

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

HEARING

BEFORE THE

**COMMITTEE ON ARMED SERVICES
UNITED STATES SENATE**

ONE HUNDRED SEVENTEENTH CONGRESS

SECOND SESSION

ON

S. 4543

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

**PART 2
SEAPOWER**

APRIL 26, 2022



DEPARTMENT OF DEFENSE AUTHORIZATION REQUEST FOR APPROPRIATIONS FOR FISCAL YEAR 2023 AND THE FUTURE YEARS DEFENSE PROGRAM—Part 2
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**DEPARTMENT OF DEFENSE AUTHORIZATION
REQUEST FOR APPROPRIATIONS FOR FIS-
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DEFENSE PROGRAM**

TUESDAY, APRIL 26, 2022

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

NAVY AND MARINE CORPS INVESTMENT PROGRAMS

The Committee met, pursuant to notice, at 2:30 p.m. in room SR-222, Russell Senate Office Building, Senator Mazie Hirono (Chairman of the Subcommittee) presiding.

Committee Members present: Hirono, Kaine, King, Cramer, Wicker, Rick Scott, and Hawley.

OPENING STATEMENT OF SENATOR MAZIE HIRONO

Senator HIRONO. This hearing will come to order. We are waiting for my Ranking Member to come, and when he does come he will simply have to agree with anything that I suggest. So that is the deal. So we will start, and then when he comes he can certainly make his statement.

I would like to welcome our witnesses to the hearing this afternoon to explore various aspects of the Department of the Navy's (DON's) investment programs: Mr. Frederick Stefany, performing the duties of Assistant Secretary of the Navy for Research, Development, and Acquisition; Vice Admiral Scott Conn, Deputy Chief of Naval Operations for Warfighting Requirements and Capabilities; and Lieutenant General Karsten Heckl, Deputy Commandant of the Marine Corps for Combat Development and Integration. Welcome. Thank you for your service to the Nation and for the professional service of the men and women under your commands.

I also want to recognize our Ranking Member, Senator Cramer, and when he comes he will submit his statement, or give his statement.

We did have a very productive 2020 year Defense Authorization Act, and I full expect to be working very productively with my Ranking Member once again. We are also grateful to our military families for the vital role they play in the success of the men and women of our Armed Forces.

Sadly, last week we tragically lost three sailors on the USS *George Washington*. On behalf of this Subcommittee I would like to

offer my deepest condolences to their family members and to all members of the USS *George Washington* family.

The Navy and Marine Corps face difficult decisions as they seek to balance competing priorities, including modernizing the fleet, maintaining a technological advantage over our adversaries, supporting ongoing operations, and to sustaining today's readiness. The threats we face around the world require us to consider the best ways to get the Navy and Marine Corps the resources that they need. However, it is critical that any shift in priorities for those resources does not come at the expense of important programs that families, including our military families, rely on every day.

At today's hearing we will explore various aspects of the Department of the Navy's investment programs. These programs play a critical role in supporting and advancing our country's strategic interest in the Indo-Asia-Pacific region, including bases in Hawaii.

This Subcommittee plays a crucial role in the oversight of those programs. We must continue to work to ensure we are getting good value for every dollar that we spend, an ongoing challenge.

This year the Navy is proposing to retire a number of ships before the end of their useful service lives. This includes a plan to retire nine littoral combat ships early, one of which would only be 3 years old. The Navy's position is that these vessels would not contribute much to a high-end conflict. However, this plan would result in our fleet size shrinking at a time when we are working to achieve a 355-ship fleet, established as the goal several years ago.

Less than two years ago, former Defense Secretary Esper published Battle Force 2045, an updated, long-term shipbuilding plan. In this plan he called for achieving a Navy force even larger than the 355-ship fleet that had been adopted as national policy in Title 10 U.S.C.

This Subcommittee is well aware of the Department of the Navy's ongoing challenges facing our air, land, surface, subsurface, and maintenance programs. The Navy has been utilizing multiyear procurement authority to modernize the fleet more efficiently. Congress has approved the use of this authority to procure attack submarines and Aegis destroyers. The two platform had been the largest inventory shortfall compared to the goals outlined in the 2016 Force Structure Assessment.

I look forward to hearing today about the Navy's multiyear contract plan for building destroyers over the next 5 years and how the plan will address our concerns for a potential shortfall.

We are also well aware of the significant changes the Marine Corps is contemplating in reorganizing itself to deal with operations against near-peer competitors. I expect to hear today how the realignment of the force, to reflect the Commandant's vision for the Marine Corps, is reflected in the plans and programs in fiscal year 2023 budget proposal.

I am also interested in hearing from Secretary Stefany about the vital role our public Navy shipyards play in maintaining a ready and capable fleet. While shipyards are not necessarily within what we call the kuleana of this Committee, it is all tied together, because if you build ships you have to repair and maintain them.

I am encouraged that the Navy has finally gotten serious about investing in this critical shipyard infrastructure that has been neglected for far too long. I look forward to hearing from you this afternoon about how the fiscal year 2023 budget supports this shipyard modernization plan.

I look forward to working with the Navy to ensure that the shipyard plan, as I said, stays on track and that you are requesting the appropriate resources for that plan to proceed.

Now—I just mentioned to them that since you are late you have to do everything I want us to do. Okay? No problem, right.

Senator CRAMER. From what I have heard it sounds like it is not going to be that far away.

Senator HIRONO. Yes. I do not think so.

STATEMENT OF SENATOR KEVIN CRAMER

Senator CRAMER. Thank you, Chairwoman Hirono, and thank you all for your service and for being here today as well.

I will agree with a fair bit of what I heard from the chairman. It is obviously a critical time in our country and the stakes are really high, and you are really an important part of all that. So appropriate funding from the Department of Defense in order to keep our Nation safe and, frankly, much of the world, and defend our interests is the most critical and highest priority, of course, we have as Members of Congress. We take it seriously.

To this end I want to thank the chairwoman for calling today's hearing to examine Navy and Marine Corps programs in the President's fiscal year 2023 budget request. I have to say, like last year, I am concerned. I am concerned that President Biden's defense budget request is woefully inadequate, nowhere near enough to give our Navy and Marine Corps the resources, equipment, and training that they need. Quite simply, because this budget does not keep up with inflation, it is a cut, and I am hopeful that we can come together again to provide the Department with the real budget growth that is necessary to fund critical modernization, readiness, and personnel shortfalls.

Regarding the President's budget, I do want to make three technical points. First, we just received the detailed budget justification material on Friday, despite the budget being submitted a month ago. We need to get the NDAA done, and this delay is not helpful.

Second, this year's shipbuilding plan's "choose your own adventure" format lacks coherence, and three different outcomes raise more questions than they answer.

Lastly, the procurement of the amphibious ship, LHA-9 is double-counted in this budget in contravention of the law. This is something that I have raised with a number of the officers that have come into the office as well. We need an explanation on that, please.

