS, as Senator Kaine and I are going to be conducting a classified hearing later today with regard to the Pacific laydown of our force posture in light of the National Defense Strategy in the Asia-Pacific, Indo-Pacific. That is going to be an important hearing. My State plays an important role in that, being one of the most strategically located places in the world. So I would like to get an update on utilization of that platform, JPARC [Joint Pacific Alaska Range Complex], Adak, other future year training and basing opportunities that fit well within the NDS.

Finally and I think most importantly—we have already touched on it—the trend in the INDOPACOM [Indo-Pacific Command] re-

gion with regard to accidents that we have had in the Navy, in the Marine Corps. I do not want to go down the whole list, but we know what they are: the USS *McCain*, others, the collisions of our ships at sea resulting in the deaths of 17 sailors, several Marine Corps and Navy aviation crashes in training, including the latest that we just talked about.

We, of course, send our heartfelt condolences to the families of the marines who have lost loved ones during this holiday season. I know all of you gentlemen take these issues extremely seriously. These are the men under your charge, but we have to do better. We must do better, all of us, including the Congress. We have to do better.

What we need to do here on our side is make sure you get the authorization and appropriations bills on time. CRs [continuing resolutions] and omnibuses that you have been forced to endure for over a decade do not help readiness and contribute to the problem.

With that, Mr. Chairman, I look forward to very much hearing from our witnesses.

Senator WICKER. The ranking member of the Seapower Subcommittee, Senator Hirono.

STATEMENT OF SENATOR MAZIE HIRONO

Senator HIRONO. Thank you very much. I will keep my remarks very short.

And I do add my own condolences to the families of the marines lost in the tragedy off the coast of Japan last week, as well as their fellow marines at Marine Corps Air Station Iwakuni and throughout the Pacific.

Gentlemen, it is nice to see three out of the four of you. Thank you very much for coming to see me not too long ago.

These are the areas that I would like to focus on, and some of them have already been, of course, mentioned.

One of the most important areas of concern for me is shipyard modernization because Pearl Harbor Navy Shipyard is very much a part of our industrial base in Hawaii, as well as, of course, a major part of our national security. I too would like to know how we are going to get to 80 percent availability for aviation.

Something that I have been talking about quite a bit, not necessarily mentioned by others, is how we are addressing the corrosion problem because that can lead to deaths, as it has, when a propeller falls off due to corrosion and lack of adequate maintenance.

And then, of course, as mentioned by Senator Sullivan, preventing collisions at sea.

So thank you very much, Mr. Chairman.

Senator WICKER. Thank you.

I believe Secretary Spencer is first in line to make opening remarks. Sir, we are delighted to have you.

STATEMENT OF THE HONORABLE RICHARD V. SPENCER, SECRETARY OF THE NAVY

Secretary SPENCER. Great to be here, Chairman.

I would open up by saying thank you for keeping your thoughts and prayers in mind for those marines affected, and I would go one

step further and please say keep your thoughts and prayers in mind for all our Navy/Marine Corps team that are out in harm's way.

Chairman Wicker, Chairman Sullivan, Ranking Member Hirono, Ranking Member Kaine, distinguished members who are all here today, first off, on behalf of the sailors, marines, civilians, and all our teammates serving around the world, we want to thank you for your bipartisan effort to restore funding stability to the Department of the Navy. It is critical and it is doing its work. I will tell you that the weather vanes are all pointed in the right direction. Urgency is the message that we have now. You are seeing improvement. You will hear it today. But the rate of improvement must increase and we believe we do have plans to address that.

The foundation for restoring readiness and increasing lethality has been set, but we must build on this, as I said, with a sense of urgency, and with a focus on people, capabilities, and process. While we have much to do, we are well underway. During this testimony, we will highlight and answer questions for you that will delineate what is being done.

The National Defense Strategy identifies three lines of effort to counter the increasingly complex security environment that we presently face. The first is to build a more lethal and ready force. The second is to strengthen alliances. The third is to reform the way that we do business.

I am going to highlight a couple of the major muscle movements that we are making.

We are increasing lethality and readiness through targeted investments in weapons platforms and munitions, while enhancing our partnerships with the private sector. As an example, alongside our private sector partners, we are gleaning commercial best practices to increase efficiency and flow in our maintenance facilities to turn those platforms back to the fleet as quickly as possible.

The Navy/Marine Corps team is strengthening our network of allies and attracting new partners through joint exercises such as RIMPAC [Rim of the Pacific Exercise], Trident Juncture, Malabar, and Bold Alligator, all the way increasing opportunities for our personnel and their allied counterparts to study together, serve together, and operate as a single unit. Teaching, learning, and exercising together seals a long-term bond with those that will be part of the fight, if called on. Aligned and training allies and friends are our force multiplier both in manpower, ideas, and capital assets.

We have made business process reform a top priority. At every level we must become—and we are moving there—to be a continual learning enterprise, identifying best practices from outside the building, promoting a culture of problem solving, and achieving efficiency at the speed of relevance. Recent examples of this include the newly revised surface force training and readiness manual, which places more focus on training and changes the delivery strategy of basic phased training to ensure ships are able to continuously train during the optimized fleet replacement plan cycle. This, coupled with the establishment of the Marine Skills Training Centers in both Norfolk and San Diego, enable surface warfare offices to develop their mariner skills throughout their career. They are

increasing the ability of the United States Navy and this shows what we are investing in our people.

The American taxpayers provide us with a treasure, and in return, we must protect them from the risks associated with an ever-changing world. We owe it to them to ensure that every single dollar we invest has a return on lethality. We must do this to fulfill our oath to them.

We have more examples of our efforts put forth to increase readiness and lethality. While we have been focused on addressing root cause issues that we face, you should be aware that we are making systemic changes that will take time to meaningfully move the needle. In order to effect our goals, we must, ladies and gentlemen—we must have consistent funding. Any breaking in that consistency will have dire effects on the process and progress that we have made to date.

We appreciate the support and the oversight of this Committee, and on behalf of the world's finest marines and sailors, we look forward to your questions.

[The joint prepared statement of Mr. Spencer, General Neller, and Admiral Moran follows:]

THE JOINT PREPARED STATEMENT OF THE HONORABLE RICHARD V. SPENCER,
GENERAL ROBERT B. NELLER, AND ADMIRAL WILLIAM F. MORAN

Chairman Wicker, Chairman Sullivan, Ranking Member Hirono, Ranking Member Kaine, distinguished Committee Members. On behalf of our sailors, marines and civilians serving around the world, thank you for your bipartisan efforts to restore funding stability to the Department of the Navy. The foundation for restoring readiness and increasing lethality has been set. Now we must build on that foundation with a sense of urgency, with a focus on our people, capabilities, and processes. While we have much to do, we are well underway, and I will highlight some of our progress.

The National Defense Strategy identifies three lines of effort to counter the increasingly complex security environment we face. The first is to build a more lethal and ready force. The second is to strengthen alliances. And the third is to reform the way we do business.

BUILDING A MORE LETHAL AND READY FORCE

We're increasing lethality and readiness through targeted investments in weapons platforms and munitions, while enhancing our partnerships with the private sector. We are gleaning commercial best practices to increase efficiency and flow in our maintenance facilities to turn the platforms back to the fleet as quickly as possible.

Overall investment in naval readiness has increased through funding for ship operations, ship depot maintenance, aviation depot maintenance, aviation spares, and flying hours. The Navy has accelerated acquisition for several key systems, including the Next Generation Frigate, MQ-25 unmanned aerial refueling system, Surface Navy Laser Weapons Systems and Standard Missile 6 Block 1B, while investing further in advanced tactical munitions including tactical tomahawks, long-range anti-ship missiles, rolling airframe missiles, and heavy weight torpedoes. The Navy has also significantly accelerated ship acquisition, procuring 22 Battle Force Ships over fiscal year 2017 and fiscal year 2018, while decommissioning nine ships.

The Marine Corps has increased modernization investments over the last three fiscal years, including 82 F-35 aircraft and 16 CH-53K and significant investments in the protected mobility of Marines at sea and ashore through acquisition of 56 new Amphibious Combat Vehicles. Enhanced investments also include close combat lethality equipment for Marine infantry, High Mobility Artillery Rocket Systems, advanced air defense systems, initial investments in a long range, ground-based, anti-ship missile system, and improved command and control systems aboard amphibious warships. All of the above enhance the Marine Corps' ability to provide enabling lethality to the Naval Force in a naval campaign at sea and from the sea.

We're also increasing the readiness of our existing fleet with \$1.1 billion in additional funding executed for ship maintenance; an increase from \$8.7 billion in fiscal

year 2017 to \$9.8 billion in fiscal year 2019. This additional funding enables ships to begin deployment training on time with improved materiel condition and modernized combat, communications, and engineering systems. We've partnered with our shipyards, public and private, to improve efficiency, reducing the maintenance backlog and increasing productivity vital for future naval growth. In the past 3 years we've reduced lost days to maintenance in the public shipyards by 11 percent (40 percent if excluding USS *Albany* and USS *Dwight D. Eisenhower*). In the past two years we have reduced workload carryover by 46 percent, which reflects our efforts to balance workload to capacity in order to improve productivity.

We've aggressively gone after readiness challenges in our operational submarine fleet, and identified three key drivers: public shipyard capacity, shipyard productivity, and parts availability. Working with our industry partners, we've been able to allocate multiple submarines to private shipyards in order to alleviate the disparity between demand and capacity within our public shipyards. Our first-ever Shipyard Infrastructure Optimization Plan, delivered to Congress earlier this year, establishes our roadmap to upgrade our drydocks, facilities, and equipment to improve overall productivity.

Today's naval shipyard training and development is a combination of class room, learning center development (hands-on in safe to learn environments), and on-the-job experience. In previous years, training could take up to 4 years, as the majority of the training and development was shadowing an experienced mechanic while 'on-the-job'. Naval shipyards have now reduced the time it takes to train and develop a worker by a least 50 percent. For example, it used to take over two years to train the top two trade skills (Marine Machinist and Pipefitter) at the four naval shipyards, but now, training and development for these skills has been reduced to 6–12 months.

The Marine Corps made significant improvements and investments in aviation readiness. Flight hours and aircrew proficiency are on-track to meet service goals. On average, Marine squadrons last year achieved readiness rates above service combat readiness standards for the first time since sequestration. Average flight hours per aircrew increased from 13.5 per month in fiscal year 2016 to 17.9 in fiscal year 2018, an increase of 32.6 percent; and the Marines invested heavily in aviation sustainment with the fiscal year 2017, fiscal year 2018 and fiscal year 2019 budgets. Over \$1.6 billion in parts will be delivered in total over that time to Marine aviation flight lines to improve the material condition of the aircraft to the service standard ahead of forecast. Marines continue to work aggressively to ensure the highest possible ground equipment readiness. Over the last three years, average readiness for mission essential ground equipment has increased to 92 percent in the active component operating forces and 95 percent in the maritime prepositioned force.

All of these investments are increasing our readiness and lethality capabilities. But our most important investments are in our greatest resource—our people. The Department of the Navy has increased the active duty force to 329,867 as of September 2018. We're also making key hires in developing areas, such as the force the Marine Corps has established for offensive and defensive cyber operations. We've also accelerated efforts to hire and train new public shipyard workers, bringing the total workforce at public shipyards from 34,918 in fiscal year 2017 to 36,696 in fiscal year 2018, meeting our fiscal year 2020 goal of 36,100 full-time equivalent workers one year earlier than originally planned.

To better assist and retain our personnel, while delivering on a promise to provide Sailor-focused customer service and around-the-clock assistance, we opened the MyNavy Career Center (MNCC) in September to provide Sailors with 24/7 human resource services. In the first month, MNCC resolved over 30,000 service requests, approximately 1,100 per day. The Tier 1 contact center agents resolved 88 percent during the initial contact and 96 percent were resolved in three days or less without the need to transfer issues to our Tier 2 subject matter experts. We also announced the military parental leave program to consolidate the legacy adoption, paternity and maternity leave policies, and to define primary and secondary caregiver leave guidelines. Finally, we implemented the Targeted Reentry Program to enable key former personnel a streamlined return into Active Duty, should they choose to return. The program also empowers our commanding officers to identify their high performers who do not intend to affiliate with the Ready Reserve and offer them a path to return to the Navy.

As we migrate to a continual learning organization, the Department of the Navy continues to invest in key development opportunities for our force, including developing the Naval Postgraduate School as a premier, relevant research and education institution. And we've increased readiness by adopting advanced technologies such as additive manufacturing that will flatten the supply chain, and more importantly

promote a culture of problem solving to enable our sailors and marines to “fix it forward”.

In the wake of the tragic USS *Fitzgerald* and USS *John S. McCain* collisions, the Department of the Navy conducted a Comprehensive Review (CR) and Strategic Readiness Review (SRR), which identified readiness reforms as a critical priority. In January of 2018, the Navy established the Readiness Reform Oversight Council (RROC) to oversee implementation of CR/SRR recommendations as well as related recommendations from other sources including the Government Accountability Office and the Navy Inspector General.

As of today, the RROC has considered 111 recommendations and fully implemented 78, with the remaining recommendations on track for adoption in accordance with programming schedules. We are now beginning to witness the benefits provided by those recommendations, from increased sea experience for our Surface Warfare Officers, to priority manning for the Department’s Forward Deployed Naval Forces, to restoring deliberate scheduling and implementing a new force generation model throughout U.S. Seventh Fleet, to Naval Surface Group Western Pacific which ensures readiness concerns are voiced in the natural tension between force supply and demand.

STRENGTHENING ALLIANCES AND ATTRACTING NEW PARTNERS

The Navy Marine Corps Team is strengthening our alliances and attracting new partners through joint exercises such as RIMPAC, Trident Juncture, Malabar and Bold Alligator, and increasing opportunities for our personnel and their allied counterparts to study together, serve together and operate as a single unit. Teaching, learning and exercising together seals a long term bond with those that will be part of the fight. Aligned and trained allies and friends are our force multiplier.

The foundation of our credibility as a reliable partner and effective deterrent is our forward presence. From the vast expanses of the Pacific, to the restricted waters of the Arabian Gulf, to the Caribbean, the Mediterranean, the North Atlantic and the Arctic, we are on watch alongside our allies and partners around the clock.

BUSINESS PROCESS REFORM

The Department of the Navy has made business process reform a top priority for our civilian and military leadership, promoting a continual learning enterprise that can identify, pursue, and rapidly achieve effectiveness and efficiency at the speed of relevance. For example, we’ve embraced lessons from commercial airline heavy-maintenance practices and their data-driven approach to improve Naval Aviation’s maintenance processes. This will be the foundation of the Navy Sustainment System. Fleet Readiness Centers are a good example of this kind of partnership, focused on reducing a significant backlog in aviation component repair parts. This effort is just one example of how the Naval Aviation Enterprise is working to improve readiness and achieve Secretary Mattis’ goal of 80 percent mission capable aircraft in our Fleet Strike Fighter squadrons by the end of fiscal year 2019.

As part of ongoing business reform initiatives, the Department of the Navy has reviewed duplicative programs and programs that are no longer mission essential. This has resulted in the divestiture of the Navy’s legacy F/A–18 Hornets (which the Marines continue to fly), the transition of the HH–60H reserve squadron from legacy aircraft to newer MH–60S aircraft, and a review of Marine Corps training munitions. Representative investments resulting from the reform initiative include an additional DDG–51, one additional F/A–18 E/F, increased procurement of Rolling Air Frame missiles and MK48 torpedoes, and funding afloat readiness to maximum executable levels.

Moreover, the Department is focused on improving business processes heightened through the audit of our financial statements. For example, the audit work has revealed that the complexity of our distribution network is too great for effective management, and this in turn leads to challenges with knowing the location and condition of all the parts and equipment we own. The audit has also revealed that we move money internally too many times before it arrives in the hands of the people who actually perform the work. The Department of the Navy is using this information to streamline our operations and reimagine how our support functions can be modernized in real time to increase readiness, lethality and efficiency.

The American taxpayers provide us with their treasure, and trust us to protect them from a dangerous world. And we owe it to them to ensure that every single dollar is invested in the most effective manner possible to fulfill our sacred oath. We appreciate the support and oversight of the Senate Armed Services Committee on behalf of the world’s finest Marines and Sailors, and look forward to your questions.

Senator WICKER. Thank you, Mr. Secretary.
Mr. Pendleton, I understand you also have an opening statement.
You are recognized.

**STATEMENT OF JOHN H. PENDLETON, DIRECTOR, DEFENSE
CAPABILITIES AND MANAGEMENT, UNITED STATES GOV-
ERNMENT ACCOUNTABILITY OFFICE**

Mr. PENDLETON. Chairman Wicker, Chairman Sullivan, Ranking Member Hirono, Ranking Member Kaine, thank you for inviting me to discuss our body of work on Navy and Marine Corps readiness issues.

I will break my statement into two parts. First, I will describe ship and submarine readiness, and then I will move to aviation.

Just over a year ago, I had the grim duty to report to you that Navy training was not up to its own standards. Training requirements at that time were being waived at an alarming rate. The Navy, in a series of internal studies, concluded that this lack of training had contributed to the deadly collisions.

When I learned that I would be testifying at this hearing, I decided to go out to Japan to see for myself how things were going. What I found was encouraging. The Navy has stepped up training to make sure that ship crews are deployed before they train, and they have committed to provide dedicated training time going forward. Things had improved markedly.

However, this is keeping the sailors very busy. We talked to 10 groups of sailors on two ships out in Japan, and they told us the sense of morale was high, but that they are still working very hard, sometimes 100 hours a week or more. I am concerned that this reveals an underlying problem still facing the Navy, that it simply is not yet putting enough sailors on the ships to cover the workload.

We reported on this last year, and the Navy is working to develop ship manning requirements, both at sea and in port, and we eagerly await the results of those studies, as I suspect a number of hardworking sailors do as well.

Completing maintenance on time has proven to be a wicked problem. Since 2012, the Navy has lost more than 27,000 days of ship and submarine availability due to delays getting in and out of maintenance. 2018 was particularly challenging with the equivalent of 17 ships and subs not available because they were waiting to get into or out of maintenance.

Looking forward, I do see some cause for concern because the dry docks are short about a third of the capacity that will be needed to conduct the planned maintenance that the Navy already has on the books, and that does not include the fleet increase.

Moving to aviation, the issues center around sustaining older aircraft while incorporating new aircraft into the fleet. In a report earlier this year, we looked at seven different Navy and Marine Corps aircraft, and none were meeting availability goals, and those availability goals were less than 80 percent. Many had delays in depot due to personnel and parts shortages and unexpected repairs due to their age. As you know, the Hornet, the Harrier, and other aircraft are 20 or more years old, and we are having to extend their service life to bridge the gap until more F-35s come into the fleet.

Moving to the F-35, early indications incorporating the fleet is we are seeing some challenges there as well. We found in a report last year that depot capabilities were already 6 years behind. What that meant as a practical matter is it took months, sometimes 6 months or more, to get the parts repaired and back out to the fleet.

I understand the rush to field F-35, and I know the Navy and the Marine Corps and DOD is working on this. But we feel additional attention has to be paid to sustaining the F-35.

As mentioned, the Secretary of Defense has established a goal to have 80 percent mission capability of several aircraft, including the F-35, by next year. This will be difficult to achieve in my assessment, and I offer a couple of cautions as we move forward on this, Mr. Chairman.

Consistent and clear definitions will be critical. There have been some efforts to define what we mean, both in the numerator and the denominator of that 80 percent. I think that is a step in the right direction. This is basically the 80 percent of what question.

Secondly, we need to be sure that everyone understands what mission-capable is. It does not mean the aircraft can do all the missions it might be assigned to it. That is typically called fully mission-capable, and that is typically lower because they need to perform all the missions, including the high-end missions. When we looked at the F-35 last year, it had a 15 percent fully mission-capable rate. This has significant implications for a high-end fight because those difficult missions are the ones that are often hard to find time to train for.

In closing, Mr. Chairman, as my statement indicates, we have 45 recommendations to the Navy and the Marine Corps and DOD. I am happy to report to you there is progress being made on those recommendations. We see actions being taken. We have not closed that many of them, but we are working closely with the Navy and monitoring progress and I am encouraged by what I see. But make no mistake, it will take significant time to rebuild the readiness of the ship, submarine, and aviation fleets, and it will require sustained attention.

We stand ready to assist you in your oversight, and I am happy to take any questions.

[The prepared statement of Mr. Pendleton follows:]



United States Government Accountability Office

Testimony

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

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NAVY AND MARINE CORPS

Rebuilding Ship, Submarine, and Aviation Readiness Will Require Time and Sustained Management Attention

Statement of John H. Pendleton,
Director, Defense Capabilities and Management

GAO Highlights

Highlights of GAO-19-225T, a testimony before the Subcommittees on Seapower and Readiness and Management Support, Committee on Armed Services, U.S. Senate

Why GAO Did This Study

The 2018 National Defense Strategy emphasizes that restoring and retaining readiness is critical to success in the emerging security environment. The Navy and Marine Corps are working to rebuild the readiness of their forces while growing and modernizing their aging fleet of ships and aircraft. However, achieving readiness recovery goals will take years as both services continue to be challenged to rebuild readiness amid continued operational demands.

This statement provides information on current and future readiness challenges facing (1) the Navy ship and submarine fleet and (2) Navy and Marine Corps aviation. GAO also discusses prior recommendations on Navy and Marine Corps readiness and progress to address them.

This statement is based on previously published work since 2015 related to Navy and Marine Corps readiness challenges, including shipyard workforce and capital investment, ship crewing, weapon system sustainment, the fighter pilot workforce, and modernizing force structure. GAO conducted site visits to the Pacific fleet in November 2018 and analyzed updated data, as appropriate.

What GAO Recommends

GAO has made a total of 45 recommendations in the prior work described in this statement. The Department of Defense concurred with most of them, and has many actions underway, but has not yet fully implemented any. Attention to these recommendations can assist the Navy and the Marine Corps as they seek to rebuild the readiness of their forces.

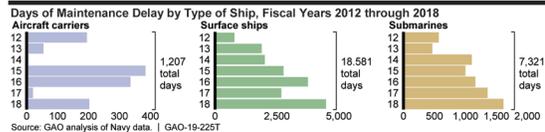
View GAO-19-225T. For more information, contact John H. Pendleton at (202) 512-3489 or pendletonj@gao.gov.

December 12, 2018
NAVY AND MARINE CORPS

Rebuilding Ship, Submarine, and Aviation Readiness Will Require Time and Sustained Management Attention

What GAO Found

The Navy has taken steps to address training shortfalls in the surface fleet, but faces persistent maintenance and personnel challenges as it seeks to rebuild ship and submarine readiness. While the Navy has corrective actions underway, they will take years to implement. Following ship collisions in 2017, the Navy has taken steps to ensure its crews are trained to standards prior to deployment and made significant progress in those efforts. However, the Navy has struggled to complete ship maintenance—with only 30 percent of maintenance completed on time since fiscal year 2012—leading to thousands of days that ships were unavailable for training and operations (see figure). Additionally, manning shortfalls and experience gaps continue to contribute to high sailor workload and are likely to continue through at least fiscal year 2021. The Navy has developed a plan to improve shipyards and is re-examining its ship manning, among other actions; however, these positive steps have not yet fully addressed GAO’s recommendations. Looking to the future, the Navy has indicated that it wants to grow its fleet to meet demands. However, the costs of such growth are not yet known and would likely require resourcing well above currently planned levels.



Navy and Marine Corps aircraft availability has been limited due to numerous challenges (see figure). Specifically, the seven aircraft GAO reviewed have generally experienced decreasing availability since fiscal year 2011 and did not meet availability goals in fiscal years 2017 and 2018. The F-35—the future of naval aviation—also has not met availability goals due to part shortages and poor sustainment planning. In September 2018, the Department of Defense established aggressive targets for aircraft availability. While the Navy and Marine Corps are taking actions to improve aircraft availability, including addressing GAO’s recommendations, aviation readiness will take many years to recover.

Sustainment Challenges Affecting Selected Navy and Marine Corps Aircraft

Aircraft	Aging aircraft		Maintenance		Supply support	
	Delays acquiring replacement aircraft	Unexpected replacement of parts and repairs	Delays in depot maintenance	Shortage of depot maintainer personnel	Parts obsolescence	Diminishing manufacturing source
AV-8B	✓	✓	✓	✓	✓	✓
C-2A		✓	✓	✓	✓	✓
E-2C		✓	✓	✓	✓	✓
E-2D		✓	✓	✓	✓	✓
EA-18 G		✓	✓	✓	✓	✓
F/A-18 A-D	✓	✓	✓	✓	✓	✓
F/A-18 E-F		✓	✓	✓	✓	✓

Source: GAO analysis of Navy data. | GAO-19-225T

Chairmen Wicker and Sullivan, Ranking Members Hirono and Kaine, and Members of the Subcommittees:

Thank you for the opportunity to be here today to discuss issues related to Navy and Marine Corps readiness.

In June 2017, we issued a report highlighting five key mission challenges facing the Department of Defense (DOD).¹ In that report, we noted that the United States faces an extremely challenging national security environment at the same time it is grappling with addressing an unsustainable fiscal situation in which DOD accounts for approximately half of the federal government's discretionary spending. Within this environment, DOD is working to both rebuild the readiness of its current forces and modernize to meet future threats. Since we issued that report, the department released a new National Defense Strategy in January 2018 that prioritizes the long-term challenges posed by highly capable adversaries and emphasizes the need to rebuild readiness. Additionally, Congress has passed appropriations to fund DOD's effort to restore readiness.

This statement provides information on current and future readiness challenges facing the (1) Navy ship and submarine fleet and (2) Navy and Marine Corps aviation. In appendix I, we also summarize our recommendations related to Navy and Marine Corps readiness that we have made in prior reports and we summarize any progress the Navy and Marine Corps have made to implement those recommendations.²

This statement is based on prior reports we issued from 2015 through 2018 examining Navy and Marine Corps readiness challenges, shipyard workforce and capital investment, ship crewing, weapon system sustainment, the fighter pilot workforce, and force structure.³ To perform

¹This report included a detailed discussion of our priority recommendations to DOD. Since August 2015, we have identified priority recommendations in letters to the Secretary of Defense—recommendations that we have made to DOD that we believe the department should give a high priority to addressing. See GAO, *Department of Defense: Actions Needed to Address Five Key Mission Challenges*, GAO-17-369 (Washington, D.C.: June 13, 2017). As of April 2018, 85 priority recommendations remained open.

²Appendix I does not include classified recommendations made in classified reports, reports without recommendations, and reports in which we directed recommendations exclusively to the Office of the Secretary of Defense or the Department of the Air Force.

³A list of related classified and unclassified GAO products is provided in the Related GAO Products pages at the end of this statement.

our prior work, we analyzed Navy and Marine Corps readiness, maintenance, personnel, and training data, and interviewed cognizant Navy and Marine Corps officials involved in operations. The reports cited throughout this statement contain more details on the scope of the work and the methodology used to carry it out. This statement also includes updates to information as of November 2018, as appropriate, based on Navy and Marine Corps documentation and discussions with senior Navy leadership, the Fleet Forces Command, the Pacific Fleet, and other officials. We also conducted 10 group discussions with officers and enlisted personnel aboard a cruiser and a destroyer based in Yokosuka, Japan in November 2018 to discuss crew workload, training, and ship manning.⁴ We have also issued several classified reports since 2015 examining these issues and made recommendations to the Navy and the Marine Corps; however, this statement does not include that work.

We conducted the work on which this testimony 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.

Background

We testified before the Senate Committee on Armed Services in September 2017 after four significant mishaps at sea resulted in the loss of 17 sailors' lives and serious damage to Navy ships.⁵ We reported on some of the Navy's challenges, including the degraded condition and expired training certifications of ships homeported overseas, reductions to ship crews that contributed to sailor overwork and safety risks, and an inability to complete maintenance on time. Since that time, the Navy has completed two internal reviews to address these and other challenges, identifying 111 recommendations to improve surface fleet readiness. The Navy formed an executive group to guide and closely track the implementation of recommendations, and its reform efforts are ongoing. As of November 2018, the Navy reported that it had implemented 78 (i.e.,

⁴Discussions were held separately with Navy officers and enlisted personnel. The results of the discussions are not generalizable beyond the individuals we talked to.

⁵GAO, *Navy Readiness: Actions Needed to Address Persistent Maintenance, Training, and other Challenges Affecting the Fleet*, GAO-17-809T (Washington, D.C.: Sept. 19, 2017).