More broadly, I am concerned about the state of our Navy and its downward trajectory. It seems to me that the Navy is dealing with the confluence of four key issues. First, President Reagan added a lot of ships to the fleet quickly, nearly a 600-ship Navy. Thirteen of the 24 ships proposed for decommissioning this year were procured in the 1980s. The Reagan-era ships are reaching the end of service life in large quantities, just like they were brought

in in large quantities. Former Navy officials' promises over the years to modernize and extend the service life of many of these ships or replace them with new ships, of course, have not panned out.

Second, as the chairwoman mentioned, the LCS program was planned to be a major portion of our fleet, with 55 of these ships in service by 2018. Instead, we have 24 today. Unfortunately, this class has been plagued with problems from the start, and a key reason for the program, the anti-submarine warfare capability, which was supposed to be operational just 12 years ago, was cancelled altogether in this budget. Nine of the 24 ships proposed for decommissioning are LCSs.

Third, we need Navy shipbuilding programs that can scale up. There is a high opportunity cost in time and money for failure in Navy shipbuilding, and again, this is an area where the chairwoman and I agree. It is a key lesson of the LCS, the CGX, the DDX, and DDG-1000 programs. Just think. If the LCS plan delivered as promised, we would have a fleet now of roughly 330 ships, with 55 LCS capable of hunting submarines, neutralizing mines, and conducting surface warfare. Instead, we have 31 fewer ships and no small surface combatants that can hunt submarines.

To this end, the new *Constellation*-class frigate program must succeed if we are to grow our Navy. Unfortunately, the lead ship will not be finished until 2026, 11 years after the last of our 51 *Oliver Hazard Perry*-class frigates was decommissioned, which has resulted in acute and continuing frigate gap in the Navy's ability to escort convoys, hunt submarines, and defend high-value assets.

Fourth, we need a consistent commitment from every administration and Congress to provide steady and predictable funding to the Department of the Navy. As bad as the President's 2023 budget request is, the projected cuts to shipbuilding in future years are worse, with the LPD amphibious ship production line abruptly ending with no transition plan. This is simply unacceptable, as it will both further shrink the fleet and starve our Navy shipbuilding industrial base, which is already barely hanging on.

I also have concerns related to the health and trends for naval aviation and the extent to which this budget supports the Commandant of the Marine Corps' force design, but in the interest of time I will not belabor that now.

The bottom line is this budget sends China and other potential adversaries the wrong message, that we are not willing to do what it takes to defend ourselves and our allies and our partners. We should be worried about China for a multitude of reasons, but looking at just their navy for a moment, their fleet surpassed our fleet size target of 355 ships 2 years ago, and continues to steadily climb. Meanwhile, this budget proposes to shrink our Navy to 280 ships over the next 5 years. It simply does not make sense, at least not to me.

So a few specifics I hope to cover today include, Mr. Stefany, I would like to discuss five shipbuilding issues to better understand how this Subcommittee can be helpful, and we will get to those five in my questioning.

General Heckl, the Marine Corps appears to be aggressively pursuing air defense and missile systems in the Indo-Pacific. I am in-

terested in better understanding how these systems can both protect forward-postured marines as well as help combatant commanders deny maneuver space to an adversary.

I am also interested in the Commandant's requirement for amphibious ships, and I look forward to your testimony. Thank you.

Senator HIRONO. Thank you.

Mr. Stefany, are you testifying on behalf of the other panelists?

Mr. STEFANY. Yes, ma'am. One opening statement for the three of us.

Senator HIRONO. Okay. Please proceed.

STATEMENT OF FREDERICK STEFANY, PERFORMING THE DUTIES OF ASSISTANT SECRETARY OF THE NAVY FOR RESEARCH, DEVELOPMENT, AND ACQUISITION

Mr. STEFANY. Thank you, ma'am. Chairwoman Hirono, Ranking Member Cramer, distinguished Members of the Subcommittee, on behalf of myself, Vice Admiral Conn, Lieutenant General Heckl we thank you for the opportunity to appear before you today to address the Department of the Navy's fiscal year 2023 budget request for our seapower capabilities. We would like to thank your Subcommittee for your leadership and support of shipbuilding, naval aviation, and ground programs that maintain maritime superiority in defense of our Nation.

I would like to highlight that this past year we have had a number of significant firsts as we provide new capabilities to the fleet. This year we achieved the initial operational capability, or IOC, of the USS *Gerald Ford*, and that ship is now, the first of our class is preparing for first deployment later this year.

We completed the operational testing of the CH-53K heavy-lift helicopter, and just recently, just a couple of days ago, we declared IOC of that capability.

We have been equipping our first platoons of marines with the new amphibious combat vehicles this year, and we expect later this year to do the first deployment of this vehicle later this year.

We achieved IOC of the VH-92, the presidential helicopter, and we are starting the commissioning process with the White House to get that helicopter into the White House's fleet.

We have also accomplished the first refueling of an operational aircraft with an unmanned air vehicle. In this case it was the MQ-25 prototype aircraft, and we refueled both an F-18, an E-2D, and a Joint Strike Fighter.

Of note on the Joint Strike Fighter, this year we had our first deployment of F-35 Charlies. Both the Marine Corps and the Navy deployed for the first time. Then a true measure of interoperability with our partners in the Royal Navy this past year saw the deployment of a squadron of marine F-35 Bravos on the HMS Queen Elizabeth.

The Department of the Navy's fiscal year 2023 budget is guided by SECNAV's priorities to strengthen our maritime superiority in defense of our Nation, to empower our people, and to strengthen strategic partnerships. It implements the Chief of Naval Operations' navigation plan to expand our fleet capabilities for distributed operations while building on the Commandant of the Marine

Corps' Force Design 2030, to rapidly modernize the expeditionary posture of the Marine Corps.

Consistent with recent budgets, this budget prioritizes the Navy's contribution to the National Strategic Deterrence while balancing readiness for the fight tonight, new capabilities for the future fight, and capacity across the near and future. The fiscal year 2022 budget continues our investments in more lethal network capabilities integrated into the Joint Force to address our pacing and acute threats.

As reflected in the Department's 30-year shipbuilding plan, this budget requests over \$27 billion for shipbuilding programs, more than \$5 billion more than what was requested in last year's President's budget, and includes 51 new construction ships across the 2023 to 2027 FYDP.

This budget also invests in 96 fixed-wing aircraft, rotary-wing aircraft, and unmanned aircraft in fiscal year 2023, with 420 aircraft across the FYDP.

The budget includes funding for Marine Corp force design priorities for equipment modernization and precision fires, resilient communications, and mobility platforms to optimize the force for naval expeditionary warfare in a maritime littoral.

To assure we can maintain the forces we have we expanded in our budget the aviation and ship depot funding lines. We also are continuing the OPN funding maintenance pilot, and we are expanding it to the Atlantic fleet and the Pacific fleet.

The budget continues, Senator Hirono, to your point, once-in-a-century recapitalization of our national ship infrastructure as part of the Shipyard Infrastructure Optimization Program, SIOP, with a significant increase in funding in 2023, that is sustained—our commitment is sustained across the FYDP.

On the aviation side, the budget funds repairs, overhauls, inspections of our airframes, engines, and aircraft components, and it continues our reform efforts to reduce out-of-reporting aircraft and increase number of mission-capable aircraft we have.

With a focus on developing our fully capable future naval forces, this budget invests a record \$24 billion in research and development. It includes investments in our next-generation submarine, our large surface combatant, our air dominance aircraft, as well as investments in hypersonic weapons, directed energy weapons, autonomy, artificial intelligence and machine learning, and the initial instantiation of Project Overmatch.

We thank you for the opportunity to appear before your subcommittee today and for the strong support this Subcommittee has always provided to our sailors and our marines. Now we look forward to answering your questions. Thank you.

[The joint prepared statement of Mr. Stefany, Admiral Conn, and General Heckl follows:]

JOINT PREPARED STATEMENT BY FREDERICK J. STEFANY, VICE ADMIRAL SCOTT CONN,
AND LIEUTENANT GENERAL KARSTEN S. HECKL

Chairwoman Hirono, Ranking Member Cramer and distinguished Members of the Subcommittee, thank you for the opportunity to appear before you today to address the Department of Navy's fiscal year 2023 budget request for Seapower capabilities. First, we would like to thank Congress and this Committee for your leadership and support for the Department of the Navy (DON) acquisition, sustainment, research

and development programs. The fiscal year 2022 Authorization and Appropriation Acts strengthened the DON's shipbuilding, aviation and ground programs that allow us to build and operate a potent, integrated, forward-maneuverable Navy and Marine Corps.

As we look to our security and operational environment we face increasing regional threats from coercive and malign actors. We are looking broadly at the war in Ukraine and how it may embolden or deter others. Aggressive actions by the Chinese and Russian militaries threaten peace, stability, and rules-based order. The DON will continue to strengthen our maritime dominance through integrated deterrence and campaigning. Our advantage will endure by empowering our warfighters and acquisition and sustainment workforce and by expanding our many interagency and international partnerships. We will work to sustain and grow that advantage by achieving seamless integration, communication, and collaboration with allies and partners. We invest in the European and Pacific Deterrence Initiatives while supporting our industrial base partners here at home. Focused on mission readiness, we are increasing the Department's resilience to climate change and reducing adverse impacts on the environment. We promote active campaigning through our operations, exercises, engagement, and interoperability with our allies and partners across the world.

To address growing demands on our warfighters, the DON is investing in lethal capabilities across a broad spectrum of platforms and programs. Since the start of fiscal year 2021 we have delivered nine highly capable warships to the Fleet including two *Arleigh Burke*-class destroyers (DDG 51), two *Virginia*-class submarines (SSN), four Littoral Combat Ships (LCS), and one *San Antonio*-class amphibious transport dock. Today, the Navy has 76 ships under contract with 53 ships in construction. We expect to take delivery of seven more ships and plan to award contracts for eight more ships during fiscal year 2022. On the aviation side, we have delivered 94 new aircraft for Navy and Marine Corps, improving capability and enabling the divestiture of less affordable legacy systems.

The Navy continues to mature critical warfighting investments. USS *Gerald R Ford* (CVN 78) successfully completed its post-delivery testing and trials period in April 2021 and Full Ship Shock Trials in August 2021. USS *Gerald R Ford* also completed its post-Shock Trial availability, turned over all Advanced Weapons Elevators to the crew, achieved Initial Operational Capability (IOC) on December 22, 2021, and is preparing for its first deployment later this year. fiscal year 2021 saw the initial squadron standup of the EA-18G Growler Capability Modification fielding a modern electronic attack capability while 25 E-2D aircraft received critical radar and network upgrades. VFA-97 became the third operational F-35C squadron and the second deployment of CMV-22 is underway today. Unmanned advancements continued forward with the MQ-25 prototype completing 36 sorties and 124.5 flight hours, achieving the first ever unmanned-manned aerial refueling test flights with the FA-18E/F, E-2D and F-35C. The MQ-25 also conducted at-sea on-deck ship compatibility testing aboard USS *George H W Bush* (CVN 77), yielding valuable early test data and increasing program confidence in the low rate initial production (LRIP) design.

The Marine Corps has implemented significant modernization efforts through the continued implementation of Force Design 2030 initiatives. Through congressional support, the Marine Corps is fielding enhanced sensor platforms, fires capabilities, and communications networks while investing in the continued research and development of enabling technologies. These capabilities are directly tied to the implementation of new operational employment concepts, such as A Concept for Stand-in Forces, and are making the Marine Corps lighter and more lethal to win throughout the competition continuum.

Readiness remains a clear Department priority and fiscal year 2023 continues prior year gains on ship and aircraft maintenance efforts to improve overall department readiness. By taking a more forward-looking approach to maintenance and modernization of our ship and aviation platforms, the DON can grow the operational capacity of the Navy. We will communicate future demand signals to our industrial partners through several government initiatives, including contract bundling, improved maintenance planning through Availability Duration Scorecard (ADS) 3.0, awarding contracts at availability start minus 120 days (A-120), improved long-lead time material acquisition, and Other Procurement, Navy (OPN) Pilot expansion. These initiatives will help stabilize the industrial base and ensure sufficient capacity.

For example, the Navy is continuing to see positive results from the pilot program to fund CNO Availabilities with multi-year OPN funding. Established by Congress in fiscal year 2020 to fund Pacific Fleet availabilities, the pilot was expanded to U.S. Fleet Forces availabilities in fiscal year 2022.

The OPN Pilot allows the Navy to implement commercial best practices for ship maintenance and more efficiently use surface ship maintenance funding through the entirety of the fiscal year without the pressure of expiring funds. The Navy is continuing to demonstrate significant improvement in ship maintenance execution, and efforts such as OPN-funded availabilities are helping maintain the positive momentum to ensure ships are delivered to the Fleet on time with work completed in full.

Unmanned systems will continue to play a key part in future Distributed Maritime Operations (DMO), and there is a clear need to field affordable, lethal, scalable, and connected capabilities. The Unmanned Campaign Framework continues as our strategy for fielding the DON's future unmanned capabilities into the fleet. The Department will take advantage of near-term opportunities for rapid experimentation, while investing in enabling technologies to include autonomy, land-based testing sites, high-reliability engineering systems, and networks in conjunction with Project Overmatch. The Framework directs an enterprise-wide partnership with industry and academia to coordinate efforts and resources, while also taking advantage of innovation opportunities such as U.S. Naval Forces Central Command's International Maritime Exercise 2022.

The Fiscal Year 2023 President's Budget Request

The President's fiscal year 2023 budget advances key defense priorities. It resources a Navy and Marine Corps Team that supports the 2022 National Defense Strategy (NDS) priorities of integrated deterrence, campaigning, and building enduring advantages, with an agile and ready joint force. Moreover, the Secretary of the Navy's enduring priorities of strengthening maritime dominance in defense of our Nation, empowering our people, and strengthening strategic partnerships is nested under this guidance and resourced to achieve these effects.