70 percent) of these recommendations. Navy officials recognize that full implementation will take significant time and management attention to address the fundamental readiness challenges identified. In figure 1, we show photographs of two of the four Navy ships involved in significant mishaps that occurred in 2017. Both the USS *Fitzgerald* and the USS *John S. McCain* were involved in collisions that resulted in sailor fatalities.

Figure 1: USS *Fitzgerald* Receiving Dry Dock Repairs and USS *John S. McCain* on Heavy Lift Transport after 2017 Collisions



USS *Fitzgerald*

USS *John S. McCain*

Source: Defense Visual Information Distribution Service. | GAO-19-225T

DOD has reported that more than a decade of conflict, budget uncertainty, and reductions in force structure have degraded its readiness; in response, the department has made rebuilding readiness a priority. The 2018 National Defense Strategy emphasizes that restoring and retaining readiness across the entire spectrum of conflict is critical to success in the emerging security environment. Nevertheless, DOD reported that readiness of the total military force remains low and has remained so since 2013. Our work has shown that the Navy has experienced increasing maintenance challenges as a high pace of operations has continued and maintenance has been deferred.⁶ Maintenance and personnel challenges also hinder readiness recovery of Navy aircraft. For the Marine Corps, our work has shown that ground force readiness has improved and remained stable in recent years, but acute readiness problems remain in aviation units.

⁶GAO-17-369.

Over the past year, DOD has made department-wide progress in developing a plan to rebuild the readiness of the military force, with the military services providing regular input on the status of their readiness recovery efforts.⁷ In August 2018, we reported that the Office of the Secretary of Defense has developed a Readiness Recovery Framework that the department is using to guide the services' efforts and plans to use to regularly assess, validate, and monitor readiness recovery.⁸ The Office of the Secretary of Defense and the services have recently revised readiness goals and accompanying recovery strategies, metrics, and milestones to align with the 2018 National Defense Strategy and Defense Planning Guidance. We have ongoing work assessing DOD's progress in achieving its overall readiness goals.⁹

DOD's readiness rebuilding efforts are occurring in a challenging context that requires the department to make difficult decisions regarding how best to address continuing operational demands while preparing for future challenges. Our work has shown that an important aspect of this, across all of the services, is determining an appropriate balance between maintaining and upgrading legacy weapon systems currently in operational use and procuring new ones to overcome rapidly advancing future threats.

⁷In September 2016, we reviewed DOD and the military services' plans to rebuild readiness and reported that the efforts may be at risk without a department-wide plan for moving forward. We made five recommendations on implementing and overseeing readiness rebuilding efforts. See GAO, *Military Readiness: DOD's Readiness Rebuilding Efforts May Be at Risk without a Comprehensive Plan*, GAO-16-841 (Washington, D.C.: Sept. 7, 2016).

⁸GAO, *Military Readiness: Update on DOD's Progress in Developing a Readiness Rebuilding Plan*, GAO-18-441RC (Washington, D.C.: Aug. 10, 2018). The Readiness Recovery Framework identifies primary readiness issues that each of the military services face, actions to address identified issues, and milestones and metrics to assess progress in addressing identified issues.

⁹Section 333 of the John S. McCain National Defense Authorization Act for Fiscal Year 2019, Pub. L. No. 115-232 (2018), requires us to report annually until 2021 on the readiness of the armed forces to conduct full spectrum operations in the ground, sea, air, space, and cyber domains.

The Navy Fleet Faces Challenges in Rebuilding Readiness and the Costs Associated with Expanding the Fleet to Enhance Readiness in the Future Are Unknown

Based on updated information we received in November 2018, the Navy has taken steps to provide dedicated training time so its surface forces may meet existing Navy training standards and their training is certified when they deploy. However, the Navy continues to struggle with rebuilding the readiness of the existing fleet due to enduring maintenance and manning challenges. As the Navy seeks to expand its fleet by 25 percent, these challenges will likely be further exacerbated and the Navy will likely face additional affordability challenges.

Navy Has Taken Steps to Address Training Shortfalls in the Surface Fleet

After the collisions in 2017, the Navy focused on training surface ship crews to its existing standards. We testified in September 2017 that there were no dedicated training periods built into the operational schedules of the cruisers and destroyers based in Japan and 37 percent of training certifications for these surface ship crews had lapsed as of June 2017. Since that time, the Navy has worked to ensure surface ships are certified before they are deployed. For example, the Navy has established controls to limit waivers that allowed training lapses to worsen, now requiring multiple high-level approvals for ships to operate uncertified. Based on our analysis of updated data, the Navy has improved markedly in the percentage of cruisers and destroyers with lapsed certifications in Japan, from 41 percent of certifications expired in September 2017 to 9 percent as of November 2018, with less than 3 percent of certifications expired on ships in operational status.

While the Navy has demonstrated its commitment to ensuring that crew s are certified prior to deploying, training for amphibious operations and higher-level collective training may not be fully implemented for several years. In September 2017, we reported that some Marine Corps units were limited in their ability to complete training to conduct an amphibious operation—a military operation that is launched from the sea to introduce a landing force ashore—by several factors, including a decline in the number of amphibious ships from 62 in 1990 to 32 as of November 2018, access to range space, and a high pace of deployments, among others. We recommended that the Navy and the Marine Corps develop an approach to mitigate their amphibious operations training shortfalls as the services await the arrival of additional amphibious ships into the fleet. Marine Corps officials told us that the Marine Corps and the Navy are

working together to maximize amphibious training opportunities. Additionally, the Navy has plans to phase in high-level collective training into the operational schedules of its ships homeported in Japan over the next several years. Previously, advanced and integrated training involving multiple ships was conducted ad hoc if at all for ships homeported in Japan. Such collective training is important because the 2018 National Defense Strategy states that the department's principal priority is to prepare for threats from strategic competitors due to the magnitude of the threat they pose. However, in November 2018, officials from Fleet Forces Command told us that fully implementing its training approach to prepare for advanced adversaries would not be fully implemented across the fleet for several years.

The Fleet Faces Persistent Maintenance and Personnel Challenges as the Navy Seeks to Rebuild Readiness

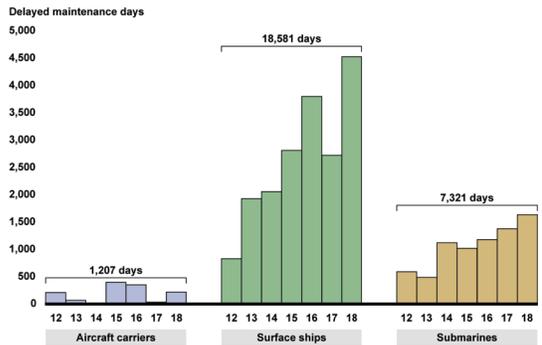
We have reported that the Navy faces persistent challenges in completing maintenance on time and providing sufficient manning to its ships. Unless these challenges are addressed, the Navy will be hampered in its ability to rebuild readiness and prepare for the future.

Maintenance Delays for Ships and Submarines Reduce Time for Training and Operations

Our work has found that the Navy has been unable to complete ship and submarine maintenance on time, resulting in continuing schedule delays that reduce time for training and operations and create costly inefficiencies in a resource constrained environment. The Navy's readiness recovery is premised on the rigorous adherence to deployment, training, and maintenance schedules. However, we reported in May 2016 on the difficulty that both the public and private shipyards were having in completing maintenance on time.¹⁰ We reported that, from 2011 through 2014, about 28 percent of scheduled maintenance for surface combatants was completed on time and 11 percent was completed on time for aircraft carriers. We updated these data as of November 2018 to include maintenance periods completed through the end of fiscal year 2018 and found that the Navy continues to struggle to complete maintenance on time. For fiscal years 2012-2018, our analysis for key portions of the Navy fleet shows that 30 percent of Navy maintenance was completed on time, leading to more than 27,000 days in which ships were delayed and unavailable for training and operations as shown in figure 2 below.

¹⁰GAO, *Military Readiness: Progress and Challenges in Implementing the Navy's Optimized Fleet Response Plan*, GAO-16-466R (Washington, D.C.: May 2, 2016).

Figure 2: Aircraft Carrier, Surface Ship, and Submarine Days of Maintenance Delay, Fiscal Years 2012–2018



Source: GAO analysis of Navy data. | GAO-19-225T

Note: In order to standardize the analysis across data for aircraft carriers, surface ships, and submarines, we calculated days of maintenance delay based on the difference between actual and planned completion dates. Additionally, these delayed maintenance days are arranged by the fiscal year in which they occurred. We included maintenance delays for converting decommissioned submarines to training ships because those conversions require shipyard resources and workers, and restrict the use of limited drydocks. Delayed maintenance days for aircraft carrier and submarine data for this analysis are limited to the Navy's public shipyards and do not include data from private shipyards. As we reported in November 2018, attack submarine maintenance performed at private shipyards also experienced delays in execution. Additionally, data are not captured in this analysis for aircraft carrier and submarine maintenance availabilities that began prior to fiscal year 2010, as well as surface ship maintenance availabilities that began prior to fiscal year 2012, that may have resulted in delays that occurred after fiscal year 2012. Data showing delayed maintenance days for aircraft carriers and submarines are as of November 2018, for surface ships the data are as of October 2018.

In addition to affecting training and operations, maintenance delays are costly. In November 2018, we examined attack submarine maintenance delays and reported that the Navy was incurring significant operating and support costs to crew, maintain, and support attack submarines that are delayed getting into and out of shipyard maintenance periods. We estimated that over the past 10 years the Navy has spent \$1.5 billion in fiscal year 2018 constant dollars to support attack submarines that provide no operational capability—those sitting idle no longer certified to conduct normal operations—while waiting to enter the shipyards, and

those delayed in completing their maintenance at the shipyards (see figure 3).¹¹ We recommended that the Navy analyze how it allocates its maintenance workload across public and private shipyards. DOD concurred with our recommendation, stating that it has taken the first steps to take a more holistic view of submarine maintenance requirements and impacts across both the public and private shipyards. In an update provided in November 2018, the Navy told us that they are developing a contracting strategy to conduct two additional depot maintenance periods at private shipyards in the future.

¹¹While acknowledging the magnitude of these costs, Navy officials stated that there may be some benefits that could be realized from supporting these idle attack submarines since crews on idle attack submarines can conduct some limited training. GAO, *Navy Readiness: Actions Needed to Address Costly Maintenance Delays Facing the Attack Submarine Fleet*, GAO-19-229 (Washington, D.C.: Nov. 19, 2018).

Figure 3: USS Albany Undergoing an Extended Maintenance Period at Norfolk Naval Shipyard



Source: U.S. Navy | GAO-19-225T

Our prior work has shown that three primary factors at the naval shipyards contribute to maintenance delays:

- **Poor conditions and aging equipment limit the ability of the shipyards to meet current and future demands.** We reported in September 2017 that facility and equipment limitations at the shipyards contributed to maintenance delays for the aircraft carriers and submarines, hindering the shipyards' ability to support the Navy. Specifically, we found that the shipyards would be unable to support an estimated one-third of maintenance periods planned over the next

23 years.¹² We recommended that the Navy take steps to improve its management of shipyard investments; the Navy concurred with this recommendation and we are encouraged by its response.¹³ For example, the Navy has developed a plan for the optimal placement of facilities and major equipment at each public shipyard, which the Navy estimates can ultimately increase its maintenance efficiency by reducing personnel and materiel travel by an average of 65 percent. This equates to recovering about 328,000 man days per year—an amount roughly equal to that of an aircraft carrier maintenance period. However, the Navy's preliminary estimate—that this effort will require an estimated \$21 billion and 20 years to address—is well beyond historical funding levels, and does not include some potentially significant costs (e.g., for utilities, roads, or environmental remediation).¹⁴

- **Shipyard workforce gaps and inexperience are limiting factors.** The Navy has reported a variety of workforce challenges at the Navy's four public shipyards such as hiring personnel in a timely manner and providing personnel with the training necessary to gain proficiency in critical skills.¹⁵ The Navy has noted that some occupations require years of training before workers become proficient. According to Navy officials, a large portion of its workforce is inexperienced. For example, 45 percent of the Puget Sound and 30 percent of the

¹²This estimate did not factor in planned increases to the fleet that would make the shortfalls even greater.

¹³GAO, *Naval Shipyards: Actions Needed to Improve Poor Conditions that Affect Operations*, GAO-17-548 (Washington, D.C.: Sept. 12, 2017). Senate Report 115-130, accompanying a bill for the Military Construction, Veterans Affairs, and Related Agencies Appropriations 2018 and Senate Report 115-125, accompanying a bill for the National Defense Authorization Act for Fiscal Year 2018 directed the Secretary of the Navy to submit a report providing an engineering master plan for the optimal placement of facilities and major equipment to support ship repair functions at each public shipyard, including an investment strategy to address the infrastructure requirements at each shipyard.

¹⁴Naval Sea Systems Command, *Report to Congress: Shipyard Infrastructure Optimization Plan, Report on the Navy's Strategic Plan for Addressing the Infrastructure Deficiencies at the Public Naval Shipyards* (Washington, D.C.: February 2018).

¹⁵The four public naval shipyards—Portsmouth Naval Shipyard, Norfolk Naval Shipyard, Puget Sound Naval Shipyard and Intermediate Maintenance Facility, and Pearl Harbor Naval Shipyard and Intermediate Maintenance Facility—provide depot-level maintenance, which the Navy describes as the most involved and time-consuming maintenance work (e.g. overhauls, alterations, refits, restorations, nuclear refueling, and deactivations). Two private shipyards—General Dynamics Electric Boat and Huntington Ingalls Industries-Newport News Shipbuilding—build the Navy's nuclear-powered ships and in some cases provide depot-level maintenance.

Portsmouth Naval Shipyards' skilled workforce have fewer than 5 years of experience. According to DOD officials, workforce shortages and inexperience contribute to maintenance delays. For example, at Pearl Harbor Naval Shipyard, two submarines were delayed approximately 20 months, in part because of shortages in ship fitters and welders, among other skilled personnel. Most of DOD's depots, which include the naval shipyards, have taken actions to maintain critical skills through retention incentives, bonuses, and awards. We plan to issue a report examining DOD's depot skill gaps, including those at the naval shipyards, later this month.

- **Depot supply support may not be cost-effective.** In June 2016, we reported that the naval shipyards and other depots had not implemented actions that would likely improve the cost-effectiveness of their supply operations. Specifically, the Navy had not transferred certain functions to the Defense Logistics Agency (DLA) at the shipyards in the same manner as the Navy and Air Force did for their aviation depots.¹⁶ The Navy and Air Force aviation depots that transferred these functions to DLA had reaped a number of efficiencies in their supply operations, including a 10-percent reduction in backorders over a 5-year period. We recommended that the Navy analyze whether such a transfer of functions is warranted at the shipyards and the Navy concurred with the recommendation.¹⁷ However, as of October 2018, the Navy had not conducted a comprehensive analysis of transferring these functions and had provided no plans to do so.

Navy Processes for
Determining Manning of Ships
Do Not Account for All Ship
Workload

In May 2017, we reported that the Navy's process for determining manpower requirements—the number and skill mix of sailors needed on the Navy's ships—did not fully account for all ship workload.¹⁸ The Navy was using outdated standards to calculate the size of ship crews that may have been leading to overburdened crews working long hours. We

¹⁶The Navy's aviation depots are called Fleet Readiness Centers. The Navy operates three Fleet Readiness Centers at Cherry Point, North Carolina; Jacksonville, Florida; and North Island, California. The Air Force's aviation depots are referred to as Air Logistics Complexes and are located in Warner Robins, Georgia; Oklahoma City, Oklahoma; and Ogden, Utah.

¹⁷GAO, *Defense Inventory: Further Analysis and Enhanced Metrics Could Improve Service Supply and Depot Operations*, GAO-16-450 (Washington, D.C.: June 9, 2016).

¹⁸GAO, *Navy Force Structure: Actions Needed to Ensure Proper Size and Composition of Ship Crews*, GAO-17-413 (Washington, D.C.: May 18, 2017).

recommended steps to help ensure the Navy's manpower requirements meet the needs of the existing and future surface fleet, and the Navy has been studying ship workload and revising its guidance. As of November 2018, the Navy was continuing to analyze the manpower requirements of its ship classes to better size and compose ship crews, and the Navy was also working to improve shipboard manning. However, these efforts are not yet complete and it is too early to assess their effectiveness. Until manpower requirements are reassessed across the fleet, the Navy risks that ship crews will continue to be undersized and sailors will be overworked with potential negative effects on readiness and safety.

Additionally, the Navy provided information in November 2018 that showed that it is taking steps to ensure that ships have a minimum percentage of crew assigned and with the appropriate skills. The Navy has prioritized manning its surface ships homeported overseas. The Navy established a minimum threshold of filling at least 95 percent of authorized billets in its ship crews with sailors (referred to as fill), with a minimum goal of 92 percent of those sailors having the right qualifications for the billet (known as fit). According to Navy officials, the Navy is for the most part meeting its fill goals Navy-wide, but has not consistently met its fit goals. However, during group discussions in November 2018 with ship crews and interviews with Navy officials in Japan, we learned that the Navy's methods for tracking fit and fill do not account for sailor experience and may be inaccurately capturing the actual presence of sailors onboard and available for duty on its ships. Moreover, sailors consistently told us that ship workload has not decreased, and it is still extremely challenging to complete all required workload while getting enough sleep. Navy officials told us that manning challenges will continue through at least fiscal year 2021 as the Navy increases its end strength and trains its new sailors to gain the proper mix of skills to operate and maintain the fleet.

Navy Plans to Expand Its Fleet but Full Costs Are Unknown and Manning an Expanded Fleet Likely Will Be Challenging

To meet continued operational demands, the Navy is planning for the most significant fleet size increase in over 30 years. According to the Navy's fiscal year 2019 shipbuilding plan, the Navy plans to build and maintain a fleet of 355 battle force ships—an increase of about 25 percent above the Navy's current force of 287 ships.¹⁹ To reach its goal, the Navy plans to buy 301 ships through 2048 and extend the service life of its 66 Arleigh Burke class destroyers and up to 7 attack submarines.²⁰ Together, the fiscal year 2019 shipbuilding plan and the service life extensions would allow the Navy to reach a 355-ship fleet by the 2030s.

Congressional Budget Office reporting and our past work have shown that the Navy has consistently and significantly underestimated the cost and timeframes for delivering new ships to the fleet. For example, the Navy estimates that buying the new ships specified in the fiscal year 2019 plan would cost \$631 billion over 30 years while the Congressional Budget Office has estimated that those new ships would cost \$801 billion—a difference of 27 percent.²¹ We also reported in June 2018 that acquisition outcomes for ship classes built during the last 10 years have often not achieved cost, schedule, quality, or performance goals that were established.²² Furthermore, we have reported that:

- all 8 of the lead ships delivered over the past decade that we reviewed were provided to the fleet behind schedule, and more than half of those ships were delayed by more than 2 years,²³ and
- six ships of different classes valued at \$6.3 billion were delivered to the Navy with varying degrees of incomplete work and quality problems.²⁴

¹⁹Department of the Navy, *Report to Congress on the Annual Long-Range Plan for Construction of Naval Vessels for Fiscal Year 2019* (February 2018). This plan reflects the Navy's plan to meet its 2016 force structure assessment.

²⁰Of the 301 ships, the Navy plans to purchase 245 combat ships and 56 combat logistics and support ships.

²¹Congressional Budget Office, *An Analysis of the Navy's Fiscal Year 2019 Shipbuilding Plan* (Washington, D.C.: October 2018). CBO's estimates are higher than the Navy's because CBO and the Navy made different assumptions about the design and capabilities of some future ships, used different estimating methods, and treated growth in shipbuilding labor and materials costs differently.

²²GAO, *Navy Shipbuilding: Past Performance Provides Valuable Lessons for Future Investments*, GAO-18-238SP (Washington, D.C.: June 2018).

²³GAO-18-238SP.

As a result of past cost and schedule problems, our work has shown that the Navy has a less-capable and smaller fleet today than it planned over 10 years ago. The Navy has also received \$24 billion more in funding than it originally planned in its 2007 long-range shipbuilding plan but has 50 fewer ships in its inventory today, as compared with the goals it first established. Therefore, we have reported that as the Navy moves forward in implementing its shipbuilding plan it will be paramount for the Navy to learn from and apply lessons learned from the past.

In addition to the cost of buying the ships and submarines to expand fleet size, the Navy will likely face affordability challenges with regard to the manning of an expanded fleet with the right number of sailors with the right mix of skills. In May 2017, we reported that the personnel costs for surface ship classes in fiscal years 2000-2015 were the largest share of total operating and support costs and that careful planning will be needed as new ships are brought into the fleet.²⁴ We also reported that crew sizes on recently inducted ship classes grew from original projections as the Navy gained experience operating them. For example, the total crew size of Littoral Combat Ships has grown from 75 in 2003 to 98 personnel in 2016, a 31-percent increase. Navy officials told us that they plan to better articulate the personnel and resources needed for a larger fleet after fully accounting for workload and right-sizing ship crews. The Navy's end strength has since increased by over 11,000 personnel from fiscal year 2017 levels, which should help alleviate manning challenges as the fleet grows. In November 2018, officials from Fleet Forces Command provided us with projections of its manning shortfalls continuing through at least fiscal year 2021 and steps it was planning to take to mitigate them.

²⁴GAO, *Navy Shipbuilding: Policy Changes Needed to Improve the Post-Delivery Process and Ship Quality*, GAO-17-418 (Washington, D.C.: July 13, 2017). According to Navy officials, incomplete work and quality problems in acquisition programs shifts repair costs from the shipbuilding accounts to the fleet's operations and maintenance accounts and contributes to a maintenance backlog from the first day the fleet is responsible for the ship.

²⁵GAO-17-413. According to DOD, operating and support costs—which include personnel and maintenance costs—have traditionally constituted about 70 percent of a ship's total life-cycle costs.

Navy and Marine Corps Aging Aircraft and F-35s Face Maintenance and Supply Challenges That Affect Readiness Rebuilding Now and in the Future

Our work has shown that Navy and Marine Corps aircraft availability has been limited by aging aircraft, delayed maintenance, and insufficient supply support. Pilot and maintenance personnel shortfalls further limit readiness recovery across legacy air platforms. The growing F-35 program, which is meant to replace many aging aircraft, has presented additional operational and sustainment challenges, which will likely persist into the future if not corrected. DOD, the Navy, and the Marine Corps have emphasized mission capability of critical aviation platforms—including the Navy and Marine Corps F/A-18s and F-35s—and are taking steps to improve availability, but these efforts will take time to realize results.

Aircraft Availability Has Been Limited by Aging Fleets with Maintenance and Supply Challenges

Navy and Marine Corps aircraft availability has been limited by challenges associated with aging aircraft fleets, depot maintenance, and supply support challenges that limit the services' ability to keep aviation units ready.²⁶ The Navy and Marine Corps spend billions of dollars each year on sustainment, such as for spare parts and depot maintenance, to meet aircraft availability goals.²⁷ However, aircraft availability rates have generally declined since fiscal year 2011. While specific aircraft availability data are considered sensitive by the Navy and the Marine Corps, and cannot be discussed in detail, we found in September 2018 that the Navy and the Marine Corps generally did not meet aircraft availability goals in fiscal years 2011-2016 for the seven aircraft we reviewed. In updating data in November 2018, we found that none of the aircraft met aircraft availability goals for fiscal years 2017 and 2018.

According to the Navy, the pace of operations has increased wear and tear on its aircraft and decreased the time available for maintenance and modernization—a necessity for an aging fleet. For example, the average age of a legacy F/A-18A-D Hornet is 26 years, of an AV-8B Harrier is 21 years, and of the C-2A Greyhound is 29 years. Both services expect

²⁶GAO, *Weapon System Sustainment: Selected Air Force and Navy Aircraft Generally Have Not Met Availability Goals, and DOD and Navy Guidance Need to Be Clarified*, GAO-18-678 (Washington, D.C.: Sept. 10, 2018).

²⁷Based on our analysis of the operating and support (O&S) costs in fiscal years 2011-2016, maintenance cost generally is one of the largest portions—about 42 percent—of total O&S costs for the seven aircraft we reviewed. GAO-18-678.

these aircraft will continue to be used for the foreseeable future and in some cases into the 2030s.²⁸

The Navy and the Marine Corps face delays in the arrival of the F-35 to replace their legacy F/A-18A-D Hornets and AV-8B Harriers.²⁹ To compensate for the delay, the Navy and the Marine Corps are planning to procure additional aircraft, such as the F/A-18E-F Super Hornet, and extend the service life and upgrade the capabilities of their legacy aircraft. However, these efforts and the sustainment of the Navy and Marine Corps legacy aircraft fleet face key challenges as shown in figure 4.

Figure 4: Sustainment Challenges Affecting Selected Navy and Marine Corps Aircraft

Aircraft	Aging aircraft		Maintenance		Supply support	
	 Delays in acquiring replacement aircraft	 Unexpected replacement of parts and repairs	 Delays in depot maintenance	 Shortage of depot maintainer personnel	 Parts obsolescence ^a	 Diminishing manufacturing source ^b
AV-8B	✓	✓	✓	✓	✓	✓
C-2A		✓	✓	✓	✓	✓
E-2C		✓	✓	✓	✓	✓
E-2D			✓	✓	✓	✓
EA-18 G			✓	✓		✓
F/A-18 A-D	✓	✓	✓	✓	✓	✓
F/A-18 E-F		✓	✓	✓		✓

Source: GAO analysis of Navy data. | GAO-19-225T

^aObsolescence is a lack of availability of a part due to its lack of usefulness or it is no longer current or available for production.

^bDiminishing manufacturing source is a loss or impending loss of manufacturers or suppliers of items.

²⁸GAO-18-678.

²⁹GAO-18-678.

Specifically, our prior work has shown that the Navy and the Marine Corps are confronted with two sets of challenges in sustaining their aircraft:

- **Depot maintenance complexities for aging aircraft and spare parts availability.** Depot maintenance on aging weapon systems, including Navy and Marine Corps aircraft, becomes less predictable as structural fatigue occurs and parts that were not expected to be replaced begin to wear out.³⁰ While the Navy and the Marine Corps reported that sustainment funding accounts, such as those for depot maintenance and spare parts, have been funded at increased levels in fiscal years 2017 and 2018, efforts to improve spare parts availability take time to produce results due to long lead times for acquiring some items. In addition, Navy and Marine Corps aircraft face challenges associated with diminishing manufacturing sources and parts obsolescence. DOD has a program intended to manage these risks, but we reported in September 2017 that its implementation varied across DOD weapon system program offices.³¹ We made recommendations to improve the program's management; DOD concurred and has initiated improvement efforts.
- **Maintenance personnel inexperience and retention.** The Navy has had difficulty attracting and retaining skilled maintainers, such as sheet metal workers and machinists at its aviation depots (i.e., Fleet Readiness Centers), which directly affects its ability to complete planned maintenance. Some of the depots experienced challenges attracting and retaining skilled personnel due to competition with nearby contractors that are able to offer higher pay, according to Navy depot officials. Similar to the shipyards, the aviation depots also lack experienced personnel, affecting the efficiency and quality of maintenance. For example, 41 percent of the skilled workers at Fleet Readiness Center Southwest have 2 years or fewer of experience. Workforce inexperience and attrition of skilled personnel were some of the reasons cited for machining defects detected in the landing

³⁰For additional information on this issue, see GAO, *Defense Inventory: Further Analysis and Enhanced Metrics Could Improve Service Supply and Depot Operations*, GAO-16-450 (Washington, D.C.: June 9, 2016).

³¹The Diminishing Manufacturing Sources and Material Shortages program is meant to address parts supply challenges. GAO, *Defense Supply Chain: DOD Needs Complete Information on Single Sources of Supply to Proactively Manage the Risks*, GAO-17-768 (Washington, D.C.: Sept. 28, 2017).

gear for F/A-18, E-2, and C-2A aircraft by a recent Navy report.³² All of the depots have undertaken retention efforts such as incentives, bonuses, and awards to address these issues.

Until the Navy and Marine Corps address maintenance and supply challenges it will be difficult to meet Secretary of Defense-established mission capability goals. Specifically, in September 2018, the Secretary of Defense issued a memorandum emphasizing that a key component of implementing the 2018 National Defense Strategy is ensuring critical aviation platforms meet their mission capability targets by the end of fiscal year 2019. The memorandum established a goal of achieving a minimum of 80-percent mission capable rates for various aircraft, including for the Navy's and Marine Corps' F/A-18 inventories, by the end of fiscal year 2019 while also reducing operating and maintenance costs. To accomplish this, the Navy and the Marine Corps developed the Return to Readiness strategy in November 2018 that includes a broad array of actions to improve the availability of spare parts and evaluate the application of best commercial practices to naval aviation sustainment, among other actions. Office of the Secretary of Defense and Navy program officials told us, and based on our prior work we agree, that this goal will be challenging to achieve by the end of fiscal year 2019.