The fiscal year 2023 budget request is analytically driven to meet our strategic goals, while balanced with reform targeted at maximizing the value of every dollar. The budget reflects the Department's commitment to building and sustaining a modernized naval force and operating forward with sufficient capability, size, and mix to deter and defend. Fiscal year 2023 continues key investments in advanced technologies and modernization of our current Seapower and Projection forces, prioritizing the recapitalization of the strategic ballistic missile submarine, the *Columbia*-class, which remains the Department's top acquisition priority. The budget requests full funding for two DDGs, two SSNs, one FFG, one LPD Flight II, one T-AO, and one T-ATS, while providing the next increment of funding for construction of the *Columbia*-class SSBN, CVN 80, CVN 81, and LHA 9. The budget request procures a total of 96 fixed-wing, rotary-wing, and unmanned aircraft, and completes procurement of E-2D Hawkeye, while maturing production and maintaining vital aviation platforms to support a modernized and tactically diverse fleet.

The fiscal year 2023 budget prioritizes readiness recovery, continuing prior year gains on ship and aircraft maintenance efforts to improve overall department readiness. The Department is investing in the Shipyard Infrastructure Optimization Program (SIOP) to provide modernized public maintenance facilities needed to sustain the future fleet. The request continues investment to develop improved war-fighting capabilities across all domains and distributed maritime operations, investing in long range fires and hypersonic weapons as well as increases to unmanned platforms. This budget also prioritized Force Design 2030 programs, such as the Navy/Marine Corps Expeditionary Ship Interdiction System (NMESIS) and MQ-9A aircraft.

The fiscal year 2023 budget makes investments to expand the industrial base partnerships that support our submarine and weapon systems and that are critical to our strength and capacity. This includes targeted investments to shipbuilder infrastructure, supply chain capacity, strategic outsourcing, workforce training, and new technologies.

Summary

Thank you for the strong support this Subcommittee continues to provide our sailors and marines. The Department of the Navy continues to deliver platforms with the capability to address today's maritime challenges while investing in future capabilities to address tomorrow's security environment. With the support of Congress, we will continue efforts to develop and field platforms, systems, and technologies to provide sailors and marines the capability overmatch required in this era of strategic competition.

Programmatic details regarding Navy and Marine Corps capabilities are summarized in the following section.

U.S. NAVY AND MARINE CORPS SEAPOWERS CAPABILITIES SHIP PROGRAMS

Submarines

Ballistic Missile Submarines, coupled with the TRIDENT II D-5 Strategic Weapons System (SWS), represent the most survivable leg of the Nation's strategic arsenal and provide the Nation's most assured nuclear response capability. Modernizing this Sea Based Strategic Deterrent with both the *Columbia* and TRIDENT D5 Life Extension 2 (D5LE2) programs will ensure the effectiveness and responsiveness of Navy's leg of the strategic Triad through the 2080s.

Funding for the lead ship and future *Columbia*-class submarines remains the Department's top acquisition priority. The lead ship started construction in October 2020 and is on track to deliver to pace the retirement of our current ballistic missile submarines, deploying for its first patrol in 2030. The fiscal year 2023 budget supports the final year of incremental funding of the lead ship, advance procurement and advance construction of follow-on *Columbia*-class submarines, and continued class design efforts. General Dynamics Electric Boat and Huntington Ingalls Industries-Newport News continue to procure component and commodity material to maintain and grow the submarine industrial base as the program builds to annual procurements beginning in fiscal year 2026. Supporting overall program risk reduction and required schedule execution to minimize strategic deterrence coverage gaps, the fiscal year 2023 budget request continues to fund Continuous Production of missile tubes, propulsors, and various critical components thanks to authorities provided by Congress. *Columbia's* missile tube production is tightly coordinated with procurement of Common Missile Compartment material for the U.K. *Dreadnought*-class submarines being executed under the Polaris Sales Agreement. The budget request also funds multi-program material procurements to achieve best value across nuclear shipbuilding programs and Production Back-up Units to reduce schedule risks.

The Navy delivered two *Virginia*-class submarines so far this year, including the second and third Block IV ships, the future USS *Oregon* (SSN 793) and future USS *Montana* (SSN 794). Looking forward, the second ship of Block V introduces the *Virginia* Payload Module, and all Block V ships will incorporate Acoustic Superiority program improvements. While construction is progressing on the remaining Block IV and early Block V submarines, we are not meeting the sustained two per year delivery objective. The Navy is working closely with industry to regain cadence and implement strategic improvements, including continued shipbuilder and supplier development initiatives. The fiscal year 2023 budget includes funding to procure two Block V *Virginia* SSNs as well as funding to address *Virginia*-class parts obsolescence, and continued development of capabilities and technologies for future Blocks.

The Navy is taking proactive steps to improve the nuclear shipbuilding industrial base capability, capacity, quality, and workforce, which is essential for on-time delivery of one-per-year *Columbia* and two-per-year *Virginia* production (1+2). In 2021, the Navy partnered with the Office of the Secretary of Defense on a study to assess the submarine industrial base's ability to design, construct, and deliver submarines at rates consistent with current and future shipbuilding plans. The fiscal year 2023 budget begins critical investments identified in the study, to execute focused actions to reach and sustain the annual 1+2 construction cadence. The investments address shipbuilder infrastructure, supplier development for capability/capacity, scaling of new technologies, workforce trade skill gaps and constraints, expanding productive capacity via strategic outsourcing, and government oversight of expanded industrial base efforts. In fiscal year 2022 the Navy is using the \$130 million provided for industrial base support in the *Columbia* funding line to continue to execute supplier development efforts to improve the capability, capacity and stability of the industrial base, as well as the \$35 million provided in the *Virginia* funding line for submarine industrial base / support facilities infrastructure at submarine production shipyards.

The Future Attack Submarine (SSN(X)) design intent is to maintain our asymmetric advantage in the undersea domain, ensuring assured access for the Joint Force in future decades. The Navy envisions SSN(X) to capitalize on Seawolf speed and payload capacity, *Virginia* acoustic superiority and sensors, and *Columbia* operational availability. SSN(X) is intended to retain multi-mission capability and sustained combat presence in denied waters, with a renewed priority in anti-surface (ASuW) and anti-submarine warfare (ASW) missions against increasing numbers of sophisticated threats. Design flexibility and margins in space, weight and power are intended to be included in the design to facilitate efficient integration of future capability upgrades to counter anticipated evolving threats. In fiscal year 2022, the Navy is developing an Initial Capabilities Document and beginning trades studies in support of the Analysis of Alternatives.

As the *Columbia* design workforce requirements diminish, SSN(X) design efforts will ramp up, thereby maintaining the strength of our submarine design workforce. The Navy is targeting SSN(X) construction start in the mid-2030s, which should maintain a properly skilled production work force as *Columbia* serial production ramps down.

Aircraft Carriers (CVNs)

The Navy continues to see increased reliability of the new critical technologies on USS *Gerald R Ford* (CVN 78) as it prepares for operational use. Having turned all 11 Advanced Weapons Elevators over to the crew, with over 17,000 cycles operating in port and at sea, *Gerald R Ford* achieved IOC on December 22, 2021. USS *Gerald R Ford* successfully completed its first Planned Incremental Availability in February 2022 and is preparing for its first employment.