Pilot Shortages Have Worsened in Recent Years and Are Projected to Remain through 2023

We reported in April 2018 that fighter pilot shortages in the Navy and the Marine Corps have been worsening in recent years and shortfalls are projected to remain through at least fiscal year 2023.³³ Our analysis of Navy and Marine Corps data showed that the Navy's shortage of first operational tour fighter pilots more than doubled from 12 percent in fiscal year 2013 to 26 percent in fiscal year 2017.³⁴ Similarly, the Marine Corps' overall shortage of fighter pilots quadrupled from 6 percent in fiscal year 2006 to 24 percent in fiscal year 2017.

Also, as we reported in April 2018, service officials attributed the pilot shortages to reduced training opportunities and increased attrition due to career dissatisfaction, among other factors. Officials from both services

³²Commander, *Fleet Readiness Centers: Fleet Readiness Southwest Landing and Arresting Gear Quality Escape Investigation Report*, May 11, 2017.

³³GAO, *Military Personnel: DOD Needs to Reevaluate Fighter Pilot Workforce Requirements*, [GAO-18-113](#) (Washington, D.C.: Apr. 11, 2018).

³⁴A fighter pilot's first operational tour at sea is completed between 3 and 6 years of service.

stated at the time that they have ensured that deploying squadrons have been fully staffed with fighter pilots by using various approaches including using senior pilots to staff junior positions and having pilots deploy more frequently and for longer periods. However, we reported that squadron leaders and fighter pilots said that these approaches had a negative impact on the fighter pilot training and retention and ultimately may be exacerbating the situation.

Further compounding their pilot shortages, we also found that the services have not recently reevaluated squadron requirements to reflect an increased fighter pilot workload. As a result, the reported shortage actually could be greater. The services were taking actions, including increasing retention incentives for fighter pilots. To help determine the magnitude of the shortages and help target strategies to better meet their personnel needs, we recommended, and the Navy and Marine Corps agreed, to reevaluate fighter pilot squadron requirements.

New F-35 Aircraft Facing Sustainment and Operational Challenges

Sustainment challenges are not just an issue for older aircraft, but represent an enduring challenge for the F-35 Lightning II aircraft—a key component to the future of tactical aviation for the Navy and Marine Corps. The Navy and Marine Corps are both flying F-35s now as the program ramps up development, and they plan to procure nearly 700 aircraft over the coming decades. The sustainment costs of the F-35 fleet are projected to exceed \$1 trillion over its 60-year life cycle. In October 2017, we reported that:

- F-35B aircraft (including Marine Corps aircraft) were *available* (i.e., the aircraft were safe to fly, available for use, and able to perform at least one tasked mission) about 52 percent of the time from March 2017 through June 2017, which fell short of the 65-percent goal established by the Marine Corps for non-deployed units and
- F-35B aircraft (including Marine Corps aircraft) were *fully mission capable* (i.e., the aircraft were capable of accomplishing all tasked missions) about 15 percent of the time from March 2017 through June 2017, which fell short of the 60-percent goal established by the Marine

Corps for non-deployed units.³⁵

We also reported on numerous sustainment challenges leading to less than desirable outcomes for F-35 warfighter readiness. For example, F-35 aircraft were unable to fly 22 percent of the time because of parts shortages from January 2017 through August 7, 2017. Additionally, DOD's capabilities to repair F-35 parts at military depots were 6 years behind schedule, which resulted in average part repair times that are twice that of the program's objective.

As DOD gains experience with the F-35, our work has shown that the department has encountered additional challenges. In 2017, the Marine Corps became the first military service to station F-35 aircraft overseas, transferring aircraft to Iwakuni, Japan. While in the Pacific, DOD expects to disperse its F-35s into smaller detachments to outmaneuver the enemy and counter regional threats. However, in April 2018, we reported that this approach posed logistics and supply challenges.³⁶ In June 2018, we reported that the F-35 program had not improved its reliability and maintainability over the past year and continued to fall short on half of its performance targets.³⁷ Furthermore, we found that the program may not meet its required targets before each variant of the F-35 is expected to demonstrate maturity—the point at which the aircraft has flown enough hours to predictably determine reliability and maintainability over its lifespan. This means that the Navy and the Marine Corps may have to decide whether they are willing to accept less reliable and maintainable aircraft than originally planned. Among other outcomes, this could result in higher maintenance costs and lower aircraft availability than anticipated which also could pose readiness challenges in the future. As we reported

³⁵GAO, *F-35 Aircraft Sustainment: DOD Needs to Address Challenges Affecting Readiness and Cost Transparency*, GAO-18-75 (Washington, D.C.: Oct. 26, 2017). At the time of our October 2017 report, the information presented here, including aircraft availability and mission capability rates, and the goals for those metrics, were not considered sensitive by the department. The Navy considers the current rates and goals to be sensitive.

³⁶GAO, *Warfighter Support: DOD Needs to Share F-35 Operational Lessons Across the Military Services*, GAO-18-464R (Washington, D.C.: Apr. 25, 2018). This was a public version of a more detailed March 2018 classified report.

³⁷GAO, *F-35 Joint Strike Fighter: Development Is Nearly Complete, but Deficiencies Found in Testing Need to Be Resolved*, GAO-18-321 (Washington, D.C.: June 5, 2018).

in October 2017, the poor reliability of certain parts is already contributing to shortages of F-35 spare parts.³⁸

Challenges posed by the F-35 program are largely the result of sustainment plans that do not fully include or consider key requirements. Our work has shown that planning for sustainment and aligning its funding are critical if DOD wants to meet its aircraft availability goals and effectively deploy to support operations. To address the challenges associated with F-35 sustainment and operational deployment, we recommended that DOD revise its sustainment plans, align associated funding, and mitigate the risks associated with key supply chain-related challenges for deployed F-35s in the Pacific, among others.³⁹ DOD concurred with these recommendations and stated that it is taking steps to address them. Furthermore, as previously discussed, the Secretary of Defense has established an 80-percent mission capability goal for critical aviation assets, including the F-35. Due to current low availability and numerous sustainment issues, the F-35 fleet will be challenged in meeting the goal.

In sum, the Navy's and Marine Corps' significant readiness challenges have developed over more than a decade of conflict, budget uncertainty, and reductions in force structure. Both services have made encouraging progress identifying the causes of their readiness decline and have begun efforts to arrest and reverse it; however, our prior work shows that fully addressing the persistent readiness challenges will require years of sustained management attention. Our work cited today contains 25 specific recommendations to the Navy and the Marine Corps and an additional 20 recommendations to various other DOD components to assist these services in rebuilding the readiness of their forces and in modernizing for the future. Attention to these recommendations can assist the Navy and the Marine Corps as they seek to rebuild the readiness of their forces.

Chairmen Wicker and Sullivan, Ranking Members Hirono and Kaine, and Members of the Subcommittees, this concludes my prepared statement. I would be pleased to respond to any questions you may have at this time.

³⁸GAO-18-75.

³⁹GAO-18-75 and GAO-18-464R.

**GAO Contact and
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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 Suzanne Wren, Assistant Director; Clarine Allen; Steven Banovac; John Bumgarner; Chris Cronin; Benjamin Emmel; Cynthia Grant; Mae Jones; Amie Lesser; Tobin McMurdie; Shahrzad Nikoo; Carol Petersen; Cody Raysinger; Michael Silver; John E. "Jet" Trubey; and Chris Watson.

Appendix I: Implementation Status of Prior GAO Recommendations Related to Navy and Marine Corps Readiness

Over the past 4 years, we have issued a number of reports related to Navy and Marine Corps readiness and we used them to develop this statement. Table 1 summarizes the recommendations in these reports.¹ The Department of Defense (DOD) concurred with most of the 45 recommendations and has many actions underway. However, DOD has not fully implemented any of the recommendations to date. For each of the reports, the specific recommendations and any progress made in implementing them are summarized in tables 2 through 16.

¹This summary does not include classified recommendations made in classified reports, reports without recommendations, and reports in which we directed recommendations exclusively to the Office of the Secretary of Defense or the Department of the Air Force.

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GAO Recommendations Related to Navy and
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Table 1: Recommendations That GAO Has Made Since 2015 on Navy and Marine Corps Readiness Cited in This Report

Product date	Product title and number	Number of open recommendations
Recommendations to Navy and Marine Corps		
November 19, 2018	<i>Navy Readiness: Actions Needed to Address Costly Maintenance Delays Facing the Attack Submarine Fleet (GAO-19-229)</i>	1 ^a
September 10, 2018	<i>Weapon System Sustainment: Selected Air Force and Navy Aircraft Generally Have Not Met Availability Goals, and DOD and Navy Guidance Need to Be Clarified (GAO-18-678)</i>	1 ^b
April 11, 2018	<i>Military Personnel: DOD Needs to Reevaluate Fighter Pilot Workforce Requirements (GAO-18-113)</i>	2 ^c
March 28, 2018	<i>Military Aircraft: F-35 Brings Increased Capabilities, but the Marine Corps Needs to Assess Challenges Associated with Operating in the Pacific (GAO-18-79C)</i>	2 ^d
September 26, 2017	<i>Navy and Marine Corps Training: Further Planning Needed for Amphibious Operations Training (GAO-17-789)</i>	3
September 12, 2017	<i>Naval Shipyards: Actions Needed to Improve Poor Conditions That Affect Operations (GAO-17-548)</i>	3
July 13, 2017	<i>Navy Shipbuilding: Policy Changes Needed to Improve the Post-Delivery Process and Ship Quality (GAO-17-418)</i>	4
May 18, 2017	<i>Navy Force Structure: Actions Needed to Ensure Proper Size and Composition of Ship Crews (GAO-17-413)</i>	4
September 7, 2016	<i>Military Readiness: DOD's Readiness Rebuilding Efforts May Be at Risk without a Comprehensive Plan (GAO-16-841)</i>	3 ^e
May 29, 2015	<i>Navy Force Structure: Sustainable Plan and Comprehensive Assessment Needed to Mitigate Long-Term Risks to Ships Assigned to Overseas Homeports (GAO-15-329)</i>	2
Subtotal		25
Recommendations to DOD components in coordination with Navy and Marine Corps		
June 5, 2018	<i>F-35 Joint Strike Fighter: Development Is Nearly Complete, but Deficiencies Found in Testing Need to Be Resolved (GAO-18-321)</i>	2
April 25, 2018	<i>Warfighter Support: DOD Needs to Share F-35 Operational Lessons Across the Military Services (GAO-18-464R)</i>	2 ^f
October 26, 2017	<i>F-35 Aircraft Sustainment: DOD Needs to Address Challenges Affecting Readiness and Cost Transparency (GAO-18-75)</i>	4
September 28, 2017	<i>Defense Supply Chain: DOD Needs Complete Information on Single Sources of Supply to Proactively Manage the Risks (GAO-17-768)</i>	6
June 9, 2016	<i>Defense Inventory: Further Analysis and Enhanced Metrics Could Improve Service Supply and Depot Operations (GAO-16-450)</i>	6
Subtotal		20
Total		45

Source: GAO analysis. I GAO-19-225T

Appendix I: Implementation Status of Prior GAO Recommendations Related to Navy and Marine Corps Readiness

Note: This table does not include classified recommendations made in classified reports, reports without recommendations, and reports in which we directed recommendations exclusively to the Office of the Secretary of Defense or the Department of the Air Force.

^aGAO-19-229 is an unclassified version of a GAO-19-192C that included three additional classified recommendations to Navy leadership, that are not counted here.

^bGAO-18-678 included a recommendation directed to the Office of the Secretary of Defense, that is not counted here.

^cGAO-18-113 included a recommendation directed to the Secretary of the Air Force, that is not counted here.

^dGAO-18-79C is a classified report that included four recommendations, all of which were deemed unclassified by DOD. Two recommendations were directed to the Commandant of the Marine Corps and are included here. The other two recommendations were directed to the F-35 Program Executive Officer and are included in GAO-18-464R.

^eGAO-16-841 included two recommendations directed to the Office of the Secretary of Defense, and are not counted here.

^fGAO-18-464R is an unclassified version of GAO-18-79C. Two recommendations were directed to the F-35 program office and are included here. The other two recommendations were directed to the Commandant of the Marine Corps and are included in GAO-18-79C.

Table 2: Status of Recommendations from Navy Readiness: Actions Needed to Address Costly Maintenance Delays Facing the Attack Submarine Fleet (GAO-19-229)

Recommendation #1:	
The Secretary of the Navy should ensure that the Chief of Naval Operations conducts a business case analysis to inform maintenance workload allocation across public and private shipyards; this analysis should include an assessment of private shipyard capacity to perform attack submarine maintenance, and should incorporate a complete accounting of both (a) the costs and risks associated with attack submarines sitting idle and (b) the qualitative benefits associated with having the potential to both mitigate risk in new submarine construction and provide additional availability to the combatant commanders.	<p>Status: Open</p> <p>Concurrence: Yes</p> <p>Comments: In response to our report, DOD stated that it has taken the first steps to take a more holistic view of submarine maintenance requirements and impacts across both the public and private shipyards. In an update provided in November 2018, the Navy told us that they are developing a contracting strategy to conduct two additional depot maintenance periods at private shipyards in the future.</p>

Source: GAO analysis. I GAO-19-225T

Note: This table does not include three recommendations directed to Navy leadership that were deemed classified by DOD.

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Table 3: Status of Recommendations from *Weapon System Sustainment: Selected Air Force and Navy Aircraft Generally Have Not Met Availability Goals, and DOD and Navy Guidance Need to Be Clarified* (GAO-18-678)

Recommendation #1:	
The Secretary of the Navy should update or issue new guidance clarifying the requirements for documenting sustainment strategies for legacy weapon systems, including for fixed-wing aircraft.	Status: Open Concurrence: Yes Comments: We will monitor DOD's efforts to address this recommendation.

Source: GAO analysis. | GAO-19-225T

Note: This table does not include a recommendation that was directed to the Office of the Secretary of Defense.

Table 4: Status of Recommendations from *Military Personnel: DOD Needs to Reevaluate Fighter Pilot Workforce Requirements* (GAO-18-113)

Recommendation #1:	
The Secretary of the Navy should ensure that the Chief of Naval Operations reevaluate fighter pilot squadron requirements, to include updating current assumptions of fighter pilot workload and assessing the impact of future incorporation of Unmanned Aerial Systems platforms into combat aviation.	Status: Open Concurrence: Yes Comments: DOD noted that across the Navy, many organizations and offices including the resource sponsor (Naval Air Forces) will play integral roles in determining the future size and mix of manpower requirements for fighter pilot squadrons. We will continue to monitor DOD actions taken to address this recommendation.
Recommendation #2:	
The Secretary of the Navy should ensure that the Commandant of the Marine Corps and the Deputy Commandant for Aviation reevaluate fighter pilot squadron requirements.	Status: Open Concurrence: Yes Comments: DOD noted that across the Marine Corps, many organizations and offices in addition to the Deputy Commandant for Aviation play integral roles in the continuous evaluation and determination regarding current and future size and mix of manpower requirements for fighter and attack squadrons. We will continue to monitor DOD actions taken to address this recommendation.

Source: GAO analysis. | GAO-19-225T

Note: This table does not include a recommendation that was directed to the Secretary of the Air Force.

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Table 5: Status of Recommendations from *Military Aircraft: F-35 Brings Increased Capabilities, but the Marine Corps Needs to Assess Challenges Associated with Operating in the Pacific* (GAO-18-79C)

Recommendation #1:	
The Commandant of the Marine Corps should assess the risks associated with key supply chain-related challenges related to operating and sustaining the F-35 in the Pacific, and determine how to mitigate these risks.	<p>Status: Open</p> <p>Concurrence: Yes</p> <p>Comments: According to DOD officials, as of July 2018, the Marine Corps was engaging in a number of risk mitigation efforts for key supply-chain-related challenges related to operating and sustaining the F-35 in the Pacific, working with key stakeholders, including the Joint Program Office, industry, and entities such as the Defense Logistics Agency and the U.S. Transportation Command. Current risk mitigation efforts already underway include a strategy to ensure that spare parts with a delivery time of greater than 2 years are placed on contract, as are plans to increase local repair capability to capitalize on resident skill already possessed by the local Marine Aviation Logistics Squadron. Other risk mitigation efforts currently under consideration include material lay-in investments to improve supplier capacity and performance, and assessment of the delivery times for off-station repair parts to mitigate future risks. The Marine Corps continues to assess supply-chain-related challenges in the Pacific and will continue to develop risk mitigation strategies in response to those challenges. We are encouraged by the Marine Corps' focus on the potential risks associated with key supply-chain-related challenges in the Pacific. However, until these assessments are complete and the Marine Corps has determined how to mitigate these risks, this recommendation will remain open.</p>
Recommendation #2:	
The Commandant of the Marine Corps should determine the F-35's ability to support distributed operations through the use of exercises and/or analyses.	<p>Status: Open</p> <p>Concurrence: Yes</p> <p>Comments: According to DOD officials, as of July 2018, the Marine Corps continued to assess the F-35's ability to support distributed operations through the Marine Corps' Training and Exercise Employment Plan in preparation for real world operations. These exercises include land-based and shipboard operations. The Marine Corps has also established Deployment Transfer Locations throughout the Pacific in order to support distributed operations. We are encouraged by the Marine Corps' continued focus on the F-35's ability to support distributed operations in the Pacific. However, until the Marine Corps determines its ability to support distributed operations through exercises and/or analyses, this recommendation will remain open.</p>

Source: GAO analysis. | GAO-19-225T

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Note: This report is classified and included four recommendations, all of which were deemed unclassified by DOD. Two recommendations were directed to the Commandant of the Marine Corps and are included here. The other two recommendations were directed to the F-35 Program Executive Officer and are included in table 13, which summarizes GAO-18-464R.

Table 6: Status of Recommendations from Navy and Marine Corps Training: Further Planning Needed for Amphibious Operations Training (GAO-17-789)

Recommendation #1:	
<p>The Secretary of the Navy, in coordination with the Chief of Naval Operations and the Commandant of the Marine Corps, should develop an approach, such as building upon the Amphibious Operations Training Requirements review, to prioritize available training resources, systematically evaluate among training resource alternatives to achieve amphibious operations priorities, and monitor progress toward achieving them.</p>	<p>Status: Open Concurrence: Yes Comments: Marine Corps officials told us that as of August 2018, the Marine Corps has ongoing actions intended to address this recommendation. For example, the Marine Corps is developing an annual requirements order detailing the naval ship services required to execute amphibious operations training. Once issued, the order will be used to schedule naval ship training support to optimize amphibious training opportunities and to identify joint- and service-level exercises that may provide venues and resources for amphibious operations training. These officials stated that the Navy and Marine Corps are also developing joint amphibious training plans to support Marine Corps amphibious readiness standards. Completion of these actions should allow the Navy and Marine Corps to better mitigate amphibious operations training shortfalls.</p>
Recommendation #2:	
<p>The Secretary of the Navy, in coordination with the Chief of Naval Operations and the Commandant of the Marine Corps, should clarify the organizations responsible and time frames to define and articulate common outcomes for naval integration and use those outcomes to (1) develop a joint strategy; (2) more fully establish compatible policies, procedures, and systems; (3) better leverage training resources; and (4) establish mechanisms to monitor results.</p>	<p>Status: Open Concurrence: Yes Comments: As of August 2018, the Department of the Navy had identified ongoing actions intended to address this recommendation. Specifically, the Navy is developing a joint Navy and Marine Corps strategy for naval integration with common outcomes. Additionally, the Navy is studying the feasibility of developing compatible Navy and Marine Corps scheduling systems to address amphibious training requirements. Completion of these actions should help align Navy and Marine Corps efforts to maximize training opportunities for amphibious operations.</p>

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Recommendation #3:

The Commandant of the Marine Corps should develop guidance for the development and use of virtual training devices that includes (1) developing requirements for virtual training devices that consider and document training tasks and objectives, required proficiency, and available training time; (2) setting target usage rates and collecting usage data; and (3) conducting effectiveness analysis of virtual training devices that defines a consistent process for performing the analysis, including the selection of the devices to be evaluated, guidelines on conducting the analysis, and the data that should be collected and assessed.

Status: Open

Concurrence: Yes

Comments: As of August 2018, the Marine Corps had completed some actions intended to address the recommendation, and had additional actions ongoing. For example, in June 2017 the Marine Corps issued the Marine Corps Ground Training Simulations Implementation Plan. The plan provides a framework for the Marine Corps' use of current and future simulations technology and virtual training environments to align training efforts and resource requirements. According to Marine Corps officials, as part of the implementation plan, the Marine Corps is also developing an analysis of alternatives to inform its virtual training developmental efforts that considers training tasks, required proficiency, and available training time. Additionally, Marine Corps officials told us they are implementing the Ground Simulation Training Effectiveness Program, which provides guidelines on conducting effectiveness analysis, including selecting the devices to be evaluated and identifying the data that should be collected and assessed. Once fully implemented, these actions should help the Marine Corps more effectively and efficiently integrate virtual training devices into operational training.

Source: GAO analysis. I GAO-19-225T

Table 7: Status of Recommendations from Naval Shipyards: Actions Needed to Improve Poor Conditions That Affect Operations (GAO-17-548)

Recommendation #1:

The Secretary of the Navy should develop a comprehensive plan for shipyard capital investment that establishes (1) the desired goal for the shipyards' condition and capabilities; (2) an estimate of the full costs to implement the plan, addressing all relevant requirements, external risk factors, and associated planning costs; and (3) metrics for assessing progress toward meeting the goal that include measuring the effectiveness of capital investments.

Status: Open

Concurrence: Yes

Comments: As of October 2018, Naval Sea Systems Command had produced a Shipyard Optimization Report, a plan intended to guide the overhaul and improvement of the naval shipyards, which the Navy presented to Congress in February 2018. However, the plan did not include metrics for assessing progress. Navy officials have stated that the Navy intends to develop metrics to meet this element, but that this development will take place during a second phase that will be complete in fiscal year 2019.

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Recommendation #2:

The Secretary of the Navy should conduct regular management reviews that include all relevant stakeholders to oversee implementation of the plan; review metrics; assess the progress made toward the goal; and make adjustments, as necessary, to ensure that the goal is attained.

Status: Open

Concurrence: Yes

Comments: In June 2018, the Navy issued NAVSEA Notice 5450, which established a new program management office responsible for planning, developing, scheduling, budgeting, and sustaining the replacement of shipyard facilities and equipment. By creating this office, the Navy has taken a first step toward establishing a result-oriented management approach, but additional steps, such as identifying all relevant stakeholders, holding meetings, and reviewing oversight metrics are needed to fully address this recommendation.

Recommendation #3:

The Secretary of the Navy should provide regular reporting to key decision makers and Congress on the progress the shipyards are making to meet the goal of the comprehensive plan, along with any challenges that hinder that progress, such as cost. This may include reporting on progress to reduce their facilities restoration and modernization backlogs, improve the condition and configuration of the shipyards, and recapitalize capital equipment.

Status: Open

Concurrence: Yes

Comments: DOD officials stated in October 2018 that the Naval Sea Systems Command's Shipyard Optimization Report, along with the creation of the Readiness Reform Oversight Council, address this recommendation. While the Readiness Reform Oversight Council does appear to involve some of the key stakeholders who should be receiving the regular reporting we recommended, regular reporting on progress cannot be achieved with only a single disclosure at the beginning of the effort. While it is possible that the newly created Shipyard Program Management Office will be able to provide such reporting, that organization is still being developed. We will continue to monitor DOD actions taken to address this recommendation.

Source: GAO analysis. | GAO-19-225T

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Table 8: Status of Recommendations from Navy Shipbuilding: Policy Changes Needed to Improve the Post-Delivery Process and Ship Quality (GAO-17-418)

Recommendation #1:	
<p>The Secretary of the Navy should revise the Navy's ship delivery policy to clarify what types of deficiencies need to be corrected and what mission capability (including the levels of quality and capability) must be achieved at (1) delivery and (2) when the ship is provided to the fleet (at the obligation work limiting date). In doing so, the Navy should clearly define what constitutes a complete ship and when that should be achieved.</p>	<p>Status: Open</p> <p>Concurrence: No</p> <p>Comments: Navy acquisition officials confirmed that the ship delivery policy, OPNAVINST 4700.8K, is the primary policy governing the delivery and post-delivery process for ships. Additionally, we reviewed the other policies identified by DOD during the course of our audit and found that they were not focused on construction and the post-delivery period, and did not provide guidance on the level of quality and completeness expected when ships are provided to the fleet. As such, we maintain that the Navy's ship delivery policy is a key instruction for ensuring that complete, mission-capable ships are provided to the fleet. In line with our finding that the Navy's ship delivery policy has not ensured complete and mission-capable ships are being delivered to the fleet, Congress included a provision in the John S. McCain National Defense Authorization Act for Fiscal Year 2019 that stipulated that the Navy could no longer count ships toward its battle force at commissioning, which occurs shortly after delivery, and instead may only count ships in the battle force once they were both commissioned and capable of contributing to the Navy's missions. In continuing to not acknowledge the importance of its ship delivery policy and taking steps to clarify it, the Navy is missing important opportunities to improve the completeness and capability of its ships and remains at risk of providing ships to the fleet with significant quality problems. To fully implement this recommendation, the Navy should revise its ship delivery policy to clearly define what constitutes a complete and defect-free ship and by when that should be achieved.</p>

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Recommendation #2:

The Secretary of the Navy should reconcile policy with practice to support the Navy Board of Inspection and Survey's role in making a recommendation for fleet introduction. Accomplishing this may require a study of the current timing of ship trials, and the costs and benefits associated with adding a Navy Board of Inspection and Survey assessment prior to providing ships to the fleet.

Status: Open

Concurrence: No

Comments: DOD noted that the current timing of Navy Board of Inspection and Survey trials provides the Navy with an opportunity to ensure contractual obligations have been met and identify construction deficiencies for correction during the post-delivery period. DOD also stated that adding another Navy Board of Inspection and Survey trial at the end of the post-delivery period would not be cost-effective and could delay ship deployment schedules. However, we found that most of the significant construction deficiencies identified prior to delivery were not corrected until the post-delivery period, and that the Navy Board of Inspection and Survey generally did not have an opportunity to inspect these corrections before ships were provided to the fleet. Given this, we maintain that the Navy should re-assess the timing of its post-delivery trials in support of the Navy Board of Inspection and Survey's responsibility to make recommendations for fleet introduction. Until this occurs, the Navy will continue to be at risk of providing ships to the fleet with significant deficiencies.

Recommendation #3:

The Secretary of the Navy should reflect additional ship milestones in Selected Acquisition Reports to Congress, including obligation work limiting dates and readiness to deploy.

Status: Open

Concurrence: Partial

Comments: DOD agreed to report obligation work limiting dates in its Selected Acquisition Reports to Congress and is in the process of making this change. DOD plans include obligation work limiting dates in the Navy's 2018 Selected Acquisition Reports and to fully implement this change by March 2019. However, DOD did not agree to report ready-to-deploy dates in the Selected Acquisition Reports to Congress, noting that operational factors outside of acquisition concerns can affect the timing of this milestone. While we agree that readiness to deploy is a fleet determination, we continue to believe that this date is important for congressional oversight, as it remains the best milestone for determining when a ship has achieved a sufficient level of completeness to operate under the Navy's current framework for ship delivery.

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Recommendation #4:

The Secretary of the Navy should, in Selected Acquisition Reports to Congress, ensure that the criteria used to declare initial operational capability aligns with DOD guidance, and reflect the definition of this milestone in the reports.

Status: Open

Concurrence: Yes

Comments: For shipbuilding programs that have not yet achieved initial operational capability, the Navy will include the initial operational capability definition in its 2018 Selected Acquisition Reports to Congress. DOD is in the process of making this change and plans to complete the effort by March 2019. However, to fully meet the intent of this recommendation, DOD should report the initial operational capability definition for all shipbuilding programs, not just those that have yet to reach this milestone. The department also needs to ensure that the criteria used to declare initial operational capability align with DOD guidance. Taking these additional steps would result in more meaningful and consistent information being provided to Congress.