USS *John F Kennedy* (CVN 79) is 85 percent construction complete. *John F Kennedy* transitioned to a single-phase delivery to achieve the most efficient path forward and deliver a more capable and lethal ship to the Fleet, and is on schedule to deliver in 2024 with a complete combat systems suite and fully outfitted with F-35C ship modifications. USS *Enterprise* (CVN 80) construction is 15 percent complete and USS *Doris Miller* (CVN 81) completed its first cut of steel in August 2021. Additionally, the first CVN 80 keel unit was laid in April 2022, with a commemorative ceremony to occur in late summer 2022.

The *Nimitz*-class Refueling Complex Overhaul (RCOH) is the full recapitalization of the carriers in support of the second half of their service life. The RCOH is refueling the ship's reactors, modernizing its capabilities, and repairing ship systems and infrastructure. USS *George Washington's* (CVN 73) RCOH is 94 percent complete. USS *John C Stennis* (CVN 74) is 21 percent complete. USS *Harry S Truman* (CVN 75) will begin RCOH in fiscal year 2025.

Large Surface Combatants

Arleigh Burke-class (DDG 51) destroyers are the workhorse of the Fleet, with 70 ships delivered as of February 2022. Over the course of the fiscal year 2018 to 2022 MYP, the Navy will procure a total of 12 Flight III DDGs, more than the planned 10 ship procurement, thanks to the strong support of Congress. The shipbuilders have a total of 19 DDG-51s under contract. The budget request funds procurement of a total of 10 ships from fiscal year 2023 to fiscal year 2027 at two DDG 51s per year, while the intended MYP contract will procure nine ships with an option for the tenth DDG 51. Similar to the fiscal year 2018–2022 MYP, additional annual options will be requested. Including the tenth ship as an option in the MYP as a “nine plus one” profile provides the flexibility to adjust procurement quantities due to potential changes driven by world events or production issues, while adjusting to force structure requirements.

These Flight III ships will provide enhanced Integrated Air and Missile Defense (IAMD) with the AN/SPY 6(V)1 Air and Missile Defense Radar (AMDR) and AEGIS Baseline 10 (BL10). AMDR meets the growing ballistic missile threat by improving radar sensitivity and enabling longer range detection of increasingly complex threats. The program demonstrated design maturity through its successful completion of all developmental testing. AMDR is in production for delivery to support Flight III ships. Initial shipboard testing of the radar and combat system has commenced on the first DDG 51 Flight III ship, USS *Jack H Lucas* (DDG 125), which will deliver in fiscal year 2023. As part of a two-phased testing approach, IOC in fiscal year 2024 will include Air and Missile Defense Commander (AMDC) capability with core BMD capability (Long-Range Search and Track and Sea Based Terminal). This aligns with Fleet priorities for Flight III to replace Cruisers in the AMDC role. Follow-on testing will support the IAMD key performance parameters with completion of Initial Operational Test and Evaluation (IOT&E), which culminates with Flight Test Mission (FTM)-42 in the fourth quarter of fiscal year 2027. The Flight III leverages the proven Flight IIA platform with modifications for hull stability, cooling (350-ton AC plants) and power (4 MW generators / 4160 VAC) to accommodate AMDR.

Aligned with congressional intent, risk reduction integration testing of critical Flight III systems (AMDR, BL10, and power systems) is ongoing. BL10 is being integrated with a LRIP SPY-6 array and power conversion equipment at a land based development site to buy down risk of first time integration at the waterfront aboard DDG 125. Land based testing of the electric plant concluded in January 2022, initiating integration and testing of the Machinery Control System software. Land based integration activities continue to groom “first-of” issues in advance of shipboard testing offering significant risk reduction for DDG 125 ship production milestones. The

first combat system software incremental load was delivered to DDG 125 in February 2022.

The *Zumwalt*-class (DDG 1000) guided missile destroyers provide multi-mission surface combatants designed to provide long-range, offensive surface strike capabilities. The DDG 1000 program continues to accomplish first-time integration of unique combat systems elements, complete Post Delivery Test and Trials (PDT&T), train the crew on ship functions, and demonstrate operational performance. USS *Zumwalt* (DDG 1000) and USS *Michael Monsoor* (DDG 1001) are both homeported in San Diego, California. The program is leveraging both ships to execute test and evaluation requirements in accordance with the Test and Evaluation Master

Plan with focus on Air Warfare, Surface Warfare, and Strike Warfare on DDG 1000; and ASW and Aviation on DDG 1001. This allows for simultaneous activation and testing of multiple warfare areas. IOC will occur following completion of PDT&T requirements. The Navy is evaluating the timeline to achieve IOC with the current estimate in the first quarter of fiscal year 2023. Planned construction and Hull, Mechanical, and Electrical (HM&E) test and activation of USS *Lyndon B Johnson* (DDG 1002) at General Dynamics Bath Iron Works is complete and the ship has transitioned to Huntington Ingalls Shipbuilding for completion of Combat Systems installation as part of the planned single delivery approach. Final delivery is expected after completion of the combat systems installation in fiscal year 2024. The *Zumwalt*-class is also planned for integration with Navy's Conventional Prompt Strike hypersonic weapon system in fiscal year 2025.

DDG(X) will be the next enduring large surface combatant that follows the highly successful DDG 51 Class. Similar to DDG 51's evolution from CG 47, the initial flight of DDG(X) is a new hull form built around the DDG 51 Flight III's AMDR with AEGIS BL10. DDG(X) Top Level requirements were approved by the CNO in December 2020 and were based on an informed requirements process executed by a cross functional team of requirements, acquisition, naval architects, and cost estimators to deliberately reduce execution risk. DDG(X) will provide the flexibility and margins (space, weight, power, and cooling reservations) to accommodate required future capacity and capability upgrades to counter evolving threats. DDG(X) is currently focused on Concept Refinement and transition into Preliminary Design with industry partners. The Navy is committed to a smooth and successful transition from DDG 51 to DDG(X) starting around fiscal year 2030. The transition will preserve the critical shipbuilding and supplier industrial base by executing a collaborative design process with current DDG 51 shipyards and transitioning to a proven limited competition model between these shipyards at the right point in ship construction.

The fiscal year 2023 request fully funds the required land-based testing efforts over the FYDP to reduce critical risks with the Integrated Power System and new hull form identified by the Senior Technical Authority in accordance with prior congressional direction. The Navy is incorporating lessons learned from prior platform transitions to deliberately reduce execution risk and position industry for a successful transition, by establishing informed requirements, use of non-developmental technologies, proven combat system elements, collaborative design process, and robust land based testing.

To date, Congress has provided a total of \$335 million to support the surface combatant supplier base and to improve surface ship shipyard infrastructure. The Navy has awarded approximately \$168 million of surface combatant supplier base funding across 51 suppliers and is working with industry for targeted investments in shipyards and the supplier base, supporting industry's capital expenditure strategies to increase efficiency.

Small Surface Combatants

The *Constellation*-class Frigate (FFG 62) is the evolution of a proven parent design built to Naval combatant design standards with increased lethality, survivability, and improved capability to support the full range of military operations as part of a more lethal Joint Force. Frigate requirements have been validated and were refined through early engagement with industry in a collaborative Conceptual Design process that completed in June 2019. The FFG 62 program is managing development risk by combining proven ship designs with mature, best-of-breed Government Furnished Equipment designated combat system elements. The Navy is establishing a FFG 62 Land Based Engineering Site to reduce integration risks and test power and propulsion systems. The first two ships, the future USS *Constellation* and USS *Congress*, are under contract, with the lead ship to start construction in fiscal year 2022. The third ship, the future USS *Chesapeake*, will go on contract in fiscal year 2022. The Navy is confident in the capability FFG 62 will deliver to the Fleet, especially its ASW capabilities against modern threat submarines.

The LCS program has delivered 26 of the 35 total funded ships. The Navy has installed Naval Strike Missile (NSM) on six Independence variant (IND) LCS platforms and continues to install NSM on LCS hulls this year and in the future, extending the offensive capability of the ship. Additionally, procurement of material for Lethality and Survivability (L&S) upgrades is on track for the first installations in fiscal year 2024. Development of the L&S Common Combat System has begun and will support transition from shipbuilder procured contractor furnished equipment combat systems to program of record government furnished equipment. Eighteen LCS will have conducted their inaugural deployments to 5th/6th, 7th, or 4th Fleet by the end of fiscal year 2022, providing a significant increase in assets for Fleet Commanders which will continue to grow as the remaining ships are delivered to the Fleet.

Large Deck Amphibious Warfare Ships

Amphibious warfare ships remain a key component of the Nation's global forward presence, supporting crisis and contingency response missions in order to provide decision space for our Nation's leaders. These ships and their embarked marines and sailors strengthen relationships with our allies and partners on a daily basis to deter strategic competitors. In order to ensure the future naval expeditionary force is maximized for effective combat power, while reflecting and supporting the force structure changes addressed in USMC's Force Design, the Secretary of the Navy directed an amphibious requirement study that will inform refinement of amphibious ship procurement plans and shipbuilding profiles, as well as inform the ongoing overall Naval Force Structure Assessment.

The America Class Landing Helicopter Assault (LHA 6) is the key platform of the Expeditionary Strike Group/Amphibious Ready Group of the present and future. The LHA 6 Class program provides agile and versatile multi-mission platforms with increased lethality, command and control, and survivability. Among other capabilities, these ships host the fifth-generation F-35B Joint Strike Fighter aircraft that is critical to the high-end fight.

USS *Tripoli* (LHA 7) delivered in February 2020 and is preparing for its maiden deployment in 2022. Bougainville (LHA 8) is 46 percent construction complete with 82 percent of units erected to support a fiscal year 2025 delivery. LHA 8 will include a well deck to increase operational flexibility and includes a reduced island structure that increases flight deck space to enhance aviation capability. LHA 9 has commenced long lead-time material procurement and preparing to start ship fabrication in fiscal year 2023. The Department plans to procure a future LHA, replacing the capability lost with the decommissioning of the Bonhomme Richard (LHD 6).

Small Deck Amphibious Warfare Ships

San Antonio-class Landing Platform Docks (LPD 17) provides the ability to embark, transport, and land elements of a landing force by helicopters, tiltrotor aircraft, landing craft, and amphibious vehicles. The San Antonio Class LPD will continue to support the embarkation of Marine Expeditionary Units (MEUs) and facilitate Amphibious Ready Groups well into the future, as these ships provide strategic mobility, force projection, and the ability to campaign across the globe.

USS *Fort Lauderdale* (LPD 28) delivered in March 2022, while USS *Richard M McCool Jr* (LPD 29) is 79 percent complete and planned for delivery in the fourth quarter of fiscal year 2023. LPD 28 and LPD 29 leveraged many design innovations and cost reduction initiatives, including the first install of the Enterprise Air Surveillance Radar (EASR) on LPD 29, as the class transitions to Flight II. The first Flight II ship, the future USS *Harrisburg* (LPD 30), is 20 percent complete with a planned delivery in fiscal year 2025. In addition, the Navy awarded the future USS *Pittsburgh* (LPD 31) Detail Design and Construction contract in April 2020 and start of ship fabrication is planned for later this year. Following advanced procurement in fiscal year 2022, this year's budget requests the remainder of the funding for LPD 32.

Connectors

The Ship to Shore Connector (SSC) program provides the capability to rapidly move assault forces from ship to shore within the littoral operational environment to accomplish Unified Campaign Plan missions and ensures the Joint Force Commander's ability to conduct amphibious operations and operate over the high water mark, including movement over ice, mud, rivers, swamps and marshes. SSC provides the functional replacement for the Landing Craft, Air Cushion (LCAC) Class of craft, which began reaching end of extended service life in 2015. The Department remains committed to fielding SSC and has addressed program developmental setbacks and commensurate reductions in procurement quantities in fiscal year 2020 and fiscal year 2021. The 2022 Consolidated Appropriations Act added funding for

three additional SSC for five total. In fiscal year 2023 the Navy requests authority to enter into one or more block buy contracts for up to 25 SSCs. The initial block buy supported by the fiscal year 2023 President's Budget would be for 10 SSCs from fiscal year 2023 through fiscal year 2027.

The Navy has contracted for 24 craft. The first two craft, LCAC 101 and 102, have been delivered to the Fleet in Little Creek, VA. The Navy is also replacing its aging Landing Craft Utility (LCU) fleet with the LCU 1700 program which will restore LCU's complementary heavy lift payload in a more rugged, reliable, and affordable independent operations capable platform. While no LCU 1700s are requested in fiscal year 2023 as the shipbuilder works off their backlog, LCU 1700 procurement is planned to continue in fiscal year 2024.

Expeditionary, Auxiliary, and Other Vessels

Expeditionary support vessels are flexible platforms used across a broad range of military operations in support of multiple operational phases. The Light Amphibious Warship (LAW) will complement amphibious warfare ships and will provide added surface maneuver, mobility, sustainability, and survivability for Marine Corps Stand-in Forces in strategic competition. Preliminary Design efforts began in January 2022 to help inform requirements through industry engagement. Upcoming analysis will focus on requirements maturation and refinement of the concept of operations for integration with the Marine Littoral Regiment capabilities in support of the Stand-in Force. The Department is driving towards a lead ship contract award no later than fiscal year 2025. These smaller ships are critical enablers of the USMC Force Design, but in no way replace traditional amphibious warfare ships. Both types of ships are required to posture the Naval Expeditionary Force to serve as a Stand-in Force and respond to global crisis.

The Expeditionary Sea Base (ESB) acts as a mobile sea base, providing prepositioned equipment and sustainment with flexible distribution to support deployed forces. fiscal year 2022 appropriations included the addition of one ESB ship. The Navy commissioned USS *Miguel Keith* (ESB 5) on May 8, 2021. The ESB 6 and ESB 7 are planned for delivery in fiscal year 2022 and fiscal year 2024.