Source: GAO analysis. | GAO-19-225T

Table 9: Status of Recommendations from Navy Force Structure: Actions Needed to Ensure Proper Size and Composition of Ship Crews (GAO-17-413)

Recommendation #1:

The Secretary of the Navy should have the Navy conduct a comprehensive reassessment of the Navy standard workweek and make any necessary adjustments.

Status: Open

Concurrence: Yes

Comments: As of November 2018, the Navy was in the process of conducting a study of afloat workload to establish accurate fleet manpower requirements and inform manning level changes, with a report on the study expected in November 2018. The results of the study are expected to be promulgated to cognizant stakeholders, and revisions will be made to the Navy Total Force Manpower Policies and Procedures Instruction (OPNAVINST 1000.16L) in February 2019.

Recommendation #2:

The Secretary of the Navy should have the Navy update guidance to require examination of in-port workload and identify the manpower necessary to execute in-port workload for all surface ship classes.

Status: Open

Concurrence: Yes

Comments: As of November 2018, the Navy had completed two in-port workload studies, and had planned future studies for various ship classes. These studies are expected to inform an update to OPNAVINST 1000.16L in February 2019.

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Recommendation #3:

The Secretary of the Navy should have the Navy develop criteria and update guidance for reassessing the factors used to calculate manpower requirements periodically or when conditions change.

Status: Open

Concurrence: Yes

Comments: As of November 2018, the Navy Total Force Manpower Training and Education Requirements Division published a Manpower Guidance Memorandum on March 1, 2018, that outlines the requirement for reassessing the factors used to calculate manpower requirements. This is expected to inform the planned revision to OPNAVINST 1000.16L.

Recommendation #4:

The Secretary of the Navy should have the Navy identify personnel needs and the costs associated with the planned larger Navy fleet size, including consideration of the updated manpower factors and requirements.

Status: Open

Concurrence: Yes

Comments: As of November 2018, Navy officials confirmed that this recommendation has an anticipated implementation date of February 2019, adding that total ownership costs that capture all facets of personnel needs and costs will be adjusted based upon the Navy's growth linked to the 30-year ship building plan and aviation master plan. The refinement of all manpower determination planning factors and assumptions, the ongoing data collection and analysis garnered from the in-port workload studies, and the outcome of the operational afloat workweek study are expected to inform all existing and future force structure manpower requirements.

Source: GAO analysis. | GAO-19-225T

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Table 10: Status of Recommendations from *Military Readiness: DOD's Readiness Rebuilding Efforts May Be at Risk without a Comprehensive Plan* (GAO-16-841)

Recommendation #1:	
<p>The Secretaries of the Departments of the Army, the Navy, and the Air Force should establish comprehensive readiness rebuilding goals to guide readiness rebuilding efforts and a strategy for implementing identified goals, to include resources needed to implement the strategy.</p>	<p>Status: Open Concurrence: Partial</p> <p>Comments: The military services have defined their readiness rebuilding goals and, in some cases, extended these goals since we reported in 2016. Further, through the department's Readiness Recovery Framework, the military services have identified key readiness issues that their respective forces face and actions to address these issues, as well as metrics by which to assess progress toward achieving overall readiness recovery goals. The Office of the Secretary of Defense continues to work with the military services to ensure that the services' actions and metrics clearly align with readiness recovery goals in an executable strategy. We will continue to monitor progress regarding DOD's Readiness Recovery Framework before closing this recommendation as implemented.</p>
Recommendation #2:	
<p>The Secretaries of the Departments of the Army, the Navy, and the Air Force should develop metrics for measuring interim progress at specific milestones against identified goals for all services.</p>	<p>Status: Open Concurrence: Partial</p> <p>Comments: The military services have taken steps to develop metrics for measuring interim progress at specific milestones against identified readiness recovery goals. Through the Readiness Recovery Framework process, the military services have identified key readiness issues that their respective forces face and actions to address these issues, as well as metrics to assess progress toward readiness recovery goals that include quantifiable deliverables at specific milestones. The Office of the Secretary of Defense continues to work with the military services to ensure that the services' metrics and milestones clearly align with readiness recovery goals. We will continue to monitor progress regarding DOD's Readiness Recovery Framework before closing this recommendation as implemented.</p>

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Recommendation #3:

The Secretaries of the Departments of the Army, the Navy, and the Air Force should identify external factors that may impact readiness recovery plans, including how they influence the underlying assumptions, to ensure that readiness rebuilding goals are achievable within established time frames. This should include, but not be limited to, an evaluation of the impact of assumptions about budget, maintenance time frames, and training that underpin the services' readiness recovery plans.

Status: Open

Concurrence: Partial

Comments: DOD noted that the department would continue to work with the military services to refine their readiness recovery goals and identify the requisite resources needed to meet them. We will continue to monitor progress regarding DOD's Readiness Recovery Framework before closing this recommendation as implemented.

Source: GAO analysis. | GAO-19-225T

Note: This table does not include two recommendations that were directed to the Office of the Secretary of Defense.

Table 11: Status of Recommendations from Navy Force Structure: Sustainable Plan and Comprehensive Assessment Needed to Mitigate Long-Term Risks to Ships Assigned to Overseas Homeports (GAO-15-329)

Recommendation #1:

The Secretary of the Navy should fully implement the Navy's optimized fleet response plan and develop and implement a sustainable operational schedule for all ships homeported overseas.

Status: Open

Concurrence: Yes

Comments: In August 2015, the Navy reported that it had approved and implemented six different revised optimized fleet response plan schedules that covered all ships homeported overseas. We closed the recommendation as implemented in 2015. In 2017, the Navy suffered four significant mishaps at sea resulting in the loss of 17 sailors' lives and serious damage to its ships. Three of the four ships involved were homeported in Japan. The resulting Navy investigations revealed that due to heavy operational demands, the Navy had not fully implemented the revised operational schedules it developed in 2015 for ships based in Japan. In light of this information, we re-opened this recommendation. As of October 2018, the Navy had developed a change to the operational schedule for ships homeported in Japan, and is expecting to codify this revised schedule in November 2018. The Navy also established Commander, Naval Surface Group, Western Pacific to oversee surface ship maintenance, training, and certification for ships based in Japan. We will continue to monitor the Navy's adherence to these revised schedules before closing this recommendation as implemented.

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Recommendation #2:

The Secretary of the Navy should develop a comprehensive assessment of the long-term costs and risks to the Navy's surface and amphibious fleet associated with the Navy's increasing reliance on overseas homeporting to meet presence requirements, make any necessary adjustments to the Navy's overseas presence based on this assessment, and reassess these risks when making future overseas homeporting decisions and developing future strategic laydown plans.

Status: Open

Concurrence: Yes

Comments: As of November 2018, the Navy had tasked the Office of the Chief of Naval Operations Assessments Division to conduct an assessment of the long-term costs and risks to the Navy's fleet associated with the Navy's increasing reliance on overseas homeporting. The Office of the Chief of Naval Operations plans to complete the review by the end of 2018.

Source: GAO analysis. | GAO-19-225T

Table 12: Status of Recommendations from F-35 Joint Strike Fighter: Development Is Nearly Complete, but Deficiencies Found in Testing Need to Be Resolved (GAO-18-321)

Recommendation #1:

The F-35 program office should resolve all critical deficiencies before making a full-rate production decision.

Status: Open

Concurrence: Yes

Comments: DOD stated that critical deficiencies would be resolved before full-rate production, expected in October 2019. As of August 2018, DOD had not resolved these deficiencies.

Recommendation #2:

The F-35 program office should identify what steps are needed to ensure the F-35 meets reliability and maintainability requirements before each variant reaches maturity, and update the Reliability and Maintainability Improvement Program with these steps.

Status: Open

Concurrence: Yes

Comments: As August 2018, DOD had not taken actions to implement this recommendation. We will monitor DOD's efforts to address this recommendation.

Source: GAO analysis. | GAO-19-225T

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Table 13: Status of Recommendations from Warfighter Support: DOD Needs to Share F-35 Operational Lessons Across the Military Services (GAO-18-464R)

Recommendation #1:	
<p>The F-35 Program Executive Officer should test operating the F-35 disconnected from its Autonomic Logistics Information System (ALIS) for extended periods of time in a variety of scenarios to assess the risks related to operating and sustaining the aircraft, and determine how to mitigate any identified risks.</p>	<p>Status: Open</p> <p>Concurrence: Yes</p> <p>Comments: According to DOD officials, as of July 2018, the Initial Operational Test and Evaluation test plan did not include an evaluation of continued disconnected operations. However, the military services are planning more limited operational tests in the near future. For example, the Marine Corps is planning a future deployment to demonstrate an ability to rapidly deploy with three to four aircraft, and operate for 2 to 3 days without connectivity back to the squadron kit. While this is not intended to replicate an extended 30-day disconnected operation, it may provide initial indications of how extended disconnected operations may function. As the emerging ALIS strategy comes into focus, particularly in terms of the decentralized maintenance capability, it is expected that a robust test plan will be developed and implemented. We are encouraged that the department is aware of the issue and working toward, as necessary, potential mitigation strategies. However, until the F-35 is tested disconnected from ALIS for extended periods of time in a variety of scenarios to assess any risks related to operating and sustaining the aircraft, this recommendation will remain open.</p>

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Recommendation #2:

The F-35 Program Executive Officer should formally share or make available, through a new or existing communications mechanism, F-35 operational lessons learned across the services.

Status: Open

Concurrence: Yes

Comments: According to DOD officials, as of July 2018, the Air Force, the Marine Corps, and the Navy all had robust systems for capturing and sharing F-35 operational lessons learned. However, although these systems are accessible by members of the other services, there is a general lack of awareness of how to access systems across the military services. The department is considering a number of possible solutions to facilitate cross-service sharing of lessons learned, with most of the solutions requiring action from the individual services. For example, there has been discussion of utilizing the already-established Joint Lessons Learned Information System website, and creating a specific repository for the F-35. We are encouraged that the department is aware of the importance of sharing operational lessons learned across the services and that a solution is likely on the horizon. However, until the department reaches a consensus and implements the optimal path forward, this recommendation will remain open.

Source: GAO analysis. | GAO-19-225T

Note: This report is an unclassified version of GAO-18-79C. Two of the four recommendations were directed to the F-35 program office and are included here. The remaining two recommendations were directed to the Commandant of the Marine Corps and are included in table 5, which summarizes recommendations made in GAO-18-79C.

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Table 14: Status of Recommendations from F-35 Aircraft Sustainment: DOD Needs to Address Challenges Affecting Readiness and Cost Transparency (GAO-18-75)

Recommendation #1:	
<p>The Under Secretary of Defense for Acquisition, Technology and Logistics, in coordination with the F-35 Program Executive Officer, should revise sustainment plans to ensure that they include the key requirements and decision points needed to fully implement the F-35 sustainment strategy and align funding plans to meet those requirements.</p>	<p>Status: Open Concurrence: Yes</p> <p>Comments: Officials from the Office of the Under Secretary of Defense for Acquisition and Sustainment (USD (A&S)) said that as of October 2018, USD (A&S) and the F-35 Program Executive Officer (PEO) were focusing actions and resources toward achieving key production, development and sustainment objectives by 2025. For sustainment, the two primary objectives are to increase F-35 availability and reduce sustainment costs. According to these officials, the PEO, with industry- and department-level input, is updating sustainment plans to accelerate depot repair capacity, reduce spares demand and improve the stability, security, and mission capabilities of the Autonomic Logistics Information System. These efforts and others will inform the Fiscal Year 2020-2024 Program Budget decisions, to ensure that investments return the most in terms of increased availability and reduced cost. Officials said that these actions, strategy updates and investments will continue over the Future Year's Defense Plan. We will continue to monitor DOD's efforts to revise the department's sustainment plans and align the department's future budgets to support those plans, but it is too soon to determine the extent to which these efforts—when completed—will address the concerns that we identified our report.</p>

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Recommendation #2:	Status: Open
<p>The Under Secretary of Defense for Acquisition, Technology and Logistics, in coordination with the F-35 Program Executive Officer, should re-examine the metrics that it will use to hold the contractor accountable under the fixed-price, performance-based contracts to ensure that such metrics are objectively measurable, are fully reflective of processes over which the contractor has control, and drive desired behaviors by all stakeholders.</p>	<p>Concurrence: Yes</p> <p>Comments: Officials from USD (A&S) said that as of October 2018, the F-35 PEO re-examines sustainment metrics every year, so that the department can objectively measure and hold the contractor accountable for delivering increased availability and reduced cost, and to align sustainment processes and deliverables to those that the contractor controls. In the fiscal year 2018 annual sustainment contract, the PEO established a fee structure to better motivate the contractor to deliver threshold performance values, established an improved metric compared with the 2017 contract, and initiated a new fee for delivery of supply chain performance metrics directly under the contractor's control. Officials said that the PEO will continue to re-examine metrics annually to ensure that they align with government and industry interests, drive desired behavior, increase F-35 availability, and reduce cost. We recognize the department's progress related to this recommendation, but the key metrics being used by the F-35 program to incentivize the contractor remain a concern as they are not fully reflective of processes over which the contractor has control. This could make it difficult to hold the contractor accountable under performance based contracts, as we reported. We will continue to monitor DOD's efforts to re-examine metrics to ensure that they are objectively measurable, fully reflective of processes over which the contractor has control, and drive desired behaviors by all stakeholders.</p>

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Recommendation #3:	Status: Open
<p>The Under Secretary of Defense for Acquisition, Technology and Logistics, in coordination with the F-35 Program Executive Officer, should, prior to entering into multi-year, fixed-price, performance-based contracts, ensure that DOD has sufficient knowledge of the actual costs of sustainment and technical characteristics of the aircraft after baseline development is complete and the system reaches maturity.</p>	<p>Concurrence: Yes</p> <p>Comments: Officials from USD (A&S) said that as of October 2018, the F-35 PEO is overseeing a Sustainment Actual Cost Working Group, made up of representatives from both the Office of the Secretary of Defense and the F-35 Joint Program Office. The working group is striving to improve DOD's insight into the actual cost of F-35 sustainment. According to these officials, to date, the working group has identified a number of gaps in the cost data that the department receives from prime and subcontractors and is now collaborating with the vendors and with contracting officials to find ways to improve the quality, granularity, and timeliness of the actual F-35 cost data that the department receives. In addition, the F-35 system has not yet completed key operational tests or reached system maturity. Until DOD has a full understanding of the actual costs of sustainment and technical characteristics of the aircraft at system maturity, DOD may not be well positioned to enter into a long-term, fixed-price, performance-based contract. We will continue to monitor DOD's efforts in this area.</p>
Recommendation #4	Status: Open
<p>The Under Secretary of Defense for Acquisition, Technology and Logistics, in coordination with the F-35 Program Executive Officer, should take steps to improve communication with the services and provide more information about how the F-35 sustainment costs they are being charged relate to the capabilities received.</p>	<p>Concurrence: Yes</p> <p>Comments: Officials from USD (A&S) said that as of October 2018, USD (A&S) was undertaking a study on F-35 Sustainment Affordability and Transparency, in response to the Senate Armed Services Committee report accompanying a bill for the National Defense Authorization Act for Fiscal Year 2018. According to these officials, the study examines affordability and transparency issues between the services and the F-35 Joint Program Office, which inhibit the services' visibility into expected F-35 costs versus budgets, what they are paying for in sustainment, and what they are getting for that money. Work on this study is ongoing. We will review DOD's report, once completed, to determine the extent to which DOD's efforts address our recommendation.</p>

Source: GAO analysis. | GAO-19-225T

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Table 15: Status of Recommendations from Defense Supply Chain: DOD Needs Complete Information on Single Sources of Supply to Proactively Manage the Risks (GAO-17-768)

Recommendation #1:	
The Under Secretary of Defense for Acquisition, Technology and Logistics, in conjunction with the Defense Contract Management Agency and the military departments, should assess whether risk mitigation actions have been identified in the event of a loss of each task critical assets facility in the defense industrial base and, based on this assessment, develop risk mitigation actions with associated implementation plans and timelines and provide this information to congressional and DOD decision makers.	<p>Status: Open</p> <p>Concurrence: Yes</p> <p>Comments: DOD officials stated that the department addressed this recommendation by issuing DOD Instruction 3020.45 in August 2018; however, DOD did not have an update on how the department will share this information with congressional decision makers.</p>
Recommendation #2:	
The Under Secretary of Defense for Acquisition, Technology and Logistics, in conjunction with the Defense Contract Management Agency and the military departments, should provide congressional and DOD decision makers with information on the potential effects on defense capabilities in the event of a loss of each task critical assets facility in the defense industrial base.	<p>Status: Open</p> <p>Concurrence: Yes</p> <p>Comments: DOD officials stated that as of August 2018, the department's efforts to address this recommendation were in progress and stated that the issuance of the mission assurance instruction furthered this progress. However, DOD did not provide information on its plan to develop a mechanism to share this information with Congress.</p>
Recommendation #3:	
The Under Secretary of Defense for Acquisition, Technology and Logistics, in conjunction with the Defense Contract Management Agency and the military departments, should provide congressional and DOD decision makers with information on DOD's organic facilities that have been identified as task critical assets, similar to the information provided previously on commercial facilities. This information also should include (1) the potential effects on defense capabilities in the event of a loss of the facility and (2) risk mitigation actions and associated implementation plans with timelines.	<p>Status: Open</p> <p>Concurrence: Yes</p> <p>Comments: DOD officials stated that as of August 2018, the department's efforts to address this recommendation were in progress and that the issuance of the mission assurance instruction furthered this progress. However, DOD did not provide information on its plan to develop a mechanism to share this information with Congress.</p>
Recommendation #4:	
The Under Secretary of Defense for Acquisition, Technology and Logistics, in conjunction with the Defense Contract Management Agency and the military departments, should take steps to share information on risks identified through the annual Critical Asset Identification Process with relevant program managers or other designated service or program officials. At a minimum, relevant officials should receive information on the most critical facilities (such as task critical assets) that produce parts supporting their programs. This information-sharing could occur through service-specific channels of communication or another method of internal communication deemed appropriate by DOD.	<p>Status: Open</p> <p>Concurrence: Yes</p> <p>Comments: DOD officials stated that as of August 2018, they were in the process of developing proactive steps to share information on risks identified through the annual Critical Asset Identification Process with relevant program managers, or with other designated service or program officials as necessary. They further stated that the issuance of the mission assurance instruction will assist with these efforts. We will assess this instruction and will continue to monitor DOD actions taken to address this recommendation.</p>

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Recommendation #5:

The Under Secretary of Defense for Acquisition, Technology and Logistics, in conjunction with the military departments, should develop a mechanism to ensure that program offices obtain information from contractors on single source of supply risks.

Status: Open**Concurrence:** Yes

Comments: DOD officials stated that as of August 2018, assessing the health of the defense industrial base and associated supply chains was the focus of an Executive Order issued in July 2017 and that the resulting interagency report will be released within the next year. DOD officials stated that the issuance of this report will provide significant information toward addressing this recommendation. We will assess this report upon issuance.

Recommendation #6:

The Under Secretary of Defense for Acquisition, Technology and Logistics, in conjunction with the military departments, should issue a department-wide Diminishing Manufacturing Sources and Material Shortages policy, such as an instruction, that clearly defines requirements of Diminishing Manufacturing Sources and Material Shortages management and details responsibilities and procedures to be followed by program offices to implement the policy.

Status: Open**Concurrence:** Yes

Comments: The DOD official that is the lead for the Diminishing Manufacturing Sources and Material Shortages program stated that as of August 2018, the department was in the process of addressing this recommendation. A working group lead by the official and comprising of all relevant offices developed a draft Diminishing Manufacturing Sources and Material Shortages instruction and accompanying manual that details program requirements, responsibilities, and procedures to be followed. The official expects the instruction and manual to be issued by December 2019.

Source: GAO analysis. | GAO-19-225T

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Table 16: Status of Recommendations from Defense Inventory: Further Analysis and Enhanced Metrics Could Improve Service Supply and Depot Operations (GAO-16-450)

Recommendation #1:	
The Assistant Secretary of Defense for Logistics and Materiel Readiness, in conjunction with the Director, Defense Logistics Agency, and the Secretaries of the Army and the Navy and the Commandant of the Marine Corps, to assess through a comprehensive business case analysis—drawing on lessons learned from previous efforts—the costs and benefits of the Defense Logistics Agency managing the retail supply, storage, and distribution functions at the Army and Marine Corps depots and Navy shipyards.	<p>Status: Open</p> <p>Concurrence: Yes</p> <p>Comments: As of August 2018, the Department of Defense (DOD) had designated the transfer of these retail functions as an operating priority and identified it as a key reform effort within logistics in the department. The Marine Corps has conducted its analysis and decided to transition additional supply, storage, and distribution functions to the Defense Logistics Agency over a 4-year period, with all implementation activities scheduled to be complete by 2022. The Navy and Defense Logistics Agency are working on a strategic memorandum of understanding to guide decisions on the role of the Defense Logistics Agency at the Navy shipyards, according to a senior DOD official. Without the Navy finalizing its business case analyses, decision makers will not be positioned to make cost-effective decisions regarding supply operations at military depots.</p>
Recommendation #2:	
The Assistant Secretary of Defense for Logistics and Materiel Readiness, in conjunction with the Director, Defense Logistics Agency, and the Secretaries of the Army and the Navy and the Commandant of the Marine Corps to use the analysis to make a decision on the degree to which the Defense Logistics Agency should manage these functions at the Army and Marine Corps depots and Navy shipyards.	<p>Status: Open</p> <p>Concurrence: Yes</p> <p>Comments: As of August 2018, DOD had designated the transfer of these retail functions as an operating priority and identified it as a key reform effort within logistics in the department. The Marine Corps has conducted its analysis and decided to transition additional supply, storage, and distribution functions to the Defense Logistics Agency over a 4-year period, with all implementation activities scheduled to be completed by 2022. However, the Navy has not made any decisions regarding the additional transfer of supply, storage and distribution functions to the Defense Logistics Agency. Without the Navy making decisions based on business case analyses on the degree to which additional supply, storage, and distribution functions will transfer to the Defense Logistics Agency, DOD will not be assured that it is operating its supply operations at military depots in a cost-effective manner.</p>

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Recommendation #3:

The Assistant Secretary of Defense for Logistics and Materiel Readiness, in conjunction with the Director, Defense Logistics Agency, and the Secretaries of the Army, Navy, and Air Force and the Commandant of the Marine Corps to develop and implement metrics that measure the accuracy of planning factors, such as the schedule, bill of materials, and replacement factors used for depot maintenance.

Status: Open**Concurrence:** Yes

Comments: As of August 2018, DOD has begun to identify metrics that measure the accuracy of planning factors used for depot maintenance. However, these metrics are not scheduled to be fully implemented until December 2018.

Recommendation #4:

The Assistant Secretary of Defense for Logistics and Materiel Readiness, in conjunction with the Director, Defense Logistics Agency, and the Secretaries of the Army, the Navy, and the Air Force and the Commandant of the Marine Corps to take action, as appropriate and necessary, to resolve any issues identified through measuring the accuracy of planning inputs in an effort to improve supply and depot maintenance operations.

Status: Open**Concurrence:** Yes

Comments: As of August 2018, DOD had begun to identify metrics that measure the accuracy of planning factors used for depot maintenance. However, these metrics are not scheduled to be fully implemented until December 2018. Thus, no actions have been taken to resolve any identified issues based on the results of the metrics.

Recommendation #5:

The Assistant Secretary of Defense for Logistics and Materiel Readiness, in conjunction with the Director, Defense Logistics Agency, the Secretaries of the Army, the Navy, and the Air Force, and the Commandant of the Marine Corps to take steps to develop and implement metrics, to the extent feasible, to measure and track disruption costs created by the lack of parts at depot maintenance industrial sites by, for example, establishing a team of supply and depot maintenance experts from the Defense Logistics Agency and the services to assess potential data sources, approaches, and methods.

Status: Open**Concurrence:** Yes

Comments: As of September 2018, DOD had begun examining potential methods for measuring and tracking disruption costs created by the lack of parts at depot maintenance industrial sites. However, DOD and the services have identified a number of data challenges in being able to compute such costs and are in the process of working through those issues so that they can begin measuring and tracking disruption costs.

Recommendation #6:

The Assistant Secretary of Defense for Logistics and Materiel Readiness, in conjunction with the Director, Defense Logistics Agency, the Secretaries of the Army, the Navy, and the Air Force, and the Commandant of the Marine Corps to take action as appropriate to address any inefficiencies identified by the disruption cost metrics in supply and depot maintenance operations.

Status: Open**Concurrence:** Yes

Comments: As of August 2018, DOD had begun to develop metrics that measure and track disruption costs created by the lack of parts at depot maintenance industrial sites. However, these metrics are not scheduled to be implemented until October 2018. Thus, no actions have been taken to resolve any identified issues based on the results of the metrics.

Source: GAO analysis. | GAO-19-225T

Related GAO Products

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 to personnel with the proper clearances and need to know, upon request.

Navy Readiness: Actions Needed to Address Costly Maintenance Delays Facing the Attack Submarine Fleet. [GAO-19-229](#). Washington, D.C.: November 19, 2018.

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Weapon System Sustainment: Selected Air Force and Navy Aircraft Generally Have Not Met Availability Goals, and DOD and Navy Guidance Need to Be Clarified. [GAO-18-678](#). Washington, D.C.: September 10, 2018.

Weapon System Sustainment: Selected Air Force and Navy Aircraft Generally Have Not Met Availability Goals, and DOD and Navy Guidance Need Clarification. [GAO-18-146SU](#). Washington, D.C.: April 25, 2018.

Military Readiness: Update on DOD's Progress in Developing a Readiness Rebuilding Plan. [GAO-18-441RC](#). Washington, D.C.: August 10, 2018. (SECRET)

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F-35 Joint Strike Fighter: Development Is Nearly Complete, but Deficiencies Found in Testing Need to Be Resolved. [GAO-18-321](#). Washington, D.C.: June 5, 2018.

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Defense Supply Chain: DOD Needs Complete Information on Single Sources of Supply to Proactively Manage the Risks. [GAO-17-768](#). Washington, D.C.: September 28, 2017.

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Navy Readiness: Actions Needed to Address Persistent Maintenance, Training, and Other Challenges Facing the Fleet. [GAO-17-809T](#). Washington, D.C.: September 19, 2017.

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Navy Shipbuilding: Policy Changes Needed to Improve the Post-Delivery Process and Ship Quality. [GAO-17-418](#). Washington, D.C.: July 13, 2017

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Defense Inventory: Further Analysis and Enhanced Metrics Could Improve Service Supply and Depot Operations. [GAO-16-450](#). Washington, D.C.: June 9, 2016.

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Senator WICKER. Thank you. A very plain and forthright testimony that we need to heed.

Secretary Spencer, we are entering a time of divided government in this Congress. We will soon have a Republican Senate and a Democratically controlled house, and we are going to have to join hands as Americans and give you the resources, give all four of you gentlemen and the people you represent the resources that you need.

Let me just remind folks listening that there is a provision in a statute that has not yet been repealed, and if it should be allowed to take effect, it would put us back in sequestration, an unthinkable result, and an utterly irresponsible act that I feel sure this Republican Senate and this upcoming Democrat House will avoid.

I remember a previous Secretary of the Navy, Secretary Mabus, telling me in a budget hearing that they had no contingency plans for sequestration because it was so utterly irresponsible and unthinkable that it could not happen. And lo and behold, it happened. We received testimony before our full Committee some 3 years ago from a previous CNO that the sequestration cuts resulted in five canceled ship deployments, \$2 billion in deferred procurement, a 30 percent cut to facilities sustainment, increased maintenance backlogs, and approximately one-half of the Marine Corps home station units at unacceptable levels of readiness. The CNO could have gone on and on on that.

I do not think this is going to happen, but it is in the statute and unless we take action, bipartisan action, to give our citizens the security they need, it is there in the statute, and we must be mindful of that.

Secretary Spencer, you first, then General Neller, and then Admiral Moran. Please give us illustrations of what impacts that would result in if the sequestration kicks back in as is currently slated under current statute. Secretary Spencer, I will let you go first.

Secretary SPENCER. Mr. Chairman, devastating in many ways.

First, right off the bat, the money that you gave us in 2017, 2018, and 2019—you are going to hear what is being done. We are doing some very unique and trailblazing efforts to really get us back on our feet into the fight at fighting weight. We are on the bicycle peddling. It took us a while to get up.