Expeditionary Fast Transport (EPF) is a shallow draft, all aluminum, commercial-based catamaran capable of intra-theater personnel and cargo lift. EPF provided combatant commanders high-speed sealift mobility with inherent cargo handling capability and agility to achieve positional advantage over operational distances. Apalachicola (T-EPF 13), Cody (T-EPF 14), and Point Loma (T-EPF 15) are under construction with deliveries planned in fiscal year 2022, fiscal year 2023, and fiscal year 2024, respectively. T-EPF 14 and T-EPF 15 are Flight 2 Variants with enhanced medical capabilities that will improve Navy's ability to provide expeditionary medical support to forces conducting DMO and Expeditionary Advance Base Operations (EABO) in contested environments. Fiscal year 2022 appropriations included the addition of one EPF Flight 2 and an Expeditionary Medical Ship (EMS). EMS is an EPF variant that will provide expanded Role 2 Enhanced medical capabilities (Flight 2A). Given the flexibility inherent in fast transports, additional missions for the fast transport vessels are being evaluated.

The fiscal year 2023 budget request continues construction of the *John Lewis* (T-AO 205) class fleet replenishment oiler to recapitalize the T-AO 187 Class, which has been in-service since the mid-1980s. T-AOs are the primary fuel pipeline that sustains Carrier Strike Groups and Expeditionary Strike Groups, enabling them to project power for extended periods at sea, reducing the reliance on foreign ports for sustainment and increasing time on station to conduct operations. T-AOs are closely integrated with commercial maritime industry due to the use of U.S. commercial standards for construction and maintenance as well as the use of merchant mariners to crew them. T-AO 205 class brings additional capability and capacity to the Fleet through a 20-ship program of record. USNS *John Lewis*, the lead ship of the class, is planned for delivery in May 2022. T-AO hulls 206 to 208 are currently under construction. Construction on the fifth ship, the future USNS *Lucy Stone* (T-AO 209), will begin in first quarter of fiscal year 2023. The 2022 Consolidated Appropriations Act added funding for one additional T-AO and Affordability Initiatives.

Navajo, the first of a new class of combined towing, salvage, and rescue (T-ATS) ship is scheduled to deliver in late 2023. T-ATS is based on existing commercial towing offshore support vessel design, and will provide ocean-going tug, salvage, and rescue capabilities to support Fleet operations. The Navy received funding for two ships in fiscal year 2022 and requests funding for the final ship in the class in fiscal year 2023.

The Detail Design & Construction contract of the fiscal year 2022 funded lead ship of a new class of Auxiliary General Ocean Surveillance ships (T-AGOS 25

class) is scheduled to award in fiscal year 2023, with serial production planned to begin in fiscal year 2025. The T-AGOS 25 ships will replace the T-AGOS 19 and T-AGOS 23 class ships. These vessels are critical to ASW and other tactical and strategic missions.

Strategic Sealift

The Navy continues to act on Congressional authorities to address strategic sealift readiness, executing the sealift recapitalization plan developed in cooperation with USTRANSCOM. This three-part approach includes acquiring used commercial vessels for the surge sealift force, constructing new ships for the Maritime Prepositioning Force (MPF), and extending the service life of the most viable platforms. On March 21, 2022, MARAD completed the purchase of the first used vessel, the CAPE Arundel, and will complete the purchase of the second used vessel in April 2022. Throughout 2022, the buy-used program will conduct the conversion of the first two vessels for service with the Ready Reserve Force and will purchase an additional five used vessels; two of which are planned for conversion in 2022.

The fiscal year 2023 budget supports readiness and recapitalization commitments by requesting two additional used vessel procurements per year over the FYDP, improving the material readiness of existing ships, retiring the least-ready vessels, and continuing to extend the service life of appropriate vessels. The newly procured used sealift vessels will continue their conversion and upgrade work to meet baseline readiness requirements of the Ready Reserve Force ships maintained in Reduced Operating Status. This work will be performed by U.S. shipyards.

The Navy and U.S. Marine Corps are coordinating revision of MPF Next Generation requirements and transition plans. Navy will introduce an initial capabilities document into the JCIDS process in fiscal year 2022 to validate MPF Next Generation requirements that will begin the process for new construction ships. Sealift new construction is most appropriate for the replacement of fully operational status ships in the MPF which support Marine Corps.

Sustainment, Modernization, Service Life Extensions and Divestments

Maintenance and modernization of the Navy's fleet ensures Fleet Commanders have the necessary assets with the required capabilities to respond to operational demands. As a collective maintenance and modernization community, the Navy is continually working to reduce deferred maintenance backlogs and deliver ships back to the Fleet on time and with all required work completed. Key efforts are underway that span the entire process of work package planning, contracting, and waterfront execution, including taking a Performance to Plan approach to improving work package quality, level-loading ports to establish predictability and stability for our industry partners, providing government equipment and material earlier, streamlining Navy inspection points, and reviewing waterfront roles and responsibilities to minimize unnecessary churn and delays in decision making. By providing predictable and stable workload to private shipyards, the Navy is enabling the efficient use of repair capacity available across the ports and allowing industry to understand future workload forecasts and identify opportunities for targeted infrastructure investments. Additionally, the Navy has completed an exhaustive thorough review into the USS *Bonhomme Richard* fire and is taking appropriate actions to avoid similar events on Navy ships completing repair, maintenance, and modernization availabilities.

Modernization efforts ensure the Navy's in-service Fleet has relevant combat capability

for our Fleet Commands. The fiscal year 2023 budget requests funding for the modernization of four destroyers that will ensure sustained combat effectiveness, mission relevancy, and enable the AEGIS Fleet to achieve their full expected service lives. The budget funds the first procurement of a SPY-6 variant for back-fit on in-service DDGs, commencing in fiscal year 2026. The Navy is incorporating lessons learned from Cruiser Modernization in the availability planning for DDG Modernization availabilities in the areas of contract type, system lay-up and reactivation, crew manning, and training. Additionally, stand-alone and incremental modernization will continually be reviewed and aligned to provide the necessary capability and mission effectiveness to defeat our adversaries throughout the life cycle of DDGs.

In this era of strategic competition, the Navy's submarine force provides an asymmetric warfighting advantage. Ensuring our submarines are maintained and modernized to dominate the undersea battlespace is an enduring Navy priority. The Navy is committed to seeking balance of the maintenance workload within the public and private shipyards, as well as maintaining a healthy industrial base for both submarine maintenance and new construction. To that end, the Navy launched a

study to improve fast attack submarine (SSN) material availability that will include a 15-Year SSN Maintenance Plan outlining approaches to optimize submarine repair at all shipyards, including private-sector maintenance execution. The Navy will continue to work with our industry partners to improve cost and schedule performance for submarine maintenance, providing valuable maintenance surge capacity.

To free up additional resources for priorities more closely aligned to the NDS, the fiscal year 2023 budget proposes to decommission 24 ships in fiscal year 2023. Of these 24 ships, eight ships are at or beyond expected service life (ESL) and 16 ships are prior to ESL (1 CG, 4 LSD, 9 LCS, 2 ESD). For the former eight ships, inactivation in fiscal year 2023 is a normal part of the end of their lifecycle. For the latter 16 ships, the Navy closely reviewed operational needs and fleet requirements, and ultimately made the difficult decision that this force structure is too costly to operate and sustain and no longer provides the capabilities needed to best address the current and future national security challenges. Decommissioning less capable ships before the end of their expected service life provides critical resources to invest in procurement and development of higher capability platforms. The Navy is trading near-term capacity for long term capability, and the fiscal year 2023 budget does not resource capacity beyond what can be reasonably sustained – manning, training, maintenance, ordnance, operations, and future modernization.