This would just knock us down, flat down. If you look at what sequester does, it is a \$26 billion cut to the Department of the Navy. If the President has MILPERS [military personnel] as exempt or 19 percent non-exempt, 14 percent. It is devastating.

I am more than happy to share with you all later a graphic that I put together here, going around the country for everyone's district, what this would mean that we would have to do if sequestration hit, and no area of the country is really unscathed by this.

Senator WICKER. Let us go ahead and put that in the record right now, Mr. Secretary.

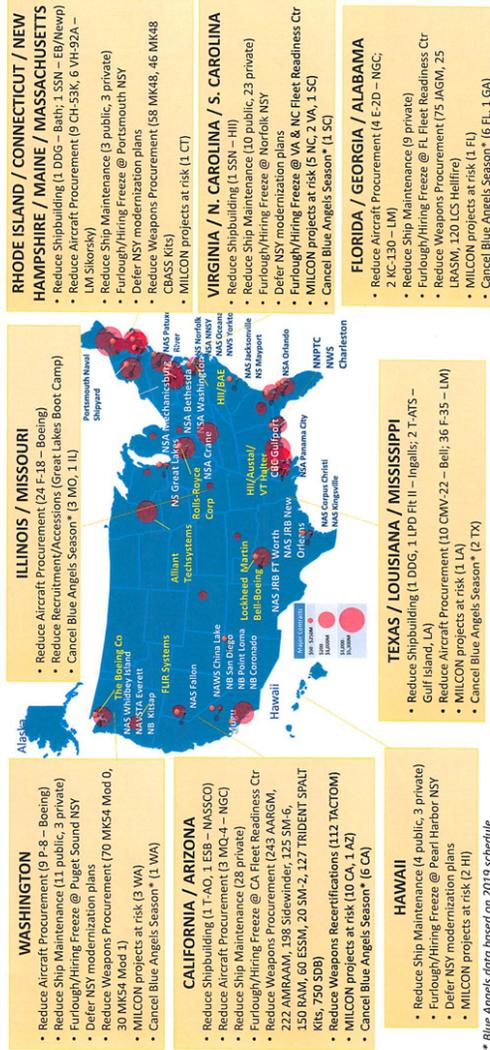
Secretary SPENCER. Will do.

Senator WICKER. Without objection.

[The information follows:]

POSSIBLE FY20 SEQUESTRATION IMPACTS

If mechanical sequestration occurs in FY20, then ALL budget line items will be reduced by the same % (unless exempted). This chart shows the SCOPE of potential cuts (or "up to" amounts) based on PB-19 FY20.



* Blue Angels data based on 2019 schedule.
 ** All other data shown represents the PB-19 FY20 planned program – this does not factor in any POM-20 changes. Ship Maintenance includes recycling and inactivations.

Secretary SPENCER. Will do, sir.

That is the bottom line. I turn it over to my two compatriots.

Senator WICKER. General Neller?

General NELLER. As the Secretary said, we are making progress, certainly not as fast as we would like or you would like, but I can show you quantifiably how our readiness is improving.

We have a unique problem. I mean, we are at an inflection point for our Nation. We have to maintain current operations, and those are being reviewed and looked at. We have to modernize a force that has been at war for 17 years, and then we have to prepare for something we have not had to prepare for since the Cold War to fight a peer adversary. Those particular nations have had to do nothing other than recapitalize their force.

If we were forced back to a sequestration level, it would be more than just the Blue Angels not doing air shows and people not going to conferences. It would be units getting ready to deploy later. It would cause us to look at our force structure and have to make ourselves a smaller force, which we lose capacity, which means we would have less presence around the world. It would delay almost every single acquisition program that we have underway, ground and air, to try to not just modernize but to create future capabilities for the force that we think we need to be to defend the interests of this Nation.

I would never underestimate the impact it would have on the force itself. It is important for—I know this Committee understands that, but the American people understand. This is not just an all volunteer force. This is an all recruited force. They expect that when they are recruited and they sign up, and we send them—we want all games to be away games. We do not do home games—that they are going to have the best gear and the best training that this Nation can provide. We would be challenged to do that. Obviously, those that are going to be forward deployed are going to get the best that we have got and they are going to get the most ready capable equipment. But the time for them to get ready would take longer, and the depth on the bench, if there were an unexpected contingency, the readiness of that force would go down. It would be devastating. I agree with the Secretary.

Senator WICKER. Thank you.

Admiral?

Admiral MORAN. Thank you, Mr. Chairman.

When I think about the Budget Control Act, sequestration, and even multiple continuing resolutions as opposed to a stable, predictable budget, I go back 5 years ago or so when the first time we went through this occurred. It has taken us 5 years to really get back on our bicycle, as the Secretary referred to. So I think about this with a component of time, time for our sailors to learn how to operate their gear, time to fly airplanes to become proficient and beyond proficient, but experts, masters at what they came in the Navy to do. I think about time for families, notification for PCS [permanent change of station] that gets driven down to 1 or 2 months instead of 6 months as it should be. I also think of time in terms of our ability to recover if we were to go back to those levels again. Even though we would probably start to recover, you are talking 5 years if you just use the recent last 5 years as an exam-

ple. The component of time is time you cannot get back. So we lose proficiency. We lose expertise, and we have to recover that by skipping generations of people who missed the opportunity during the time when we did not have the resources available.

Senator WICKER. Thank you, gentlemen.

Senator Hirono?

Senator HIRONO. Thank you, Mr. Chairman.

I mentioned in my opening statement the concern I have about our public shipyards, and I know that the Navy has a new plan for modernizing the public shipyards called the Shipyard Infrastructure Optimization Plan. I consider this to be a major improvement after years of neglect of this important infrastructure. Certainly there have been military construction projects and various upgrades over the years, but there is nothing like a comprehensive plan that can be implemented to really move us to the point where we need to be.

The Navy told us earlier this year that the Navy would issue a master plan for modernizing the four public shipyards in the fall of 2018. That master plan was intended to guide Navy investments over the next 20 years.

Secretary Spencer, where does the Navy stand on implementing that master plan?

Secretary SPENCER. Underway, Senator. The key that we are looking at right now when we fund and we are looking to build up the POM [Program Objective Memorandum] is basically three buckets, and that is our legacy systems, what I call our installed base, modernization, and then Force 2.0, which are our present investment for future weapons, think AI [artificial intelligence], directed energy, et cetera.

We have stepped back and taken a close look because the fact of the matter is until we get our shipyards, specifically for our underwater fleet, our public shipyards primarily, increased flow and increased efficiencies for throughput, we are hurting ourselves. I am responsible with my Title 10 hat to man, equip, train, and deliver those assets needed by the combatant commanders. This is a key focus. We are allocating dollars. Hawaii is one of the first projects that we are looking at right now. We are sitting there taking an industrial flow overview look on how we are going to rebuild these. The fact of the matter is that the science of industrial flow has progressed tremendously since we last touched these shipyards. We are going to modernize them.

Senator HIRONO. I am glad to hear that Pearl Harbor is one of your first shipyard focuses. I would be very interested to know what specifically is happening at Pearl Harbor that will lead to its modernization.

Mr. Pendleton, has the GAO reviewed the Navy shipyard modernization plans? If so, have you drawn any conclusions from that review?

Mr. PENDLETON. Ma'am, we have a review underway looking at how that is going. We have work that indicates the age and condition of the shipyards and have looked at the impact on maintenance delays. The documentation itself—we are still looking at that.

Senator HIRONO. When you say looking at it, when can we expect a report?

Mr. PENDLETON. Let me check.

Summer, ma'am.

Senator HIRONO. I am sorry?

Mr. PENDLETON. Summer of next year, probably May, June. But we would be happy to brief you earlier.

Senator HIRONO. Meanwhile, the modernization plans are proceeding. They are being implemented per our Secretary. So thank you very much.

Mr. Moran has mentioned that it would be pretty challenging to get to the 80 percent aircraft availability. Are we being realistic in expecting, Mr. Secretary, an 80 percent readiness?

Secretary SPENCER. It is a stretch goal, Senator, but it is a stretch goal that we will take. If I could bring you out to one of our depots out west to show you what we are doing as a program for the F-18 Super Hornet—we have hired a fellow who ran Southwest Airlines maintenance. In a matter of 8 weeks—and I can turn it over to the Vice here because he sits on the steering committee for this program. In 8 weeks, we have increased throughput by 40 percent.

Senator HIRONO. There is a concern about something called innovative accounting techniques to indicate to us that these 80 percent goals are being met. Can you assure us that that is not what you are going to provide us?

Secretary SPENCER. It is not going to be done by pencil whipping, I will tell you that.

Senator HIRONO. Thank you.

I think it would be good for me to go and take you up on that visit.

Now, I did want to get to the corrosion issue because we recently had multiple deaths as a result. Just this week the Marine Corps released their official results of the investigation into the crash of a Marine Corps KC-130T aircraft in Mississippi in 2017. The investigation found that aircraft crashed because a corroded propeller blade came off during the flight killing all 16 people aboard.

Secretary Spencer, can you give us your views on the importance of pursuing corrosion prevention and mitigation programs, as you seek to take good care of the people and equipment under your control? Of course, part of what happened in that tragic incident was that there was inadequate training for the maintenance people. So can you tell us what you are doing to address the corrosion issues?

Secretary SPENCER. I can, Senator, in two ways. One is how we go about doing our maintenance. The fact that corrosion was the actual fault in that accident, the real problem was that we were not doing the appropriate preventative maintenance in the right way as outlined in the procedure. That has been corrected on both fronts.

Now, when it comes to corrosion in general, we work in a maritime environment, highly corrosive. This is something that we are actually enhancing our efforts at because if you could see, when we start peeling back the onion on our maintenance issues, corrosion ends up being one of the biggest manpower consumers. With the

chemistry that is out there today, we have the ability to really address this, along with process, to stay ahead of it.

Senator HIRONO. I think when I met with you, I was very interested in making sure that when we purchase the ships, et cetera, aircraft, that corrosion is one of the factors that we would consider in putting out the contract to begin with, that all these people should be looking at ways that they can incorporate anti-corrosive products into the crafts.

Secretary SPENCER. Most definitely, Senator. I mean, if you were to see the efforts that are going on now with two of our prime suppliers, they are partners in this problem. They are not simply contractors. We are living it through them saying, one, what can you bring to the table that is new since the last time we let this contract, and two, what are best practices we are seeing out there amongst other areas and what can we do to improve the way that we battle this.

Senator HIRONO. Thank you.

Thank you, Mr. Chairman.

Senator WICKER. Senator Sullivan?

Senator SULLIVAN. Thank you, Mr. Chairman.

I appreciate the witnesses joining this joint Committee today.

General Neller, it has been nearly 3 months since Hurricane Florence made landfall in North Carolina. Have you had the opportunity to assess the order of magnitude to the impacts of Camp Lejeune and the challenges we see there?

General NELLER. Yes, sir, we have.

Senator SULLIVAN. What are the numbers? Do you have numbers?

General NELLER. Camp Lejeune is not as dramatic when you look at it with your own eyes as to what happen on the panhandle of Florida. The storm was very slow moving. There was a lot of wind, but it sat on top of the base and it rained for 2 or 3 days. A lot of the buildings at Camp Lejeune are very old. They suffered roof damage, exterior damage, and then when that happened, the water got inside, and so you end up with mold and other things.

And so there was an effect on housing, which we are working with a private vendor for them to fix that, and they are making some progress, not as fast as we would like, but they are making progress.

On the facilities and structures for us, if you were to repair it, it would be one number, but if you were to take the buildings that we would consider to be not worth the cost of just repair, that they needed to be rebuilt, the total bill comes to about \$3.6 billion.

Senator SULLIVAN. Let me ask another question for you, General. You mentioned some of the bad consequences if we went back into sequestration, and you put forward a list that was pretty significant that I think should get everybody's attention in terms of negative consequences.

One thing you did not mention, which is obviously an issue that we have raised here, is, to be blunt, the increased probability that some of the really bad things that we have seen could increase in terms of their potential. I am talking about deaths in training and deaths in the activities of our military. Is that another risk if we go into sequestration? That is the ultimate risk. Right? I love the

Blue Angels, but my biggest concern is that we see more of these deaths, and the American people—none of us should tolerate it. Is that a risk?

General NELLER. When you are not able to train as hard and as long and fly as many hours as you require to maintain a substantial training level that makes you qualified, based on current standards, yes, Senator, that is a risk.

Senator SULLIVAN. Okay. That is really important to know.

Mr. Pendleton, you also mentioned—I think we all recognize we have a readiness problem, readiness challenge. You just mentioned in your opening testimony it is going to take significant time to rebuild readiness. Let me ask just the basic question. What in your view—you kind of have the outside view, the independent view—put us in this hole in the first place? Remember, it is not just readiness. This is a readiness challenge that is killing our marines and sailors. What put us in the hole? Was it the fact that from 2010 to 2016, the DOD budget was slashed by 25 percent? A lot of people do not know that. That is a fact. Is that it?

Mr. PENDLETON. I do not think budgets helped. Unpredictability of budgets certainly did not help.

But it was also a demand and supply problem. I mean, the Army, if you go back a few years—they were able to bring more folks home and retrain and get repetitions through the combat training centers.

Senator SULLIVAN. So succinctly, what put us in the readiness hole?

Mr. PENDLETON. I think for the Navy and Air Force is what I am getting to, is that demand did not really slow down, and so they had to continue to find ways to meet the demand with a shrinking fleet. With budgets like they were, they affected sustainment accounts, which then had a ripple that we are trying to work off now.

Senator SULLIVAN. Let me ask, Mr. Secretary. You know, one of the things—and I touched on it briefly in my opening statement. There has been a lot of interest from this Committee on what is happening in the Arctic, and it is not just me as an Alaska Senator. It is actually broad-based. We have had a number of provisions in the NDAA, including the demand from the Department of Defense for a new Arctic strategy. As you know, the Russians are building up their capability massively, you know, huge exercises, new airfields, new ports, 40 icebreakers, building 13 more. Some are nuclear powered. Many are weaponized.

Secretary Mattis, in his visit to Alaska this summer and in a statement to this Committee, said it is a strategic area we need to pay more attention to. You and I had the opportunity to visit potential areas, Adak, Port Clarence, Nome, and you recently said in a speech that we need a strategic Arctic port in Alaska.

Can you focus on some of the issues that you see as challenges from the national security perspective, National Defense Strategy, and how the Arctic plays into that? Can I get your commitment, as required in statute, to work with this Committee on a revised analysis of a strategic Arctic port?

Secretary SPENCER. One, you do have my commitment, Senator. Last October when I was newly minted, one of my first trips outside the country was to the Arctic, Kavivium and Reykjavik, and

that was my educational curve for really what was going on in the Arctic. At that point, our Russian friends were warming up five airstrips, 10,000 Spetsnaz troops up there for, quote/unquote, search and rescue according to the ambassador from Russia. The Chinese are up there. Everybody is up there.

Senator SULLIVAN. Everybody but us.

Secretary SPENCER. Well, Senator, we are up there under the sea and in the air.

Senator SULLIVAN. But you cannot do a FONOP [freedom of navigation operation] under the water.

Secretary SPENCER. I agree to an extent.

But I am getting to my point, which is we are looking at how we can get up there. This is portfolio management. If I had a blank check for everything, it would be terrific to ice-harden ships, but with the demand that we have right now, it is unaffordable. Do we have an avenue that could possibly work at seasonal times to go up there? I believe we do. We are looking at that right now. The Coast Guard is getting its heavy ice cutter. We would have to have that in tail, if in fact there was ice. We need to get up there. I can commit to the fact that we are trying to figure out how we do service that.

You and I did go look on the coast up there for a potential strategic port. I think the Coast Guard, in concert with the Navy—we should definitely flesh out what could possibly be done.

When it comes to using Alaska in the Arctic area for training, the Commandant and I have talked about this, plans to go look at doing something this summer, possibly on Adak for training. The Vice and I have talked about possible P-8 debt up to Adak. There is definite training uses and there is definite ability to effect the National Defense Strategy with Arctic activity.

Senator SULLIVAN. Thank you, Mr. Chairman.

Senator WICKER. Thank you very much, Senator Sullivan.

Senator KAINE?

Senator KAINE. Thank you, Mr. Chair.

Secretary Spencer, I will start with you. I have chatted with you about the requirement in the NDAA from 2015 that is now live about audited financial statements for all functions within the DOD. We view that as a tool not just for congressional oversight, not just for public oversight, but we also view it as a tool for military leadership to manage, to create—I think you described in your testimony kind of a culture of continuous improvement. If we are going to be reliable on ample budgetary requests and budget certainty going forward, it really helps us if we believe that the DOD is using tools like this to promote improvement, to let go of lesser performing priorities or lower performing programs and invest in other areas, as you describe, bringing in somebody from Southwest to help you figure out new strategies on maintenance. That sounds like a good one.

How are you using tools like the audited financial statements and others to try to figure out how to better prioritize and squeeze more value out of the dollars we give you?

Secretary SPENCER. Senator, the audit process at Navy from the day I arrived, the conversation was this is not an invasion into your area for a painful financial exam. This is a process that will

give you a tool—you, a manager, a tool—to see how you are deploying resources and the effect of the employment of those resources.

So we did change the conversation. I will tell you what. We have gone through our first cycle, as you know, and I think as we advertised day one when I was up here for my confirmation hearings, I do not think we will probably get a clean opinion for another 5 to 6 years. But that is not the issue. It is the learning process along the way that is critical. This cycle alone, we have vignettes that I can provide for you on the record later of events, and I will just quote a few.

We found out that in the Navy alone, we had in excess of 700 distribution points for parts. You know, Amazon does this globally with 25 centers. Do we have something to learn there? We certainly do.

The ability to turn around and find out where inventory is. A fine example. We were missing some assets that were held by a contractor. In my heart of hearts, I said we will probably find these. This is a paper issue. It was.

But when you work in the commercial sector, there was a thing that I grew up with called SAS [Statement on Auditing Standards] 70, which were the standards that you would provide your services and goods to a client. That exists amongst all our contractors, but it appears that we forgot to ask for that or we were not aware that. From this evolution, we are going to turn around and say when you hold assets for us, when you do anything for us, will you do them at the same generally accepted accounting standards as SAS 70? If it is there, we are taking advantage of it.

Senator Kaine. Well, expect to get asked questions like this a lot at future hearings. We really want to see how those are being used. To all of you.

General Neller, I was struck by your costs on the repair of Lejeune. I think you put it at around 2.2. Is that right? \$2.2 billion?

General Neller. Actually at the high end, if we costed out, because we do not believe it is cost effective, Senator, to repair buildings that are 35 to 50 years old.

Senator Kaine. Right.

General Neller. So if you replace these 31 buildings -- there are actually more, but these are the ones we put into priority—the bill is around \$3.6 billion, \$3.7 billion.

Senator Kaine. It would also be the case that it would be foolish to repair a building that would then be vulnerable to the same kind of damage with the next hurricane that comes along.

General Neller. I would agree with that.

Senator Kaine. Right. So we really ought to probably be looking at the higher cost. The Tindall price tag is about \$5 billion, as I understand it. That is not the purpose of this hearing.

But talk to me about this top ten list. In the Navy/Marine side, there is a report due, pursuant to the NDAA, this month about sort of the top ten installations that you feel have vulnerabilities because of climate. When are we likely to see that report?

Secretary Spencer. Senator, that should be forthcoming soon. I will get back to you on the exact date. I have seen the list, and I

do not know where the process is in actually finalizing it and signing it out to you.

But not surprisingly, it is going to be what you might expect. In the Navy, it is going to be oceanfront areas, water rising issues. It is going to be areas exposed to what we have seen now as 100-year storms that come every 2 or 3 years. We are going to have to start addressing this so we do this correctly and spend the money correctly.

Senator KAINE. We had a very well attended hearing in Hampton Roads now nearly 2 years ago, a very bipartisan congressional delegation talking about sea level rise and the effect on Norfolk and other basis, Langley and others in the area. And it was pretty sobering. And we started thinking about if there is a future BRAC [Base Realignment and Closure] round or any kind of physical base rationalization, that has got to be a vulnerability that people would be concerned about. But one of the DOD witnesses said you should worry about sea level rise, but try running a base in an area where there is a persistent drought. It is not just sea level rise. There are all kinds of weather emergencies and challenges that all of the services are dealing with on the climate side. And we look forward to that report because it will help us do our job better when we get to NDAA and appropriations.

Thank you, Mr. Chair.

Senator WICKER. Thank you, Senator Kaine. And we certainly ought to be able to deal with issues like that apart from any BRAC round we might have.

Senator Rounds?

Senator ROUNDS. Thank you, Mr. Chairman.

Gentlemen, thank you all for your service to our country.

Mr. Pendleton, some of the numbers right now with regard to aircraft and their mission-capable, not fully mission-capable, numbers are still pretty disturbing. The numbers, as I am reading them—and I am looking at comparisons between the different types of aircraft and the different branches of government. Clearly there is a difference between the requirements for each one of these aircraft in terms of the missions that they are supposed to be capable of. But I would like your thoughts on a couple of things.

Number one, the Navy's F/A-18 E&F, the Super Hornets, which are the newest of the Hornets. They have a mission capable rate of 49.1 percent right now, according to the most recent stats that we have. Compare that with the Marine Corps who have a mission capable on their older ones, their legacy Hornets, of 60 percent, clearly a higher percentage rate. I would like your thoughts as to why Marines have a higher mission capability, the same depot or different depot. If you compare that with the Air Force, their F-16C aircraft, not their newest F-16's, they have a 70 percent mission capable rate.

Why is it? What is the difference in discrepancy? Is it a matter that the intensity of the operations for the Navy is that much greater? Is it a matter of best practices? What in your opinion is causing the differences between the mission-capable differences?

Mr. PENDLETON. You know, I am going to have to get back to you with a better answer. But I mean, it has to do with the experience level at the depots, the throughput at the depots. We just have not

done the comparison you are talking about, and I do not feel comfortable opining about it. But we will look at it because we visited all those places in recent years. Some of the folks to my right might be able to talk to you about that, but I do not feel comfortable making those comparisons.

Senator ROUNDS. Admiral Moran, would you care to comment on it?

Admiral MORAN. Senator, thank you for the question.

I think we got to make sure that we are comparing apples and apples. Numerators and denominators matter here.

Our current statistics on the Super Hornet are the mission capability rate for Super Hornets in operational squadrons that would have to go to the fight, if called to, is at 66 percent and rising.

Senator ROUNDS. So the numbers that I have got right now with regard to 49 percent are older numbers?

Admiral MORAN. They are much older numbers. And that 49 percent is much more reflective of the total active inventory, to included airplanes that are in the depot today, which are not in reporting. There is a lot of math here and I do not want to confuse it. But we are on this path, this stretch goal to the Secretary's point, of 80 percent. Last year, when I testified, we were in the mid-40's.

Senator ROUNDS. Then let me ask this. I really do not mean to cut you off, but I think you have answered my first question.

What about the F-35's? Right now, the C model which you are implementing at this point—the 35C indicates, according to the data that we have got, about a 17 percent mission-capable rate. Is that an accurate number today?

Admiral MORAN. Well, sir, what I would share with you there is it is the law of very small numbers. We only have one operational F-35—well, we do not even have an operational F-35C squadron yet. We have the FRS [Fleet Replacement Squadron], which is our training squadron, and the law of small numbers means that a couple go down on a given day. Depending on when you report it, it could drive the percentages really low or really high.

I think we need more run time on the F-35C, whereas the Air Force and the Marine Corps have had more run time on the F-35's and have a better indication I think of what you can expect.

Senator ROUNDS. Okay.

I want to move over to submarines for just a minute. Mr. Pendleton, the attack submarines. A year ago, we used it as an example of the reason why we need to improve the capabilities of our dry docks. The USS *Boise* became an example. It had been at dock not mission-capable, not even able to dive for a period of up to 3 years. I presume that that attack submarine is now in dry dock?

Mr. PENDLETON. I believe so. I better check to be sure if it still is. It is out?

Senator ROUNDS. Secretary Spencer?

Secretary SPENCER. It is not there yet, no.

Senator ROUNDS. It is not there yet?

Secretary SPENCER. It is January, sir.

Mr. PENDLETON. I knew it was around that. Contracted.

Senator ROUNDS. So it has been 4 years then out of service for an attack submarine.

Secretary SPENCER. That is correct.

Senator ROUNDS. Do we have any other attack submarines that are currently at dock, not able to dive, that are awaiting drydock services?

Admiral MORAN. Yes, sir, we do. We have two more that are not certified to dive today. Both of those go into dry docks after the new year, one in February and I think the next one in May or June. This is all part of spreading this across the public and private sector and addressing the submarine shortages.

Senator ROUNDS. My time is up.

Senator WICKER. Well, no. Why did that happen, Admiral?

Admiral MORAN. Why did what happen, sir?

Senator WICKER. The 4-year period, the lengthy time.

Admiral MORAN. It is the age-old problem of what we talked about the last 2 years in this hearing where we had aging SSBNs which take priority in the public yards to fix because of the national priority on strategic deterrence.

The next in the order of priority are our carriers, which as we have all testified here the last couple years, have been ridden very hard, high OPTEMPO [Operational Tempo], extended periods because of discovery work and additional maintenance that we were not anticipating.

The last and standing in line to get into those availabilities in the public yards were our SSNs.

And so we have begun to put them in private yards to help unload or level load and get submarines that need to be in dry dock in dry dock sooner. *Boise* was—you know, we talked about this last year, Senator. We want no more *Boises*. The numbers are coming down significantly. The standing in line has come down significantly. We still have a ways to go. We are not out of the woods yet, but I think as capacity opens up in the private yards and we do a better job in the public yards of getting our carriers out on time, we will be there.

Senator ROUNDS. Mr. Chairman, if I may, just one thought.

Senator WICKER. Please.

Senator ROUNDS. A year ago, did we have three submarines that were waiting to get into drydock or did we have less than that?

Admiral MORAN. I will have to get back to you.

Senator ROUNDS. Okay. It appears to me that even with the resources that we have allocated so far, we are going the wrong direction with regard to the fleet that we have got. My only point is that if it is a matter of resources and if you are not here in public testimony to tell us what the impacts of not having the additional resources necessary to keep these critical pieces in the defense of our country operational, how in the world can we ever go to what we know we need in a 355-ship Navy and support them if we are not going to be able to share with the American public how critical it is to maintain the defense posture that we have currently got. What I would expect, as a member of the committee, is to at least be able to allow you the opportunity to share what happens if we ever do get back into a reduced defense budget or to, heaven forbid, another sequestration and what the impact is to these young men and women that are expecting that they are at least going to get the tools to do their job. Then to find out that we have three attack

submarines that have not even been able to get into dry dock seems to me to be something that ought to be shared with the American public, and they ought to understand how serious this problem really is.

Secretary SPENCER. I could not agree with you more, Senator. But as a fine example, so everyone truly does understand the ups and downs of this, the monies that you gave us to optimize the shipyards—that is a 2-year project at the least to get that up and running to the new flow rate.

There was a study that was done up at Portsmouth. You all know maintenance is all about hands touching and turning and fixing things. It is hands-on time. They tracked one of the maintenance people for his hands-on time. He drove a golf cart around the area for 4 miles one day just in an average search of parts. We have to bring the parts down to the ship. This is what I am talking about, the science of industrial flow that needs to be put into these old shipyards. We are doing it. The monies that you have given us will get after that. It is 2 years to effect that, but to kill it now with any sort of sequestration would be a crime.

Admiral MORAN. Senator, if I could. If I could go back to the earlier comment about what the element of time does to this problem, we just got back the shipyard workers in the public yards to the level we wanted after sequestration 5 years ago. This is a unique, highly skilled workforce in our nuclear yards. If they do not feel like they are supported, if we are not giving them adequate resources to do their job and have the manning levels where they need to be, they walk. They can go other places because they are highly skilled. And then it takes a long time to recover that.

So to your point, if we go backwards on this, it is going to take us 3, 4, 5 years to recover just the workforce and skill sets we need to do nuclear maintenance.

Senator ROUNDS. Thank you.

Thank you, Mr. Chairman.

Senator WICKER. I do not think we are going to go back to sequestration, but we are going to have to take affirmative votes not to.

I think Senator Rounds' question, though, is even with the adequate budgets that we have provided the last 2 years, and going forward, if we are able to do the same thing—now it seems that the administration is all in favor of generous funding for the military. Even with that, I think the question is what else is necessary. I do not think you are being critical, Senator Rounds. I think we are asking a question of how we can improve the situation.

Senator ROUNDS. Mr. Chairman, thank you. If I came across as being critical, I do not intend to be. What I am trying to get at is that we have got to be able to share with an American public that sees an increasing defense budget, and they have got to understand how far behind we were and about what our adversaries are doing with their own and where we are falling behind. It is not just a matter of readiness. It is a matter of modernization because, as you say, directed weapons is not something in the future. Others are working on it now. And we start talking about what is going on in space and our ability to control the information coming through, and in hypersonic weapons which are there now and how far we

will be if we do not maintain this. And it puts our security at risk. We have a difficult time trying to get that information out to the public because most of the information we receive is in a classified section. So this opportunity for you to share how serious this is has got to be shared with the American public. That, I guess, is where my frustration comes from.

Senator WICKER. Thank you, Senator Rounds.

Senator King, it appears that we have taken all of your time and I just regret that.

[Laughter.]

Senator WICKER. Why do we not go ahead and recognize Senator King?

Senator KING. I would be glad to yield my time to Senator Rounds anytime.

Secretary Spencer, I think you have touched upon this, but it strikes me that both in aircraft and ship maintenance, we do have a lot to learn from the private sector, and I hope that that is a really active effort. I know you mentioned when I was absent—I apologize. I had another hearing—Southwest Airlines. Obviously, there are differences. It is not apples to apples. But I think there is a lot to learn in terms of work flow, systems, just in time, parts availability. I hope that is a major part of your effort to upgrade because we cannot afford to buy ships that we are not using.

Secretary SPENCER. Senator, I could not underscore your statement stronger. One thing that I do want you all to know is that as we reach out, whether it is Southwest, whether it is Delta, whether it is Carnival Lines, to similar models that we are facing, corporate America is bending over backwards to help us. The hours that they spend with us, the resources that they provide us with people, it really is stunning. And we are learning a tremendous amount. I could give you vignettes down the line on simple parts that used to take 55 days for us to process where someone looked and said, hey, here is how we are doing it in the civilian world, and cut it down to 2 days. And that one part would be a downing part for an aircraft. That is the kind of impact that we are seeing with what we are learning.

Senator KING. Well, there is an interesting chart in the GAO analysis of the naval data that talks about parts obsolescence or diminishing manufacturing source of parts. There is a checkmark next to every Navy aircraft in those areas, as well as delays in depot maintenance. So I think this is a really big deal, and it is very important in terms of budgetary priorities. Again, it makes it so much more efficient if the planes and ships that we have are fully ready to be utilized.

One of the concerns I have—and you mentioned Portsmouth—is personnel and workforce. At Portsmouth now, a tremendous yard doing great work, 30 percent of their workforce has been there less than 5 years. That is a change in recent years. I hope the Navy is thinking about workforce development because that is not going to happen on its own.

Secretary SPENCER. It is a definite upfront of mine, Senator. And you and I have talked about this. But when I talk about collaboration and partnership with our commercial counterparts, also with our States to help whatever they can do to promote any sort of edu-

cational assistance or early education venues to feed the yards, which are amazing careers—you know, a lot of people do not realize the contribution that one makes to a great product, but also the compensation received.

Senator KING. I can attest to that at Portsmouth because they let me use a virtual welding machine where I could actually think I was wielding, but I was not screwing up a ship hull. It was a very positive experience.

Secretary SPENCER. Next time, we will use you.

Senator KING. That is right.

Talking about industrial base and acquisition, the frigate, which we are talking about—there are five yards competing. There are going to be 20 ships. As I understand it, the intention now is to award all 20 ships to the winner. It is a winner take all among five. In terms of industrial base and also just spreading the work, getting the work done faster, talk to me about the possibility of splitting that award between at least two yards, if not three.

Secretary SPENCER. You bring up an interesting concept. There are two things going on here that need to be weighed out. One, yes, we do have to be attentive to our industrial base and the ability to keep hands busy and trained. Two, one thing we also have to look at, though, is the balancing of the flow of new ships into the fleet because what we want to avoid is a spike because that spike will come down and bite us again when they all go through regular maintenance cycles and everyone comes due within 2 or 3 years or 4 years. It gets very crowded.

It is not off the table because we have not awarded anything yet. We will look at how best we can balance with how we get resourced, and if we have the resources to bring expedition, granted, we will do that.

Senator KING. I appreciate that.

Final question. The Navy and the Marine Corps recently went through their first audit, and no one expected it to be a clean audit first time through. Two questions. What have you learned from this audit, and secondly, when can we expect a clean audit?

Secretary SPENCER. I will go first question first. We are still learning. It was a tremendous cycle. As I told Senator Kaine, we changed the conversation in the Department of the Navy, the Navy and Marine Corps team, that this iteration of a thing called an audit is not an invasion for financial reasons. This is a tool that you will use as a manager so you know how your organization is operating, so you know how the resources you are applying are providing you a return. That message has been received.

If you look at our list of deficiencies, there are many, but this was the first time in the barrel for the Navy. It was eye-opening, 700 distribution centers. Well, you know what? We can probably get after that. Real estate that was missing, quote/unquote. A lot of it was procedure. I mean, the building was there, but was it in the right book in the right business system? No. This is all the learning that we are doing so we have tools to manage.

Senator KING. Do you feel that we are headed toward a time when there can be a clean audit?

Secretary SPENCER. Yes. I would love to say in the future. I do not see a clean—

Senator KING. In our lifetimes?

Secretary SPENCER. I would say 5 to 6 years, to be very frank with you.

Senator KING. General Neller, I just want to greet you.

Senator WICKER. What is your life expectancy?

[Laughter.]

Secretary SPENCER. That might be my life expectancy, Senator.

Senator KING. General Neller, I just want to compliment you on your service. You drew the long straw this morning and the Secretary seems to be getting the brunt of the questions. But thank you.

General NELLER. We are very appreciative that you are giving him all the questions.

[Laughter.]

General NELLER. Senator, just one thing on the audit just for the record. The Marine Corps has been under audit for several years, and as the Secretary said, I have taken the brief from the audit team myself the last 3 years. It has been enlightening. A lot of it is procedural. A lot of it is accounting things and procedures. A lot of it is that there are a number of systems across not just within the Department of the Navy, other services. A big issue is we have a lot of ammunition that we share with the Army and the systems that we have that account for that—they do not talk to each other.

The auditor gives you a list of findings or conclusions or things, and then your job is to go back and try to close them out. I assure you that the Secretary of the Navy and the Secretary of Defense keep score on that sheet. And so we have a team of people, and then the audit for this next year has already started. Again, it is a continuous process.

We will get there in our lifetimes, I am confident, but there are going to be some things that are going to have to take place probably systemically and with data. But there is no shortage of effort and understanding and appreciation that we are going to get there eventually.

Senator KING. Thank you.

Thank you, Mr. Chairman.

Senator WICKER. Senator Ernst is next, and Senator Shaheen, regardless of who else walks into the room, you will be recognized after Senator Ernst. Senator Ernst?

Senator ERNST. Thank you, Mr. Chair.

Secretary Spencer, we are going to continue on with your questioning. So thank you for being available today. And it was a great game on Saturday. So thank you.

[Laughter.]

Secretary SPENCER. Kind of.

Senator ERNST. Yeah, sorry. No, I am not.

[Laughter.]

Senator ERNST. As the chairman of the Emerging Threats and Capabilities Subcommittee, I do especially enjoy working with our special operations community and really want to make sure that our SOF [Special Operations Forces] have the support and capabilities necessary to perform their many no-fail missions.

One issue that I have learned about is the importance of assuring that SOF have necessary access to float-ahead staging bases.

Especially with our renewed focus on great power competition, naval resources will be extremely strained while we continue to build up the fleet. The demands in the Pacific and in Europe especially will mean that the Navy and SOCOM [Special Operations Command] will be required to find intuitive ways to supply capabilities to our SOF warriors.

How do you believe that we can ensure that SOF warfighters have adequate, dedicated, persistent support in order to fulfill their missions?

Secretary SPENCER. Senator, leave it to the SOF world, and I use them as a poster child. They have already done some, as you know, innovative ways to find platforms to work on on a maritime basis.

That being said, you address a topic, though, that is a gap that we know we have and that we are working on. And we will come to you with some requests here going forward, and that is our pre-positioned forward ships and our reserve ships. You know—you have read the reports—the shape that they are in. This is a simple case, in many cases, of portfolio management and resources available. If in a perfect world, I had the ability to go out and buy used ships on the market with very little constraint, we could close this gap quite rapidly.

Senator ERNST. Well, and we talk about the policy limitations that are out there. You had just addressed one of those.

With those limitations on the use of leased vehicles, how do you balance sea-basing support for SOF between our counterterrorism and our VEO [violent extremist organizations] missions and potential state-on-state conflict where we cannot use those leased vehicles?

Secretary SPENCER. Yes. My easiest answer is if I could get some more restraint lifted, I would have the ability to manage that risk-gapping.

Senator ERNST. Is that an area that we can address within this committee?

Secretary SPENCER. I believe it is.

Senator ERNST. Okay. Thank you for that.

Are there platforms within the current industrial base that you do believe would be optimal for our SOF mission?

Secretary SPENCER. Yes, there are.

Senator ERNST. In an open format, can you discuss any of those?

Secretary SPENCER. We have the ability right now with some of the things that we are looking at within the Navy that would be applicable to missions. But more importantly, we do have an industrial base out there that has the ability to produce specifically what might be needed for that mission set.

Senator ERNST. Okay. Thank you.

Recently—just a slightly different topic. One that is very important, though. Recently I did have the honor of speaking at the commissioning of the USS *Sioux City* over at Annapolis. I appreciated that. Among many other aspects, I was impressed by the crew of the ship and their ability to explain to me the importance of that naval platform. And I believe—and as I was a commander, of course, in the Iowa Army National Guard—that it is our sailors, it is our people that make up the backbone of our services. And as in the Navy, they will be manning those stations and making crit-

ical life or death decisions in times of conflict, and that absolutely is something that we cannot have built in a shipyard.

General Neller, it is the same with you. What I would like for you gentlemen to do, just in the very brief remaining time that I have left, is to address the challenges that we have in recruiting and retention in the Navy—and Admiral Moran, if you could address that—in the Navy and in the Marine Corps. How do we do better?

General NELLER. Well, Senator, first on your previous question, there are a lot of things going on with the use of SOF or the SOF operating off of naval platforms throughout the world. In fact, we train it. We do it as a matter of course. It happens all the time. It just is something you do not read or see in the newspapers or the media. I can talk to you offline and there are actually things we do to accommodate each other. I think the Navy, the naval force, and SOF—they do a lot of things.

On recruiting, we made our numbers. We made our quality spread. We work really hard. We invest a lot in our recruiters. We have a command screen board for our officers that lead our recruiting stations. If you are a Marine major and you are at the top of the heap, your reward is you get to command a recruiting station. And then if you are successful, then you will probably be acknowledged later on in the promotion process for command of another organization from your MOS [military operational specialty]. So it takes work.

We are recruiting the seniors for next year. We came into the year with over 50 percent of the recruits that we wanted to ship this year already contracted. The most difficult time comes after the first of the year, kind of January through May, because you have shipped all the seniors. They graduate last May, June, and then they ship this summer. So you are more in a direct shipping market.

We are confident that we can make it. It is getting harder. We used to make it before the third week of the month was out. Now some places, you are making it the last day of the month. So it just takes really, really hard work.

I think this committee and the Nation should be aware or concerned about the fact, not just the propensity of the young men and women to want to serve in the military, but the percentage that are qualified to be able for us to even talk to them. That number is right around or slightly below 30 percent. But we are making it. On the officer side, we have got more people that want to be a Marine officer than we have spots.

Senator ERNST. Admiral?

Admiral MORAN. Senator, thank you.

I would just build off of what General Neller just commented on. The Navy is in a very similar place. We were able to make mission this year in a much more demanding market. Our goals were at 40,000-plus, and a typical year for us about 33,000. We made goal by May. So our recruiters are doing a great job. We have shifted our approach in how we do recruiting, to go where the market is, which is more in the social media lane than it is on the more traditional advertising campaigns we have done in the past. Our recruiting force is doing a fabulous job.

We are starting to see some stressors, though, similar to what the Commandant just talked about in terms of when we are meeting those goals, at the end of the month as opposed to the second, third week in the month. So the stressors are clear. Anytime you have an unemployment rate below 4.1 percent, historically trouble looms on the horizon for both recruiting and retention. It is at about 3.8 percent I think now. So we are all expecting this market to get more difficult than easier.

That said, we had the best retention year in zone A, B, and C this past year than we have had in a decade.

So there are some good things going on. Hard to put our fingers on exactly what is generating those kinds of results in an economy that is really challenging us and competing for that talent. But hopefully, we can continue to do this because our recruiting goal for this year is also high.

Thanks for the question.

Senator ERNST. Thank you, gentlemen.

Secretary SPENCER. Senator, if I could add something on there.

Senator ERNST. I suppose, Secretary.

[Laughter.]

Secretary SPENCER. Not a huge item, but it is worth bringing up for conversation.

There is in excess of 1,100 schools and school districts that deny access to the uniformed members to recruit on their campuses. They are all throughout the country, the preponderance up in the northeast and northwest. Whatever help anyone could do in helping us get the message out would be greatly appreciated.

Senator ERNST. Thank you, Secretary. You are absolutely welcome in Iowa.

Senator WICKER. Are you speaking of colleges and universities?

Secretary SPENCER. High schools.

Senator ERNST. High schools for recruiting. Thank you for pointing that out.

Senator WICKER. Thank you, Senator Ernst, for that line of questioning. Let me just thank the General and the Admiral for good answers and for a really good work product in challenging times. I am impressed, and I think the country is impressed.

Senator Shaheen?

Senator SHAHEEN. Thank you, Mr. Chairman.

And thank you all for being here.

Senator Hirono, I believe that Secretary Spencer may have misspoke when he said that Pearl Harbor was the number one priority. Senator King and I understood that it was Portsmouth that was the number one priority.

Secretary SPENCER. One of our first priorities.

[Laughter.]

Senator WICKER. I think he was talking about his priority for a field hearing.

Senator SHAHEEN. Thank you. I just wanted to make sure everybody was awake this morning.

Mr. Pendleton, you talked about the delays in maintenance. Secretary Spencer, you talked about the plan to address depot maintenance. We all recognize the challenges with getting the *McCain* back into operation.

Are there lessons that we have learned from what has happened, aside from the challenges around depot maintenance and a plan? Are there other lessons that we have learned about how to better get the fleet back out when there are damages? I think about the Portsmouth Shipyard where during World War II, they produced 70 ships. They launched four subs in one day. So there are other things that are going on other than just the facilities that address how quickly we are responding to the challenge. Can you talk about some of those lessons that have been learned?

Mr. PENDLETON. Around the damage, we did not really look at the *McCain* maintenance.

I think one of the things, going forward, that is going to be very important is not to let deferred maintenance mount up. What is happening is that as they bring the ships and subs in and they begin to look at the tanks and other things, they find damage or corrosion or other things that require additional work. I think getting caught up on the deferred maintenance is one of the key lessons learned and it will be one of the keys to success going forward.

Senator SHAHEEN. Anything else?

Secretary SPENCER. Yes. Senator, one of the things—you asked—it is a far-reaching question that deserves a moment here because one of the things that we are trying to do—and I will back up to the F-18 scenario that we are working on right now. We are calling that the Naval Sustainment System that we are building because it does not just apply to aviation. It applies to surface, underwater, weapons platforms. Maintenance is all about flow, getting parts, people all in line in time for procedures.

One of the things that we want to start doing is we have the data to start doing predictive analytics. So before a ship even comes in, we know where there is great probability that there is going to be work done, have it pre-staged, have the work orders ready. It is going to take some time. But you asked for the lessons learned. This is exactly it. Allowing those teams that are actually working on the ships alone to start thinking how can I do this better, how as a team can we actually make more movements shorter, quicker, more effective.

So it is a collection of a bunch of activities that we are doing. A lot of them we are picking up from the commercial world outside the wire, but a lot are organic ideas coming from within the organization.

Senator SHAHEEN. Great.

Back at the end of November, we had the National Defense Strategy Commission come and appear before the committee. They identified six trends in national security that we needed to be aware of. One of those was conflict in the gray zone. One was cyber as well. But one of the things that the commission recommended was that DOD develop—and I am quoting here—analytic tools that measure readiness across the range of challenges from low intensity gray zone conflicts to protracted high intensity fights with major power rivals.

It seems to me that we have been able to better measure some of the ways to address the high intensity fights with major power rivals because we can look at how many ships we have and how many people we have ready. But when we are talking about gray

zone conflicts and the potential for that kind of conflict, how do we measure how ready we are and what are we doing to address that?

We had a briefing yesterday, which I will not go into because it was classified. It presented the problem, but it did not really talk about how we are addressing the problem. And it seems to me that it is not clear to me how we are addressing that problem.

Secretary SPENCER. The Commandant has some more granular information, but to frame the context of this from my point of view wearing the Title 10 hat is this is exactly one more portfolio that we actually have to manage. Whenever one talks about us competing with China and we continually hear they are investing this amount of money and they are building this amount of ships, one, they do not have the installed base that we have. Two, they do not have the mission requirements set for global security. These are what we—I will not say struggle with. This is what we perform to. To get an appreciation, it is one more of the portfolios.

But, Commandant?

General NELLER. Senator, I will speak for the Marine Corps, but I can say with some confidence that all the services have developed capabilities that allow them to function within this area, whether it be cyber, electronic warfare, whether it be information operations, whether it be military information, or things like that.

For our example, organizationally we have changed a group which used to be a headquarters support group into what we call the MEF [Marine Expeditionary Force] Information Group. We have grown hundreds and hundreds of people that now have MOSs in cyber that support CYBERCOM [Cyber Command] as part of their component. Each of the services has a component there. So that readiness is measured. In preparation for this hearing, I looked over the readiness of those teams. You have cyber protection teams that do defense, and you have cyber teams that do offensive things. Obviously, I am not going to talk about what that is. And some of them work for other organizations.

But to your point, I think it is a clear recognition with all the services and with the joint world and with OSD [Office of the Secretary of Defense] that we are growing and continue to develop this capability. And it is not going to get smaller. We are going to need this capability because this is the fight that goes on every day. This is the fight that is taking place as we sit here in this hearing. This is the fight that is probably going to be the precursor to a fight which could potentially—God forbid—lead us to a kinetic fight further on down the road.

If you ask me what my biggest readiness concern is or my operational concern is, it is the ability for us to have resilient, reliable command and control to move our forces around the world and protect the network that allows us to do that. At the same time, I want to be able to take that away from whoever might be our adversary. Whoever can protect theirs and keep it up or bring it back faster and whoever can deny the adversary their ability to do command and control or pass information or share information or do analytics, you have a decided advantage. And that is where I think we are all headed.

Senator SHAHEEN. I really appreciate that.

Mr. Chairman, it would certainly be helpful to me—I do not know how others feel—to have a better understanding of more about what is being done in that area.

Can I ask just one more question to follow up on Senator King's question about audit?

Senator WICKER. Absolutely.

Senator SHAHEEN. There have been some reports about fraud within the Department around the audit. Has there been any evidence of fraud that occurred or that was shown to be the case as the result of the audit?

Secretary SPENCER. As far as Department of the Navy goes, Senator, I have not heard the word "fraud" used during the audit. Unaware in that regard. That would have come front and center.

Senator SHAHEEN. Good. Thank you.

Thank you, Mr. Chairman.

Senator WICKER. Thank you, Senator Shaheen.

Senator Blumenthal?

Senator BLUMENTHAL. Thank you very much, Mr. Chairman.

Commandant, this hearing marks the last official appearance here and work by my military fellow, Alex Monte, who happens to be a Marine Corps officer. He has done extraordinary work over the last year. I was tempted to ask you to issue an order that he continue in my office, but that work has been such a hardship, I am sure, given his boss, that I think he deserves relief from this duty, sir. But I just wanted to say on the record how grateful and pleased I have been with his performance. I would say he is the best of our military fellows, except a few others have been marines. So I do not want to single him out, but he certainly is one of the best and we will miss him. I am grateful to you personally for permitting your marines to serve us in that capacity. I will not ask you for a response to that.

I do have a question about submarine maintenance, and I know you have been asked about submarines by Senators Hirono and Kaine and about the maintenance issue by Senator Rounds. It is not the most glamorous of the topics that we discuss today, but in my view, it is one of the most essential because our submarine fleet, our undersea warfare capability, is in my view one of the linchpins of our national defense and part of building a more powerful Navy and ensuring readiness is not just building more ships—we like to do that in Groton Electric boat—but also making the ones that we have now work properly and keeping them at sea.

As you are aware, the GAO released a report last month, actions needed to address costly maintenance delays facing the attack submarine fleet. The Naval Sea Systems Command (NAVSEA) agreed with the majority of the report's findings and has already taken some specific actions. I am very much aware to address the GAO findings. Specifically, the Navy contracted four submarine availabilities to the private yards, one to Electric Boat, three to Newport News, and plans to contract an additional two attack submarines in the spring of 2019. I am also aware the Navy is working with private shipyards to provide a longer-term plan for modernization.

I want to stress Electric Boat has approximately 5 million hours of available labor to provide submarine maintenance from fiscal year 2019 to fiscal year 2024. I wrote the Navy a letter last week

asking for a detailed submarine workload allocation plan to consider awarding submarine maintenance contracts to Electric Boat. Based on maintenance requirements, the Navy should consider transferring more than the two additional attack submarines to address readiness, in my view, challenges that are simply growing, and we need to address them to make sure that we have that workforce available ahead of the *Columbia*-class production.

Mr. Pendleton, let me ask you, based on the GAO report and your assessment, how is the current submarine maintenance backlog affecting readiness? What is your plan for providing more work to the private yards? What is the timeline?

Mr. PENDLETON. So we did the study, and we updated some of the numbers. Maintenance delays have been trending upward since we even finished the study last month. So that is headed in the wrong direction. We are hoping that it is reaching as bad as it is going to get.

What we recommended was the Navy take a look to see if there were opportunities in the private yards, and they are doing that. We will be following up with them to see how that goes over time and following submarine readiness in general, sir.

Senator BLUMENTHAL. Would you recommend that additional work be sent to the private yards?

Mr. PENDLETON. That is really not my place. I mean, what we wanted the Navy to do was to look to see if you could make a business case for it because the public yards, as Admiral Moran mentioned, it is a lower priority and there were backups. And we understood that there was potentially capability there available, and we wanted the Navy to take a look at the cost and the benefits of doing that. That is what we understand that they are doing.

Senator BLUMENTHAL. If I may ask another question, Mr. Chairman. Thank you.

Admiral Moran and Secretary Spencer, I wonder if you would respond as well please.

Secretary SPENCER. Senator, we are, obviously, exercising the public yard option. I have learned in my life that managing expectations is probably the best way to go. I will tell you—and it will be self-admitted by the shipyard builders—that there is not a 100 percent correlation between building skills and maintenance skills. They do not overlap 100 percent. We are learning that right now. They are farther up the curve than starting from zero, for sure. But repair is a different exercise than build. So we are on a learning curve, and all we are hoping for—not that hope is a strategy—is that as partners working together we can get a price point that is agreeable.

Senator BLUMENTHAL. Well, hope is not a strategy. You are absolutely right. And repair is not the same as building a new boat. But the skills are very, very transferable and comparable. And I want to urge that, with all due respect, perhaps you could respond to my letter. I look forward to hearing in more detail either in person or by letter about what the plans are because I think it is very important that we address these maintenance needs. And it goes beyond Electric Boat. It is the capability of our private yards to do this work, to maintain the defense industrial base to give our workers continued challenges and work that they need and deserve.

Secretary SPENCER. Totally agree. And when I talk about the learning curve, we have *Virginia* payload and we have *Columbia*, and I have to balance that also when we talk about using those man-hours. We will do whatever we can. We need everyone to lean towards the stone to make sure we can get the right value and efficiency proposition.

But you will hear from us. We have a 5-year plan for submarines that has been finished. I think we are going sign it out to you on the 28th of December. But more than happy. Your letter will be addressed. It is on my desk right now to be addressed. Loud and clear, we hear you. We need to fix the maintenance flow for these vessels.

Senator BLUMENTHAL. Thank you, Mr. Secretary.

Senator WICKER. Senator Blumenthal, I think you are going to get a response to your letter.

Now I will now take a second round. Secretary Spencer, I am going to direct these questions to you. If someone wants to jump in as a member of the team, please do so.

I spoke in my opening statement about requirements that we placed in the NDAA on surface warfare and readiness. So let us go down the list.

Section 911 directs the Secretary of the Navy to conduct a comprehensive review of operational and administrative chains of command and functions at the Department of the Navy. This is due month after next, February of 2019. Will this deadline be met?

Secretary SPENCER. Yes, it will.

Senator WICKER. Are there any changes or insights that you would like to share with the committee today?

Secretary SPENCER. I think I would like to have the report presented to you in full.

Senator WICKER. All right. You have answered the question.

Section 915 expands the principal duties of the Assistant Secretary of the Navy for Research, Development, and Acquisition, to include sustainment, including maintenance. The intent was to put a single Senate-confirmed official in charge of sustainment, including maintenance of weapons systems. This took effect in August. How is this change being implemented?

Secretary SPENCER. It has been implemented, Senator.

Senator WICKER. And how is it going?

Secretary SPENCER. It is actually going very well. It is something that we probably should have done a while ago, to be very frank with you, because we spend an inordinate amount of time focusing on how we buy things, and the sustainment equation did not get the appropriate amount of attention. Now it is.

Senator WICKER. Well, got advice from folks out there around the globe that know what they are doing. So that is good to hear.

Section 322 requires the Bureau of Inspection and Survey Inspections beginning January 1, 2020, to be conducted with minimal notice and results reported in an annual unclassified report. I assume that this deadline will be met since it is a year away.

Secretary SPENCER. This we will meet March of 2019.

Senator WICKER. There you go.

Section 323 limits the duration of vessels home-ported in locations other than the United States or Guam to no more than 10

consecutive years. With some few exceptions, this provision took effect in August. What actions are being taken to comply?

Secretary SPENCER. This will be completely implemented by fiscal year 2021 due to the cycle nature of it. We are underway.

Senator WICKER. Thank you, sir.

Section 526 requires certain watchstanders on Navy surface ships to maintain a career record of watchstanding hours in specific operational evolutions for key watch stations. This takes effect in February. Will that deadline be met?

Secretary SPENCER. January of 2019, Senator.

Senator WICKER. All right. It is hard to keep up with you guys.

Section 524 requires a comprehensive assessment of the Navy's standard workweek and update of Navy policies and procedures to identify the manpower necessary to execute in-port workload. This is due in February. Will the deadline be met, and are there any early insights that can be shared today?

Secretary SPENCER. The deadline will be met. I have not read the final report yet, so I would like to wait until it is fully vetted.

Senator WICKER. We look forward to those insights.

Secretary Spencer—and Admiral Moran may want to chime in here—section 527 requires a review of the adequacy of individual training for certain watch stations. This is due in February. Will that deadline be met, and are there early insights?

Secretary SPENCER. That deadline will be met, and we will share with you what we learned. No insights right now, sir.

Senator WICKER. Okay.

Section 525 requires congressional notification if manning levels drop below certain percentages for ships. This took effect in August. We have not received any notifications being submitted pursuant to this section. So is the Navy compliant there?

Secretary SPENCER. The first report is in staffing now.

Senator WICKER. Okay. And what is it going to show? Give us a sneak preview. Admiral?

Admiral MORAN. It is going to show we have a relatively small percent of those ships that are outside their maintenance and basic phase of the OFRP [Optimized Fleet Response Plan] that are below those thresholds, very marginally below, but it is a small percentage. I think you will be pleased with the report that is on its way to the Secretary.

Senator WICKER. All right. Only two more.

Section 334 requires a review of options to increase civilian watchstanding qualifications for surface warfare personnel. This is due in March. Will that deadline be met?

Secretary SPENCER. That deadline will be met.

Senator WICKER. Section 335 requires a review of Navy surface ship inspections and visits to identify unnecessary requirements. This is due in August. Will that deadline be met?

Secretary SPENCER. That will be met in January of 2019. The initial reviews are complete.

Senator WICKER. Actually, Mr. Pendleton, I hope you are expecting two questions in this regard. Are you prepared to talk about section 514?

Mr. PENDLETON. Is that the one about surface warfare audits, sir?

Senator WICKER. It requires a GAO study of surface warfare career paths. This is due in March.

Mr. PENDLETON. Yes. We have it underway. We will see you in March.

Senator WICKER. Okay.

Can you give us observations or comments on the updates provided by the Secretary, as well as your understanding of the implementation of GAO's related recommendations?

Mr. PENDLETON. I am not sure I quite understand what you are looking for there. We have not done a lot of work on the surface warfare officer mandate yet. We are getting started. And in the back of my prepared statement, we detail the 45 related recommendations we made over the last 3 years and the status of them. And so we keep track of that very closely.

One thing I would like to mention, Mr. Chairman, is the question came up earlier about gray zone conflict and domain readiness, and I feel like I should remind everyone—

Senator WICKER. With regard to Senator Shaheen's—

Mr. PENDLETON. Yes, Senator Shaheen's question.

We were required in last year's NDAA to look at readiness through a domain lens, air, ground, sea, space and cyber. We have also done that work. So in the spring, we hope to have some assessment of how the Department is doing in assessing readiness across all those domains as well.

Senator WICKER. Thank you very much. I tell you what we are going to do, Mr. Pendleton. I am going to look over your prepared statement and see if I need to follow up on any questions for the record.

Does anyone else wish to ask questions? Senator Hirono?

Senator HIRONO. Very briefly.

Mr. Secretary, you have been impressively prepared to respond to the chairman's questions. Thank you very much.

With regard to our shipyards, could you provide to this committee a list of what specifically is being done at the four public shipyards to implement the shipyard infrastructure optimization plan?

Secretary SPENCER. I will follow up with you on that, yes.

Senator HIRONO. Thank you.

One more thing. I had mentioned in my opening remarks that I was interested in preventing collisions at sea, the sort of disasters that occurred. One of the changes that the Navy has discussed was ensuring that ship or squadron commanders can highlight their concerns when higher headquarters may try to deploy ships that are not trained and ready.

My question to either you, Mr. Secretary or Admiral Moran, in particular, can you point to any example of a ship not deploying after being assigned to deploy when training or readiness were not up to standards per the ship or squadron commander's concerns?

Admiral MORAN. Senator, we have—and I can send you a written follow-up with the list of those examples. They come both ways, both from senior officers in the chain of command who observe a ship not being ready to either go to an exercise, deploy, get underway and where ships themselves have come forward through their

chain of command saying they need additional time to train and be certified for the——

Senator HIRONO. I think that was an important change, and I hope that Admiral Moran agrees with that, because we cannot continue to have all these waivers for the readiness of these ships before they deploy.

Mr. PENDLETON. I went out to Japan, as I mentioned in my opening statement, and what we saw was a much different looking certification chart. For the ships that were underway, less than 3 percent of the certifications were expired, and they were managing those very, very closely.

The Navy has done this by pouring resources into what is called the Afloat Training Group, and that means that folks are going out and working with the ship crews to make sure that they are trained and certified before they deploy. So that has been a significant change, at least in Japan.

Senator HIRONO. Thank you very much. I commend the Navy for doing those kinds of changes.

Thank you, Mr. Chairman.

Senator WICKER. Senator Kaine?

Senator KAINE. Thank you.

Secretary Spencer, one of the things I think we are all aware of is that the backlog of installation and infrastructure maintenance is a sizeable one, and it is probably going to be unrealistic to think that the Marines and the Navy can MILCON [military construction] their way out of this. So we will have to tackle it.

But one particular I was interested in is this. Within the Navy, there has been, for a number of years, a Resilient Energy Program Office, REPO. REPO's goal—I guess mission—has been to leverage third party investment to improve installation readiness. My understanding is third parties will make investments on naval bases to either improve the resiliency of the energy infrastructure or, on occasions, investments to do conservation and efficiency investments, and then the third party shares if there is a reduction in energy cost. The third party shares in that. These are common arrangements. I did some when I was Mayor of Richmond 20 years ago.

My understanding is that REPO projects have slowed to almost a halt, and I wonder, is that the case? Why is it the case? Do you commit to finding paths forward to make these kinds of investments that can save the Navy money that could be used to address some of the other installation issues?

Secretary SPENCER. Most definitely, Senator. I will follow up with you because the whole battle cry from my office is if we can leverage private-public relationships in any way, whether it be real estate development, whether it be energy resiliency, we are to explore them.

Senator KAINE. Excellent. I will submit that as a written question for the record and look forward to your response.

Thank you, Mr. Chair.

Senator WICKER. Any other questions?

[No response.]

Senator WICKER. I want to thank our witnesses for their testimony today. It occurs to me that we are extraordinarily well rep-

resented by the members of the panel today, and I want to thank you.

The record will remain open for 1 week for other questions members may have.

If there is nothing else, this hearing is adjourned.

[Whereupon, at 11:26 a.m., the Subcommittees adjourned.]

[Questions for the record with answers supplied follow:]

QUESTIONS SUBMITTED BY SENATOR ROGER F. WICKER

NAVY PILOT PRODUCTION

1. Senator WICKER. Secretary Spencer, given that helicopter pilots make up 55 percent of the Naval Aviators produced each year, please describe how the Navy plans on replacing the aging TH-57 helicopter and ensure naval aviation warfighting readiness can be improved by training aviators in aircraft that more closely resemble what they fly in the fleet?

Secretary SPENCER. The Navy initiated an effort to replace its legacy TH-57 training helicopters with the Advanced Helicopter Training System (AHTS). The goal is to rapidly and efficiently replace the TH-57 with a better, more modern training helicopter by leveraging the capabilities and capacity of industry. AHTS will consist of a commercial helicopter accompanied with a Ground Based Training System and Contractor Logistics Support. The commercial acquisition will allow the Navy to obtain a suitable replacement trainer, free of development costs. Naval Air Systems Command released the AHTS Request for Proposal in January 2019 with industry responses due April 2019. Following the source selection process, the contract award for the TH-57 replacement will be in the 1st quarter fiscal year 2020, with aircraft delivery approximately one year after contract award.

QUESTIONS SUBMITTED BY SENATOR JONI ERNST

NAVAL SUPPORT TO SOF

2. Senator ERNST. Secretary Spencer, I greatly appreciated discussing with you the need to provide dedicated persistent support to our Special Operations Forces (SOF) through sufficient access to afloat sea basing. During your testimony, you stated that if certain policy restraints were removed, you could rapidly close gaps in our current afloat sea basing posture. Secretary Spencer, could you detail in writing the current posture for afloat sea basing to SOF?

Secretary SPENCER. Current SOF requirements for Afloat Forward Staging Bases (AFSBs) are best met by a combination of dedicated leased commercial Maritime Support Vessels (MSVs), Navy AFSB support provided by Expeditionary Support Bases (ESBs), and contingency support from other SOF-modified Navy platforms. Two ESBs are currently available for tasking with three more under construction, and two MSVs are available. A number of other Navy vessels are suitable and have been used for SOF seabasing in support of contingency operations; LHD/LHA, LPD and SSGN are prime examples.

3. Senator ERNST. Secretary Spencer, how do policy restrictions prevent you from closing current gaps in afloat sea basing?

Secretary SPENCER. There are legal restrictions and limitations on using leased commercial vessels for a potential state on state conflict; these do not prevent these vessels from being used for counterterrorism operations. With DOD and Navy vessels suitable for use as AFSBs increasingly focused on state on state conflict there is a gap in suppling seabasing capabilities for counterterrorism. If there was the ability to purchase and modify for SOF used vessels and possibly foreign-flagged vessels as a cheaper alternative to U.S.-flagged ones this would help alleviate the gap.

4. Senator ERNST. Secretary Spencer, could you provide in writing the specific policy changes that need to be made in order to allow you to close these gaps?

Secretary SPENCER. The ability to purchase and modify for SOF, used vessels and possible foreign-flagged vessels as a cheaper alternative to U.S. flagged ones would help alleviate the gap.

QUESTIONS SUBMITTED BY SENATOR DAN SULLIVAN

AVIATION MISSION CAPABILITY

5. Senator SULLIVAN. Secretary Spencer, a couple months ago the Secretary of the Defense established a mission capability goal of 80 percent for key aircraft, such as the F/A-18 Super Hornet, that is to be achieved by the end of fiscal year 2019, while also reducing sustainment costs. In October 2018, the Navy reported publicly that F/A-18 Super Hornet availability was about 50 percent, how realistic is it for the Navy to add about 30 percent availability for the F/A-18 Super Hornet in less than year in order to meet the Secretary of Defense's goal? What's the risk in trying to meet that goal?

Secretary SPENCER. The Navy believes that actions taken over the past year, combined with the increased support to sustainment budgets over the past several years, has put us on a path to reach the required Mission Capable (MC) readiness level for Fleet F/A-18 Super Hornet Squadrons by the end of fiscal year (FY) 2019. The MC rates for the Navy F/A-18 is 71 percent as of April 22, 2019. We have implemented a comprehensive approach to address F/A-18 and other platform readiness shortfalls called the Naval Sustainment System (NSS). The NSS will address the systemic issues that have led to reduced availability, with emphasis on reforming activities across the key pillars of governance, operational-level maintenance, intermediate and depot-level support, supply support, and engineering support. The NSS will take advantage of best practices from the commercial aviation industry, balancing those with the unique missions and operational environments of Naval Aviation. For F/A-18s, examples of specific reforms include the implementation of an "Aircraft On the Ground" cell, focused on the near-term prioritization of supply and maintenance actions to get more flight line aircraft into an MC status sooner; a reduction of the time to conduct an aircraft's depot-level Planned Maintenance Interval inspections from 120 to 60 days; a reduction of 4 days in the time to conduct operational-level 84-day aircraft inspections; and an increase in the output of repaired engines to the flight line to support the increasing numbers of MC aircraft. All of those activities are underway with demonstrated results, as the monthly average of MC F/A-18 Super Hornet aircraft has shown improvement each of the last four months. The risk in trying to meet the fiscal year 2019 MC aircraft goal is that actions taken in the near term must not come at the expense of the longer term requirement to sustain the fleet at the higher 80 percent MC level. The Navy is acutely aware of, and is managing, that risk. The actions being taken, such as those described in the examples above, appropriately consider long term sustainment. That risk is one reason why the inclusion of commercial industry best practices into the Naval Aviation model is so important. Those best practices support both near and long term commercial aviation readiness goals, and without success in both areas those companies suffer. Naval Aviation is taking that same mindset with the NSS and our actions to increase readiness across the force.

IMPLICATIONS OF 2018 NATIONAL DEFENSE STRATEGY

6. Senator SULLIVAN. Secretary Spencer, in January 2018, the administration announced a new defense strategy that identifies long-term strategic competition with China and Russia as DOD's principal priorities. Secretary Spencer, how will you balance the need to rebuild readiness with the need to modernize? Should one take priority?

Secretary SPENCER. The National Defense Strategy identifies great power competition with China and Russia as DOD's priority and pursues three distinct lines of efforts to expand our competitive space, including rebuilding military readiness, as we build a more lethal Joint Force. A fundamental tenet of every budget request we build is that naval power is about maintaining balance across all dimensions of naval power. Naval power is not a choice between increased capacity or better capability—it is a combination of both. Naval power is not a choice between readiness and modernization—it requires a balance of both. Naval power is not a choice between more complex stand-alone technologies or networked systems—it is achieved through both. The talent to operate and sustain a larger and more lethal force is not a choice between more people or better training—it must draw on components from both. Our Program Objective Memorandum process is designed to optimize this balance to ensure the fleet can maneuver as desired, respond when directed, and win in a short or prolonged fight.

READINESS IMPROVEMENTS AT NAVAIR (SAN DIEGO)

7. Senator SULLIVAN. Secretary Spencer, can you talk about some of the improvements you are making to the Navy Sustainment System (NSS), specifically the work

being done at NAVAIR's Fleet Readiness Center—Southwest (FRC—SW) in San Diego?

Secretary SPENCER. The Naval Air Systems Command's (NAVAIR) Fleet Readiness Center Southwest (FRCSW) reform is one of the six pillars that has been employed to establish the Navy Sustainment System (NSS). The six pillars are: Surge/Aircraft on the Ground; FRC reform; Operational-Level reform; supply chain reform; engineering and maintenance programming reform; and governance, accountability, and organization. These pillars are the foundational business processes being addressed to improve the Navy's F/A-18 E/F Super Hornet readiness shortfalls. FRCSW's activities associated with NSS are initially focused on aircraft component repair work centers. These work centers were strategically selected based on their impact to F/A-18 E/F material shortfalls known as Issue Priority Group One (IPG-1). IPG-1s are backordered repairable component supply inventory requirements associated with a missing part on aircraft, and have the highest repair priority to restore aircraft to mission readiness status. The foundation to the improvement process within the FRCSW work centers is accuracy, accountability, and transparency. Work centers were transformed into production control centers that physically integrate the daily activities of external partners in the supply chain responsible for supporting component repairs such as Naval Supply Systems Command (NAVSUP), Defense Logistics Agency (DLA), and engineers. Production and supporting stakeholders aligned their activities that have the greatest effect on decreasing flight line IPG-1s and increasing throughput. The goal of these work centers are to drive IPG-1 backorders to zero and improve aircraft component availability at the flight line. The improvements at FRCSW have been focused on flow, visual management, material kitting, supply chain synchronization, machine maintenance availability, and artisan training. The fundamental focus of NSS improvements at FRCSW is to treat the maintenance artisan as a surgeon where all production and support activities come to them to efficiently produce components.

- Flow-Production Control Centers are transformed to provide minimal travel time and maximum visibility.
- Visual Management- Each production process is visible in the work center where operations that become barriers can be visible and elevated.
- Supply Chain Synchronization—Improving the demand signal, logistics response time, and overall material availability to support rapid repair.
- Material Kitting—Partnering with DLA and NAVSUP in strategies to improve material processing within the FRC to ensure all material to complete repair is available at time of need.
- Machine Maintenance Availability—establishing strategies and preventative maintenance to decrease support equipment down time.
- Artisan Training—developing training strategies and programs aligned to meet customer demand. The NSS initiatives have had immediate gains:
- FRCSW Hydraulic Shop reduction in aircraft component IPG-1s by 78 percent in 120 days (Pre-NSS IPG-1 count of 107, current IPG-1 count of 24)
- FRCSW Canopy Shop has increased production from 2.4 canopies/month to 8 canopies/month in the past 30 days, IPG-1 reduction of 24 percent (Pre-NSS IPG-1 count of 37, current IPG-1 count of 28)
- FRCSW Landing Gear Shop reduction in IPG-1s by 13 percent (Pre-NSS IPG-1 count of 112, current IPG-1 count of 97) NSS improvement plans are scalable. FRCSW is beginning efforts to scale the NSS effort across the plant to include all type-model-series components and aircraft maintenance, repair, and overhaul production lines. Commander FRC has initiated the NSS improvement strategy across all FRCs.

ARCTIC STRATEGY/FREEDOM OF NAVIGATION OPERATIONS

8. Senator SULLIVAN. Secretary Spencer, during the hearing you stated, "If I had a blank check for everything, it would be terrific to ice-harden ships, but with the demand that we have right now, it is unaffordable." Can you elaborate on specifically why it is unaffordable to ice-harden ships?

Secretary SPENCER. As agreed to by the Government Accountability Office (GAO) in their recent November 2018 Report to Congress, there are currently no validated capability gaps that require the Navy to ice-harden existing vessels or construct new ice-capable vessels. From a funding perspective, ice hardening an existing program of ship might take ten years if the Navy can leverage an ongoing program, such as the DDG-51 Class program. Modifications to the current surface fleet that would enable sustained operations in extreme cold environments could compromise performance in other areas such as speed, range, and ship motion. Navy-contracted construction yards currently lack expertise in the design and construction of winter-

ized, ice-hardened surface combatant and amphibious warfare ships. Accordingly, ice-hardening and winterization design practices could introduce cost and schedule risk, challenging the execution of a new construction ship-building program for an ice-hardened ship.

9. Senator SULLIVAN. Secretary Spencer, given the requirement in the current Arctic strategy, how will the Navy address the need for conducting visible surface FONOPs, in all weather conditions during all times of the year?

Secretary SPENCER. The current Department of Defense (DOD) Arctic Strategy states that the DOD will preserve freedom of the seas in the Arctic. In support of the U.S. national security interest in preserving all of the rights, freedoms, and uses of the sea and airspace recognized under international law, DOD will preserve the global mobility of U.S. military and civilian vessels and aircraft throughout the Arctic, as in other regions. This includes conducting Freedom of Navigation operations (FONOPS) to challenge excessive maritime claims when and where necessary. The U.S. FON Program, as executed by DOD, employs every branch of military service including the U.S. Coast Guard. In the Arctic, Navy submarines can conduct FONOPS year round, either undersea or by surfacing, and Navy surface combatants could conduct FONOPS in open water conditions during the summer melt season.

10. Senator SULLIVAN. Secretary Spencer, can the Navy conduct such FONOPs without ice-hardened ships? If so, would the Navy use a U.S. Coast Guard ice-breaker? How would that ice-breaker be protected?

Secretary SPENCER. The Navy cannot conduct visible surface FONOPs, in all weather conditions during all times of the year without ice-hardened and winterized ships; neither can any other nation or military. The U.S. FON Program, as executed by DOD, employs every branch of military service including the U.S. Coast Guard. U.S. Coast Guard ice-breakers may be employed in accordance with the FON program. Current U.S. Coast Guard ice-breakers lack defensive capabilities and would need escort during a high-risk transit. Other options are: fully funding and building of the National Polar Security Cutter which will have power, weight, and space for defensive systems of their own; conducting FONOPS in areas where protection is not needed; or conduct FONOPS with friends, allies, and partners.

11. Senator SULLIVAN. Secretary Spencer, are subsurface FONOPs using submarines effective? When such FONOPs are not readily visible, how do they show forward U.S. presence to deter adversaries and assure allies?

Secretary SPENCER. The U.S. FON Program consists of a two-pronged, complementary strategy for preserving the rights, freedoms, and uses of the sea and airspace recognized by international law. The Department of State leads the first prong by diplomatically protesting excessive maritime claims, and the DOD complements those efforts in the second prong, by conducting operational assertions of freedom of navigation (i.e., "FONOPs"), regularly and routinely around the world. The Navy believes that sub-surface FONOPs are an effective method of accomplishing the goals of the FON Program. Submerged transits in straits used for international navigation, for example, challenge excessive maritime claims that purport to require submarines to transit on the surface. The DOD publishes an annual FON report that summarizes these operations, and other FONOPs, identifying the specific coastal states and excessive maritime claims challenged in that year. U.S. Navy submarines can show forward U.S. presence in the Arctic by surfacing through the ice. Last year, during the Navy's biannual Arctic Ice Exercise (ICEX), two U.S. submarines rendezvoused with a British submarine at the North Pole and simultaneously surfaced through the ice, demonstrating to our adversaries that the U.S. and our partners continue to retain assured access to the entire Arctic region.

12. Senator SULLIVAN. Secretary Spencer and Admiral Moran, does it make operational or tactical sense for a U.S. submarine to conduct a surface FONOP in the Arctic, as has been suggested in previous Senate Armed Services hearings? If so, how?

Secretary SPENCER, and Admiral MORAN. There is no inherent operational or tactical benefit to operating a submarine on the surface. However, if the DOD determines that the best asset for a FONOP is a submarine and a visible transit is desired, that submarine will likely not drive on the surface for the entire transit. The submarine could drive certain portions of a transit on the surface and other portions underwater. Another option would be to navigate the majority of a transit underwater and then surface to make its presence known, then submerge to continue the transit.

STRATEGIC ARCTIC PORT

13. Senator SULLIVAN. Secretary Spencer, the DOD's most recent "Strategic Arctic Port" report (sent to the SASC in January 2018) concludes that in light of the current threat environment, the Port of Anchorage, while not technically an Arctic port, is sufficient to meet the DOD's near to midterm requirements for Navy operations in the Arctic region. However, you recently stated in an event at CSIS that we need a strategic arctic port in Alaska.

In your personal opinion, is the DOD's assessment and conclusion in this report reflective of your current view? Please elaborate.

Secretary SPENCER. The National Defense Strategy affirms the Department of Defense (DOD) will be prepared to defend the U.S. Homeland. The Arctic is strategic terrain in the defense of the Homeland and protecting U.S. northern approaches is critical to our national security. We are considering all options in terms of how to best ensure our security interests in the region, but have nothing to announce at this time. The Navy supports and agrees with the DOD's "Strategic Arctic Port" report.

14. Senator SULLIVAN. Secretary Spencer, do I have your commitment to work with the SASC on a revised analysis for a strategic arctic port?

Secretary SPENCER. While existing DOD infrastructure in the region is adequate to meet today's needs, we regularly assess the evolving security environment and associated changing requirements for the Arctic region. We remain committed to addressing SASC concerns as well.

15. Senator SULLIVAN. Secretary Spencer, in your personal opinion, is it in the strategic interest of the U.S. to have a Strategic Arctic Port or Ports?

Secretary SPENCER. The existing DOD infrastructure in the region is adequate to meet today's needs. We regularly assess the evolving security environment and associated changing requirements for the Arctic region. The Port of Anchorage was designated as a Strategic Seaport in 2004 and is sufficient to meet the current requirements for a deep water port in the Arctic at this time. Additionally, Thule Air Base is the United States Air Force's northernmost base, located about 750 miles north of the Arctic Circle and adjacent to the world's northernmost deep-water seaport. This seaport supports logistics resupply operations for Thule and smaller military sites in Greenland and in northern Canada.

16. Senator SULLIVAN. Secretary Spencer, as required by the Fiscal Year 2017 NDAA, would you support the designation of a site (or sites) for a strategic Arctic Port? If so, what sites?

Secretary SPENCER. The existing DOD infrastructure in the region is adequate to meet today's needs. We regularly assess the evolving security environment and associated changing requirements for the Arctic region. Thus, in accordance with the Fiscal Year 2017 NDAA, and since the "Strategic Arctic Port" report concluded that no Strategic Arctic ports were required, there are no recommendations for the designation of one or more ports as Department of Defense Strategic Arctic Ports.

MARINE CORPS TRAINING

17. Senator SULLIVAN. General Neller, can you please describe—in detail—the Marine Corps current plan to begin training in Alaska? What specific sites will be used, what type of training will be done, and how many Marines will be involved in each training exercise?

General NELLER. To fully utilize and exploit opportunities for amphibious cold-weather training in Alaska, I would work with our Training and Education Command, associated commands in Alaska, and our unit commanders to seek affordable and sustainable venues that would increase our combat readiness in cold-weather operations.

18. Senator SULLIVAN. General Neller, can you elaborate on the Marine Corps mid-term and long-term plans to train in Alaska, specifically focusing on combined arms live fire exercises and the use of Alaska's Joint Pacific Alaska Range Complex (JPARC)? From what installation(s) would the Marine Corps operate? What facilities—if any—would you expect them to use and/or need?

General NELLER. I would continue efforts to take advantage of Alaska's terrain, climate, and world-class training in the Joint Pacific Alaska Range Complex (JPARC) for Marine deployment for training, ensuring that those opportunities are affordable and sustainable from a global force management perspective. The size of the JPARC airspace—vertical (altitude) and horizontal (square miles)—offers unique

opportunities for aviation to exercise a broader range of aviation capabilities. Other benefits include less congestion and competition for ranges and periodic opportunities to train alongside joint and partner nation forces.

QUESTIONS SUBMITTED BY SENATOR DAVID PERDUE

SUSTAINMENT OF NEW ACQUISITIONS

19. Senator PERDUE. Secretary Spencer, the Navy is pursuing the development and procurement of various advanced technologies. One such technology is the MQ-25 tanker drone that is in a six year development effort moving toward a 2024 declaration of initial operational capability. The sustainment of new and technologically advanced weapons systems like the F-35, however, is proving to be a major challenge for all of the Services. Among other supply chain deficiencies, military depots were found to be 6 years behind schedule in their capabilities to repair F-35 parts. Has the Navy projected its sustainment costs for the MQ-25?

Secretary SPENCER. Yes, the current Acquisition Program Baseline has an estimated operating and support cost of \$13.78 billion, covering a 30-year program life cycle of 74 aircraft flying ~773,000 flight hours. Military Construction (\$778 million) is currently in place to stand up all depots and hangers by fiscal year 2028.

20. Senator PERDUE. Secretary Spencer, to what extent has the Navy considered organic solutions for short and long-term maintenance of the MQ-25?

Secretary SPENCER. The MQ-25 will be maintained organically at the organizational level by Navy Sailors assigned to a squadron once the MQ-25 reaches Initial Operational Capability. Intermediate level maintenance will be performed organically by Navy Sailors at Fleet Readiness Centers. The Navy's strategy for establishing depot level repair includes performing a Core Logistics Analysis to determine core sustainment requirements and performing a Source of Repair Analysis (SORA) to identify organic depot repair sites and compliant commercial support arrangements. The SORA considers organic depot facilities across all services to help the program manager implement performance based logistics strategies that optimize total system availability while minimizing cost and logistics footprint. The MQ-25 SORA recommended organic depot facilities across the Department of Defense for system and sub-system sustainment. As the MQ-25 design is refined, a Level of Repair Analyses (LORA) and follow on economic LORA will determine the level of repair for each component of the MQ-25 and the most cost effective level of repair or replacement. This analysis will feed a Depot Source of Repair (DSOR) decision. The DSOR will ensure compliance with title 10 U.S.C. sections 2464/2466 and include industrial based optimization, capacity and surge requirements, criticality of the system, leverage existing Performance Based Logistics arrangements, limited inventory of the system, and location of the MQ-25 basing sites to support operational needs. Funding for depot facilities and capabilities stand up has been included in the Military Construction and Operating and Support cost estimates.

21. Senator PERDUE. Secretary Spencer, how does the Navy plan to capitalize on lessons learned from RQ-4 sustainment, which is now organically maintained by the Robins Air Force Base Air Logistics Complex?

Secretary SPENCER. Over the past few years the MQ-4C Triton and RQ-4 Global Hawk programs have exchanged sustainment concepts and planning in efforts to exploit lessons learned and to coordinate future sustainment activities. The Global Hawk program is transitioning from Contractor Logistics Support (CLS) sustainment strategy to an organically supported weapon system. The timing of transition has presented numerous opportunities for cooperation and shared investments for establishment of depot-level repair capability. The Triton Joint Depot Source of Repair determinations are complete and include capabilities at all three Air Logistics Complexes (ALC) for common subsystems. The two programs have coordinated capability standup priorities, activities, and recommended investment sharing. Major sub-systems include landing gear, flight controls, and engine. Common engine overhaul and major repair capability is in-place in a joint arrangement with Oklahoma City ALC. The Triton incorporated lessons learned provided through site visits to Global Hawk facilities and subject matter experts during the MILCON and airfield support requirements definition. Additional opportunities for greater collaboration and data exchange to enhance the supportability of the two platforms continue to be actively explored through regular Program Office engagements and the Q-4 User's Group. Future areas of discussion include, but are not limited to, the following: 1. Engineering methodologies to be used in defining scheduled mainte-

nance requirements 2. Aircraft Age Exploration and Aircraft Conditional Inspection 3. Interactive Electronic Technical Manuals 4. Advance Material (Composite) Repair Development 5. Aircraft Non-Destructive Inspection standards 6. Strip, Paint, and Fill and Fair Process 7. Paint and Corrosion Control Manual 8. Support Equipment 9. Maintenance Planning Database

INTER-SERVICE DEPOT MAINTENANCE

22. Senator PERDUE. Secretary Spencer, what are the benefits of inter-service depot maintenance?

Secretary SPENCER. The benefits of inter-service depot maintenance for the Department of Defense (DOD) and Department of the Navy is the ability to leverage existing capability, capacity, expertise, and lessons learned across the DOD maintenance, repair, and overhaul enterprise to focus on readiness requirements in the most effective and efficient manner.

23. Senator PERDUE. Secretary Spencer, what have been the benefits of moving Navy C-130 and C-17 work to the Warner Robins Air Logistics Complex?

Secretary SPENCER. One of the primary benefits of the directed move from Ogden (OO-ALC) to WR-ALC, has been a revitalized relationship between the United States Air Force (USAF) and the United States Navy engineering and logistics departments at WR-ALC. This move has resulted in more unified and streamlined depot overhaul procedures to include both quality assurance and turnaround time. Additionally, manpower and support equipment constraints for both the USAF and Navy for concurrent workload at OO-ALC will be mitigated by the migration of this workload to WR-ALC.

QUESTIONS SUBMITTED BY SENATOR RICK SCOTT

MARINE CORPS AAV-SU PROGRAM

24. Senator SCOTT. Secretary Spencer, on August 17, the Department of the Navy made an abrupt decision to cancel the Amphibious Assault Vehicle Survivability Upgrade program. Given the immediate need for safe, reliable, and survivable ship-to-shore transportation for our US Marines, I do not understand the decision. Canceling this program keeps our Marines at risk for the next ten years, or until the next generation vehicle is fielded. This is simply unacceptable. Further defying explanation, is that the Navy is cancelling a firm fixed price contract. Such types of contracts are a victory for taxpayers. The Marine Corps asked for my help to preserve this program in the Fiscal Year 2019 NDAA, yet you decided to cancel the program shortly after the NDAA was signed into law. Congress also appropriated about \$97 million for it this year. To be honest, I would like to see this program re-instated. I fear the Navy's treatment of the contractor will result in less competition for this work in the future. We need more companies competing for these programs, not less.

Secretary Spencer, I understand you and Secretary Geurts have been in discussions with the contractor regarding certain costs that they incurred to keep program costs down and to maintain the contemplated schedule. Could you tell me where the Navy stands in resolving this issue?

Secretary SPENCER. The Amphibious Assault Vehicle Survivability Upgrade (AAV SU) program was initiated to enhance the legacy AAV's survivability, a limited effort deliberately intended to upgrade only a portion of the AAV fleet, and to serve as a bridge until the Marine Corps fielded Amphibious Combat Vehicle (ACV) 1.2. This plan was based on the estimated arrival of its replacement, the ACV and based on the capabilities of each variant of the ACV. Originally, the ACV 1.1 variant was to provide land and limited ship-to-shore amphibious capability only. ACV 1.2 would provide the missing ship-to-shore capability, while both ACV variants would provide enhanced survivability to the AAV. The expected time lapse between the 1.1 and 1.2 variants led the Marine Corps to pursue the AAV SU in order to maintain enough operationally relevant vehicles to support the requirements of our forward deployed forces. There were several developments which contributed to the decision to divest of AAV SU. First was the release of the National Defense Strategy in December 2017 and the following guidance issued from the Secretary of Defense (SECDEF) and Congress. The SECDEF's guidance for divestment decisions prioritizes investment in modernization for the capabilities needed in the future operating environment and pacing competitors over modest improvements to "legacy programs." Congressional guidance also consistently directed the services to re-consider investment in legacy programs such as AAV. Subsequently, the Commandant of the Marine Corps directed senior leaders to begin addressing possible divestment

opportunities. In July 2018, the Marine Requirements Oversight Council (MROC) convened to officially review acquisitions programs for potential divestiture. The MROC determined that the need for the AAV SU program had been significantly reduced and recommended divesting of the program, while maintaining investment in certain sub-systems such as the Remote Weapon Station and Tactical Communications Modernization. Significant to this decision was the fact that the ACV 1.1 program had progressed faster than expected. The ACV 1.1 variant demonstrated its ability to be a robust swimmer with ship-to-shore capabilities and increased mobility and survivability during testing in 2018. This eliminated the requirement for the bridge capability provided by AAV SU. Accordingly, the Commandant approved the divestiture decision in August of 2018. The Termination for Convenience process dictates that all aspects of liability and termination costs will be negotiated by the assigned Defense Contract Management Agency termination contracting officer in good faith and in due time. The Government has requested a termination proposal from the vendor and until such time as we have that proposal, it is difficult to make any assessment as to what will or will not be acceptable as covered termination costs. In reference to investments made by the vendor, the Marine Corps recently received a Request for Equitable Adjustment from the Science Applications International Corporation (SAIC) regarding long lead material purchased for a portion of the contract which was not executed. This request is under careful consideration by our contracting and legal teams and will be adjudicated in a fair and reasonable manner. The Marine Corps has repeatedly demonstrated an understanding of the value of additional players in the combat and tactical vehicle market. The competitive selection of SAIC both as an early competitor for the ACV and the AAV SU program supports this assertion.

25. Senator SCOTT. General Neller, are you comfortable with the risk you are placing Marines at by keeping legacy AAVs in the fleet for at least another ten years?

General NELLER. Yes. The Marine Corps will maintain 10 infantry battalions of lift to include 10 Amphibious Assault companies. Risks are moderately mitigated by the re-prioritization of ACV fielding to OPFOR from 125 to 150 vehicles per year. In addition, the AAV modification line will mitigate some risks by upgrading to Amphibious Remote Weapon Station and improving communications. The follow-on ACV, currently being tested, has demonstrated several critical objective level requirements and will be significantly more lethal and survivable than the AAV. The Marine Corps legacy AAV fleet is in sundown, the total number of vehicles is being decreased annually. All AAVs are planned to be replaced through the ACV program.

QUESTIONS SUBMITTED BY SENATOR RICHARD BLUMENTHAL

CH-53K

26. Senator BLUMENTHAL. General Neller, I understand that modernization is the primary method to improve aviation readiness in the Marine Corps. Replacing the legacy CH-53E remains crucial as low numbers of flyable aircraft is affecting Marine Corps aviation readiness. What does heavy lift capability bring to the Marine Corps? How will it be improved with the CH-53K? Can any other helicopter meet heavy lift requirements?

General NELLER. Just as the heavy lift mission remains relevant today, it will also be key for future operating concepts. The legacy CH-53E continues to do the heavy lifting for the Marine Corps but has approximately 40 percent of its service life remaining with growing sustainment and obsolescence issues. There are 142 CH-53E's in the current inventory, covering down on a 200 aircraft requirement. Years of war and worldwide operations have impacted sustainability, availability, and exacerbated an inventory shortfall. To mitigate these issues, significant investments in readiness initiatives like RESET and the Engine Reliability Improvement Program (ERIP) have been made to ensure that CH-53E remains ready and relevant until the arrival of the CH-53K to the Fleet Marine Force. Vertical heavy lift provides the Marine Corps with the speed, agility and the flexibility required to defeat a near-peer adversaries. As the Marine Corps has modernized, its equipment has not only gained decisive capability, but weight as well (e.g. missionized JLTV is 22.5K, 7K heavier than an up armored HMMWV). The ability to maneuver Marines and their equipment from anywhere facilitates our forward power projection and the successful manipulation of engagements with our adversaries. The blitzkrieg of this maneuver hinges on the MAGTF's ability to conduct heavy lift operations. This capability relieves pressure on surface connectors (land and sea) and exponentially bolsters the speeds associated with them. The ability of a commander

to maintain the speed and tempo of an engagement is also empowered by vertical heavy lift's ability to forward refuel and rearm other ground and air platforms during operational maneuver. Vertical heavy lift has also recovered countless downed Joint and Coalition aircraft on the battlefield, as well as the training environment. This enables us to preserve assets and warfighting capability. Probably the least publicized but most significant capability of vertical heavy lift is in the support of humanitarian aid operations. The agility and forward presence of the Marine Expeditionary Unit allows this asset to respond within days if not hours to humanitarian plight. Vertical heavy lift can transport countless aid requirements from water and medical supplies to generators and heavy equipment. These supplies can be delivered to the most devastated and remote areas. Unlike fixed wing platforms, the vertical heavy lift capability is not reliant on a functioning airport or usable runways. Finally, when state and local aerial firefighting assets are overwhelmed, Marine Corps vertical heavy lift is routinely called upon to supplement. Its speed, agility and excessive payload are much sought after traits when battling wildfires. The responsibility of the Marine Corps to provide vertical heavy lift to the MAGTF and Joint Force is essential in the execution of our National Defense Strategy and the diplomacy of our Nation. The CH-53K will bring quantum improvements to the current vertical heavy lift capability of the Marine Corps. First, it is the only fully marinized heavy lift rotorcraft that will support current and future warfighting concepts by lifting 100 percent of the equipment to the ranges that the Marine Corps will require. The CH-53K is a state of the art aircraft that brings our fighting force into the next century. Lifting almost three times more than its predecessor in a hot heavy environment out to 110 NM, the safety and reliability of this aircraft are unprecedented for a rotorcraft of this size. Enhancements in information management, mission integration and flight stability greatly reduce the pilot workload in the most challenging and historically demanding environments. The CH-53K has also been designed with the maintainer in mind. Everything from work platforms, ergonomic workspaces and component orientation have been influenced by current seasoned Marine maintainers. All of these initiatives reduce the maintainer workload and cost of ownership while increasing availability and reliability. Finally, as I mentioned previously there are currently 142 CH-53Es to do the current Heavy lift mission. While the CH-53E is doing a great job, we are operating at a reduced inventory. The CH-53K program of record is 200 aircraft. 200 aircraft allows the Marine Corps to operate at a full Table of Organization for the life of the aircraft and ensure that we can provide the Heavy lift capability to the Nation. The answer to your final question is no. There is currently nothing else that will meet the heavy lift requirement other than the CH-53K.

27. Senator BLUMENTHAL. General Neller, in terms of the overall program, I understand the CH-53K is performing well and meeting its marks; however, the Marine Corps has initiated an above threshold reprogramming request for \$158 million to cover unanticipated shortfalls and keep the CH-53K program on track. While there are numerous reasons for the research and development shortfalls, can you tell me exactly why the Marine Corps missed the budget mark for funding in fiscal year 2019? If this above threshold reprogramming request is not approved by Congress, what overall impact would it have on the CH-53K program?

General NELLER. The Marine Corps did not identify the fiscal year 2019 shortfall until after the budget controls had already left our hands. A couple of items influenced this. First, the rate of closure on technical deficiencies and testing were not being conducted at the rate that we had planned on. There were also some new discoveries and technical issues that slowed the test progress and shifted some of the scope of effort on higher priority challenges early in fiscal year 2019. We as a team also had to ensure that with the new technical challenges and demonstrated test efficiency, funding request were commensurate with funding requirements. This detailed validation was time intensive requiring the integrated effort of both NAVAIR and the original equipment manufacturer (OEM) to ensure its accuracy. If the ATR is not approved it will require the test program to slow down even more than it already has. The program office will direct Sikorsky to reduce spending and scope to what is currently in the budget. This will ultimately delay Initial Operational Capability and the first deployment that is scheduled for 2023-2024. I have also been told that Sikorsky will have to move or reduce the workforce on the CH-53K team and that knowledge base will not be easily replaced.

28. Senator BLUMENTHAL. General Neller, despite the need for additional funds in fiscal year 2019 and in the out years, where does the CH-53K program stand with regard to a Nunn-McCurdy violation?

General NELLER. We are currently at 22.02 percent above the original December 2005 baseline. Our program office constantly updates this as we change the scope and time in the program. Right now we are not at risk of a Significant Nunn-McCurdy violation, but as with any program, delays to production or issues discovery will increase this risk. As the program continues to progress, we will closely monitor the potential for violation and make all efforts to avoid it.

C-130T MODERNIZATION

29. Senator BLUMENTHAL. Admiral Moran, earlier this month, the Marine Corps released its findings regarding last year's fatal C-130T mishap that killed 15 Marines and one sailor. The investigation determined the primary causal factor of the mishap was an unnoticed fatigue crack on a propeller blade, resulting from corrosion not removed during its depot overhaul, which caused a series of cascading failures that led to the aircraft breaking up in mid-air. Although the Marine Corps intends to replace its legacy C-130T fleet with new C-130J aircraft, Navy modernization efforts for its 43 C-130T aircraft will replace the legacy four bladed propellers with an improved eight bladed propeller system known as the NP2000 Propeller System—manufactured by UTC's Collins Aerospace in Windsor Locks, CT. The NP2000 Propeller System offers a significant operational capability enhancement to current U.S. Navy C-130T aircraft that have significant airframe life remaining, but at a fraction of the cost of replacing the aircraft with C-130J. After more than a year following the fatal Marine Corps C-130T mishap, I understand a majority of the Navy's C-130T fleet remains grounded? Are C-130T propellers the Navy's number one aircraft readiness degrader?

Admiral MORAN. There are currently 31 Navy C-130T aircraft and 12 USMC aircraft. The Navy's fleet consists of 24 Fleet Logistics Support Wing (FLSW) aircraft, six Navy Test Wings Atlantic / Pacific aircraft, and Fat Albert. Currently five of the 24 Navy FLSW C/KC-130T aircraft have NP2000 propellers, with the remaining 19 scheduled to complete the transition by fourth quarter, fiscal year 2020. Navy Test Wings will remain with 54H60 for the time being. Until the transition is complete, propellers will continue to be a readiness degrader and therefore, a closely monitored item.

30. Senator BLUMENTHAL. Admiral Moran, for the Navy's fiscal year 2020 budget submission, will there be more emphasis on modernizing Navy C-130T propellers or should we expect to see another unfunded requirement like we did this past year for fiscal year 2019?

Admiral MORAN. The funding supplied in fiscal year 2018 for the NP2000 propeller fully funded equipping the existing fleet of 24 Navy Fleet Logistics Support Wing (FLSW) K/C-130T aircraft. To date, 5 FLSW aircraft have been modified and the remaining 19 are scheduled to complete transition by fourth quarter, fiscal year 2020. Future budget submissions may include funding for the Navy's six C-130 test aircraft; however, the decision to transition has not yet been made.

QUESTIONS SUBMITTED BY SENATOR MAZIE HIRONO

SURFACE SHIP MAINTENANCE STRATEGY

31. Senator HIRONO. Admiral Moran, how well is the current surface ship maintenance strategy performing in terms of providing sufficient throughput and timely delivery of ships back to the Fleet in terms of meeting the requirements of the Optimized Fleet Response Plan?

Admiral MORAN. The Navy is continuing to work for greater improvements to on-time delivery and availability performance through Private Sector Optimization (PSO) and Private Sector Improvements (PSI). Initiatives include Small Dollar Value Growth (SDVG) that sets a fixed price for growth valued over \$25,000, standard item reductions / modifications, checkpoint reductions, awarding ships earlier, and the vertical and horizontal grouping of ships. The Navy continues to engage regularly with industry, hosting two Industry Days thus far in FY 2019 with a third planned in September, as we work in collaboration to implement contracting strategies and administrative improvements that provide for increased predictability and stability in the industrial base. These improvements will allow industry to better plan and execute the required work allowing ships to meet OFRP commitments.

32. Senator HIRONO. Admiral Moran, if performance is not meeting the Navy's needs, what is the Navy implementing or considering to improve throughput and timeliness?

Admiral MORAN. Navy initiatives to improve throughput and performance include using solicitation approaches such as Vertical and Horizontal Grouping to increase stability and predictability in the industrial base. With Vertical Grouping, the Navy groups availabilities with similar start dates into a single solicitation. Horizontal Grouping combines multiple ship availabilities that have a similar work scope over a longer time period into a single solicitation. Vertically grouped ships in Norfolk were awarded in February, and the first two horizontal groupings (one group in Norfolk and one group in San Diego) are in solicitation now and awaiting industry bids. In order to reduce the amount of time needed for change approvals that occur while a ship is in execution, the Navy has implemented methods to streamline the process for executing contract changes such as the Level of Effort (LOE) to Completion and Small Dollar Value Growth initiatives. These changes will serve to provide private-sector contractors with improved workload and workforce predictability and stability, which are expected to improve planning and execution of future work.

SHIP MAINTENANCE PLANNING

33. Senator HIRONO. Secretary Spencer, I understand that the Navy uses the principle of “executor in the loop” to better coordinate planning for aircraft carrier and submarine maintenance availabilities. Is this principle something that could help in surface ship maintenance?

Secretary SPENCER. Yes, the surface ship maintenance community recognizes the benefit from having the executor involved in availability planning as early as possible in the process. One significant difference between surface ship and both aircraft carrier and submarine maintenance is the contracting timeline. Usually, aircraft carrier and submarine availabilities are planned by the executing shipyard and given as much as 18-months lead time between contract award and the start of the maintenance as opposed to three to six months for surface ships. In order to leverage benefits from “executor in the loop” principles while maintaining fair and open competition, the Navy is developing a strategy that will afford surface ship maintenance contractors the opportunity for earlier engagement in the planning process by publically issuing preliminary work items or draft specifications for review.

CONTRACTING STRATEGY

34. Senator HIRONO. Secretary Spencer, how is the current surface ship maintenance contracting strategy performing in terms of creating the business conditions needed for industry to attract the skilled labor and capital necessary to perform at optimal levels and meet the Navy’s expectations and needs both today and in the future?

Secretary SPENCER. The Navy recognizes that the current contracting strategy requires changes to provide a more predictable and stable longer term workload so industry can better forecast capacity needs. Therefore, we are implementing contracting changes and initiatives to update the acquisition strategy to improve longer term workload stability and predictability. Capacity growth is assessed by regions monthly. We have recently observed signs of improvements in capacity and capability such as the Virginia Ship Repair Association (Feb 2019) reporting that they have increased member companies from 250 in 2016 to more than 280 at the close of 2018.

PREVENTING SURFACE SHIP MISHAPS

35. Senator HIRONO. Mr. Pendleton, following the tragic mishaps involving the destroyers Fitzgerald and McCain last year, the Navy undertook a lengthy investigation and produced two reviews full of recommendations, many of which were incorporated into law in the Fiscal Year 2019 NDAA. Do you believe that these investigations, recommendations and changes required in the NDAA fully address the root causes of the surface mishaps in 2017?

Mr. PENDLETON. In sum, the Navy has taken many actions to address the root causes of the 2017 surface ship mishaps, but sustained attention will be required to ensure those actions result in meaningful and lasting change. Looking forward, we believe additional attention by the Navy is needed to address manning shortfalls and maintenance challenges.

Status of Navy Reforms

The Navy chartered its Readiness Reform Oversight Committee (RROC) in January 2018 to implement more than 100 recommendations derived from the Comprehensive Review and the Strategic Readiness Review it conducted in 2017, as well as related recommendations from GAO and other audit organizations. The Navy re-

cently reported that 82 percent of those recommendations have been implemented.¹ However, the Navy defines a recommendation as implemented when it initiates action and sets policy instead of when its actions have been evaluated to determine whether they have achieved their intended outcomes. As we testified in December 2018, and as senior Navy officials have recognized, reform efforts are ongoing and it will take years to determine the efficacy of the Navy's actions.

GAO has made recommendations in addition to the ones being tracked by the Oversight Committee. In total, GAO has made 25 readiness-related recommendations to the Navy and Marine Corps, 19 of which relate to surface ship readiness.² The Navy concurred with the majority of them, and has many actions underway that partially address them, but has not completed implementation of any. Attention to these recommendations can assist the Navy as it continues to address the causes of the surface ship mishaps in 2017 and seeks to rebuild the readiness of the surface fleet. We will monitor this going forward.

Ship Manning Shortfalls

While both of the Navy's reviews are in part focused on addressing ship manpower requirements and manning, the issue of undermanned crews could benefit from increased attention by the Navy to systemic or underlying causes. Specifically,

- **Manpower requirements:** Pursuant to GAO's recommendations, the Navy has conducted studies across its surface ship classes to reevaluate the proper size and composition of its crews, and has drafted changes to guidance intended to prevent the perpetuation of outdated or unrealistic manpower requirements. However, the Navy has yet to update its manpower requirements for ships based on these studies. Once a stable baseline for the number and type of required personnel is established by updated manpower requirements, the Navy could better understand the scale of its service-wide personnel issues. For example, the Navy has cited it has a shortage of sailors with the proper experience and skills to fully man the fleet and is expecting manning shortfalls to persist through at least fiscal year 2021. However, these shortfalls are likely to be worse given that the Navy has not yet updated manpower requirements per our recommendation.
- **Manning:** The Navy established a minimum threshold of filling at least 95 percent of billets in its ship crews (referred to as fill), with a minimum goal of 92 percent of those sailors having the right qualification for the billet (known as fit). These fit-fill goals are taken from the billets authorized (i.e. funded) every year, not from the number or type of sailors required by updated ship manpower requirements. Ninety-two percent fit and 95 percent filled results in crews with unfilled billets, and that workload is redistributed among other crew members. Also, as we learned during discussions with officials and ship crews in November 2018, the Navy's methods for tracking shipboard manning do not account for sailor experience, and may overstate the number and skill level of sailors aboard and available to work at any given time. For our December 2018 testimony, we conducted group discussions with ship crews, during which sailors consistently told us that ship workload had not decreased, workweeks over 100 hours remained common, and that it was still extremely challenging to complete all required workload while getting enough sleep. It will be important for the Navy to man its ship crews according to updated manpower requirements to ensure that sailors are not overworked.

Maintenance Challenges

As we testified in December 2018 and have previously reported, the Navy is increasingly unable to complete surface ship depot maintenance on time and on cost.³ As noted in both the Navy's Comprehensive Review and Strategic Readiness Review, this additional time and cost needed to complete depot maintenance is pulling resources from other areas and contributing to systemic problems. Additionally, in May 2016 we reported that the Navy's adherence to revised deployment, training, and maintenance schedules—the Optimized Fleet Response Plan—contributes to wide swings in workload.⁴ These swings in workload erode the industrial base and exacerbate maintenance challenges. While the Navy's Strategic Readiness Review recommended that the Navy should increase the duration of surface ship availabilities

¹ U.S. Navy, Vice Chief of Naval Operations, *RROC: One Year Later* (Feb. 25, 2019).

² GAO, *Navy and Marine Corps: Rebuilding Ship, Submarine, and Aviation Readiness Will Require Time and Sustained Management Attention*, GAO-19-225T (Washington, D.C.: Dec. 12, 2018).

³ GAO-19-225T.

⁴ GAO, *Military Readiness: Progress and Challenges in Implementing the Navy's Optimized Fleet Response Plan*, GAO-16466R (Washington, D.C.: May 2, 2016).

by creating more comprehensive work packages and reinstating ship-check validation, the effectiveness of these actions has not been determined.

In July 2017, we also reported that ships are being delivered to the surface fleet in incomplete condition, leading to an increased maintenance burden before they can operate.⁵ Additionally, the Navy changed its contracting strategy for private shipyard maintenance in 2015 with the intention of reducing cost growth, but reductions in cost growth are not yet evident. We recommended that the Navy systematically assess the new strategy's implementation. The Navy concurred with our recommendation and responded that it would submit biennial reports covering its assessment, but it has not yet released its first biennial report.⁶

Ongoing GAO work

GAO has ongoing work examining key Navy training, manning, and maintenance issues that we expect to report on over the next year that will provide additional insight. Specifically, we will be reporting on:

- Navy surface warfare officer training and career paths,
- the Navy shipyard improvement plan,
- Navy overseas ship maintenance and repair capacity,
- implications of acquisition decisions on the sustainment of Navy ships, and
- Navy's implementation of the Multiple Award Contract, Multi Order (MAC-MO) contracting strategy.

QUESTIONS SUBMITTED BY SENATOR TIM KAINE

SHIPYARD OPTIMIZATION PLAN

36. Senator KAINE. Secretary Spencer, issued almost a year ago, the Shipyard Optimization Plan is an attempt to optimally size, configure, and locate the Navy's public shipyard infrastructure in order to meet operational needs. The total estimated cost for this plan is \$21 billion over 20 years, which is nearly three times what has historically been spent on shipyard capital investment. What will be the operational effects on the fleet if the Navy does not receive the estimated funding identified in the Shipyard Optimization Plan and what is your mitigation plan if you do not receive all the planned funding?

Secretary SPENCER. If the Navy does not receive the estimated funding identified in the Shipyard Infrastructure Optimization Plan (SIOP) Report delivered to Congress in February 2018, an estimated 67 major drydock availabilities will have to be moved, deferred and/or rescheduled due to the lack of adequate dry dock capacity. The shipyards' current outdated industrial layout will continue to impact throughput, productivity, and morale. Naval shipyard capital equipment infrastructure is well beyond its effective service life. Continuing to rely on aged equipment for maintenance availabilities and places their schedules at risk. Fully funding SIOP is crucial to the Navy's ability to improve productive capacity at our shipyards to support increased maintenance throughput and on time delivery of a growing fleet. If the funding is not received for the optimization effort, the Navy will attempt to mitigate existing depot level maintenance challenges by continuing to follow the current facility sustainment model and work towards recapitalizing the shipyards within that constrained funding profile. Full benefits of the recapitalization with a focus on optimization will be delayed or may not be realized at all to the detriment of the Navy's readiness.

NAVY AND MARINE CORPS INSTALLATIONS FUNDING SHORTAGES

37. Senator KAINE. Secretary Spencer, as you know, the current backlog of installation infrastructure maintenance is significant. It is highly unlikely the Navy and Marine Corps will be able to request and receive enough military construction to find their way out of this backlog, which will continue to degrade installation readiness. In recent years, the Resilient Energy Program Office (REPO) has leveraged third-party investment to improve installation readiness. However, REPO projects have slowed to almost a halt in the last year. Why has the REPO effort slowed,

⁵GAO, *Navy Shipbuilding: Policy Changes Needed to Improve the Post-Delivery Process and Ship Quality*, GAO-17418 (Washington, D.C.: July 13, 2017).

⁶GAO, *Navy Ship Maintenance: Action Needed to Maximize New Contracting Strategy's Potential Benefits*, GAO-1754 (Washington, D.C.: November 21, 2016). We did not include this report's recommendation in our total above since it is not directly related to ship readiness. However, the recommendation relates to maintenance cost growth, which the Navy cited in the Strategic Readiness Review as being a depot maintenance challenge.

given the large infrastructure backlog, and do you commit to placing an emphasis on REPO going forward?

Secretary SPENCER. The Department of the Navy's energy strategy is built on the Energy Security Framework and its three pillars of making installations reliable, resilient, and efficient. Leveraging third-party investments helps us achieve this goal and continues to be a top priority for the Navy. The Navy and the Resilient Energy Program Office (REPO) remain committed to this priority and utilizing third-party investment projects whenever practicable. To better align energy investments to mission assurance and critical operational capabilities, the Navy created the Energy Mission Integration Group (EMIG) in 2018, which leverages REPO expertise to identify the highest priority energy gaps, determine the most effective solutions, and execute these solutions through authority best suited for the requirement, to include third-party investments. The Navy and REPO have executed \$800 million through 50 projects between fiscal year 2016 and 2018 and intend to continue to develop and execute projects through the EMIG process at a similar pace in the years to come.

CLIMATE CHANGE

38. Senator KAINE. Secretary Spencer, can you talk about some of the climate-related impacts you've already observed and which installations might make the top 10 most vulnerable to climate-related events required by the Fiscal Year 2018 NDAA?

Secretary SPENCER. We are seeing extreme weather events, droughts, and sea level rise. Superstorm Sandy caused \$50 million in damage at Naval Weapons Station Earle. More recently, Hurricane Irma severely impacted Naval Air Station Key West in 2017 and Hurricane Florence caused \$3.6 billion in damage at Camp Lejeune in 2018. Wildfires in 2018 forced the evacuation of Naval Air Station Point Mugu and burned approximately 1,200 acres at Camp Pendleton. Droughts can have broad implications for base infrastructure, impair testing activities, increase the number of black flag day prohibitions for testing and training, and contribute to heat-related illnesses. Naval Station Norfolk is experiencing sea level rise averaging 4.6mm per year, with a 5.1mm increase in 2017. Sea level rise, land subsidence, and changing ocean currents have resulted in more frequent nuisance flooding and increased vulnerability to coastal storms. The ten most vulnerable Marine Corps installations (in no particular order) are:

- Marine Corps Base Camp Pendleton, CA
- Marine Corps Base Camp Lejeune, NC
- Marine Corps Base Camp Butler, Okinawa, Japan
- Marine Corps Base Hawaii, HI
- Marine Corps Recruit Depot Parris Island, SC
- Marine Corps Support Facility Blount Island, FL
- Marine Corps Air Station Beaufort, SC
- Marine Corps Base Quantico, VA
- Marine Corps Reserve Forces, New Orleans, LA
- Marine Corps Recruit Depot San Diego, CA The sixteen* most vulnerable Navy installations (in no particular order) are:
- Naval Air Station Key West, FL
- Naval Submarine Base Kings Bay, GA
- Naval Base Guam, Guam
- Joint Base Pearl Harbor Hickam, HI
- Wahiawa Annex, HI
- Naval Magazine Indian Island, WA
- Naval Base Coronado, CA
- Naval Base San Diego, CA
- Joint Base Anacostia Bolling, DC
- Washington Navy Yard, DC
- Andersen Air Force Base, Guam
- Naval Support Facility Indian Head, MD
- Naval Air Station Oceana, VA
- Naval Air Station Norfolk, VA
- Naval Support Activity Hampton Roads, VA
- Naval Support Activity Hampton Roads—Northwest Annex, VA/NC
- Sixteen installations are listed to include installations similarly impacted by current and potential future climate events.