The CG and LSDs are in poor material condition and require significant resources to continue to maintain, modernize, and operate them. The substantial cost to retain these ships outweighs the potential warfighting contributions of these platforms over their limited remaining service life. For the LCS, the fiscal year 2023 budget focuses the LCS class on mine countermeasures (MCM) and surface warfare (SUW) mission areas, eliminating the ASW mission for the class. The ASW Mission Package is no longer being pursued due to technical challenges and the forthcoming introduction of FFG 62 as a highly capable ASW platform. Consequently, eight *Freedom*-class ships are planned for decommission in correlation with the eight ASW mission packages. In addition, LCS 3 is also proposed for decommissioning because it remains a non-deploying test ship that is no longer needed. Continued retention of this ship imposes significant cost to upgrade it to common configuration and capability with the rest of the Fleet. The T-ESD ship class is less relevant for peer military competition, as they were designed for non-contested environments to support ship-to-shore craft movements. These T-ESDs support the maritime prepositioning force. In the fiscal year 2023 budget, Maritime Preposition Squadron Two will be placed into reduced operating status (ROS).

Shipyards Infrastructure Optimization Program (SIOP)

The Shipyard Infrastructure Optimization Program is essential to supporting the future needs of the Navy's nuclear submarine and aircraft carrier force. With the tremendous support received from Congress, to include \$1.6 billion appropriated in fiscal year 2022, the program is advancing several key initiatives. The Navy appreciates the Congressional support provided in the fiscal year 2022 appropriation to derisk the construction schedule for the new Multi-Mission Dry Dock at Portsmouth Naval Shipyard, critical for the east-coast maintenance capability for the *Virginia*-class submarines. In fiscal year 2022, the second increment of digital modeling will commence which will inform project design and construction. Area Development Plans will be completed at each public shipyard across the FYDP utilizing the digital modeling output. Additionally, funds will be utilized to begin project design for a *Ford*-capable dry dock at Puget Sound Naval Shipyard (PSNS), award the construction contract for DD8 Salt Water Upgrades at Norfolk Naval Shipyard (NNSY), award several restoration and modernization projects, and purchase capital equipment to replace aged elements to revitalize maintenance shop capabilities. Funding requested in fiscal year 2023 budget requests for SIOP includes \$8.3 billion across the FYDP, which includes construction start of a new Multi-Mission Dry Dock at Pearl Harbor Naval Shipyard, critical for the west-coast maintenance capability of the *Virginia*-class submarines.

To ensure disciplined execution of construction efforts managed within the program while maintaining uninterrupted support to the Fleet, the DON has established a Program Executive Office for Industrial Infrastructure (PEO II) affiliated with the Naval Facilities Engineering Systems Command, and reporting directly to the Assistant Secretary of the Navy for Research, Development, and Acquisition. PEO II and the Program Management Office (PMO 555) are implementing agile acquisition methodologies to coordinate the programmatic execution of this complex effort. PEO II also remains integrated with the Naval Sea Systems Command and the Naval Sustainment System – Shipyards (NSS-SY) efforts to ensure that required ship maintenance at the shipyards is not impacted by SIOP efforts.

The program remains committed to applying lessons learned and, when applicable, applying industry best practices to an iterative process that utilizes industrial modeling and simulation data to inform program decisions that can improve Fleet operational availabilities. This process and ongoing coordination, across the major stakeholders, will ensure that thoughtful and informed actions toward optimization are made at the Nation's public shipyards. SIOP is creating momentum as a cross-organizational initiative committed to creating predictable delivery of critical infrastructure for the four public shipyards of the future.

Unmanned Surface and Undersea Vehicles

The DON continues to experiment, develop and deliver unmanned surface and undersea capabilities to augment the manned force. These capabilities will increase capacity, standoff, reach, and protection of our manned platforms.

The Navy's Medium and Large Unmanned Surface Vessels (MUSV/LUSV) are a key element of the Future Surface Combatant Force that support the NAVPLAN "Capacity" priority to deliver a larger, hybrid fleet of manned and unmanned vessels. These USVs will expand Intelligence, Surveillance, and Reconnaissance (ISR) advantage and add missile magazine depth. Our fiscal year 2023 efforts will execute a deliberate development plan to include reliable Hull, Mechanical and Electrical; advanced networks and radios; common core USV Combat System; vessel control software; sensory perception and autonomy; and platform and payload prototyping.

In February 2022, the Navy assumed ownership of the two Strategic Capabilities Office Overlord vessels for continued experimentation and learning. Of significant note, the Navy accumulated over 4000 hours and 47,000 nautical miles of autonomous mode operations to include teaming with other manned ships during fiscal year 2021 through March 2022. Experimentation with the Overlord vessels will continue to inform development of MUSV/LUSV.

By the end of fiscal year 2023, Navy will have an operational MUSV Land Based Test Site, will have initiated LUSV land based testing, and will operate six USV prototypes: three of the four Overlord USVs (OUSV), one MUSV prototype, Sea Hunter and Sea Hawk. Additionally, the first autonomy enabled EPF-13 will commence sea trials in July 2022 and be delivered at the end of fiscal year 2022 to support EABO experimentation and CONOPs development.

The MCM USV program includes the development and production of MCM USV craft and Payload Delivery Systems to deliver multiple capabilities to meet MCM Mission Package requirements. Mine sweeping is accomplished leveraging the mature craft and sweep payload developed for the Unmanned Influence Sweep System program that completed IOT&E in June 2021 and Underwater Explosive testing in the first quarter of fiscal year 2022. Payload integration between the same mature craft and the AN/AQS-20 towed sonar has completed and technical evaluation is currently in progress, which will provide the mine hunting capability. The Barracuda program is the future mine neutralizing capability in early development, with plans to integrate onto the MCM USV.

The Navy continues to invest in a family of Unmanned Undersea Vehicles (UUVs) to aid in maintaining undersea domain superiority. These investments will expand Navy reach and persistence by augmenting manned platform capacity with unmanned autonomous systems. The Navy has begun fabrication of Orca, Extra Large Unmanned Undersea Vehicle (XLUUV), a pier-launched UUV capable of carrying large payloads, and anticipates delivery of the Test and Evaluation asset in Q3 of fiscal year 2022. The Large Displacement Unmanned Undersea Vehicle which will support Subsea and Seabed Warfare and Intelligence Preparation of the Operating Environment capabilities delivered the first in class Phase 1 UUV in Q2 of fiscal year 2022, and has commenced in-water testing. The Navy is taking a deliberate pause on LDUUV Phase 2 to realign Subsea and Seabed Warfare and hostability requirements.

The Navy delivered the last three, of nine, Dry Deck Shelter variant Razorbacks to UUVRON-1 in October 2021. These are the first Program of Record submarine launched and recovered UUVs. A competitive RFP was issued in fiscal year 2020 for production of a Medium UUV that supports both the submarine torpedo tube launched and recovered Razorback Intelligence Preparation of the Operating Environment mission, as well as the Maritime Expeditionary MCM UUVs mission. The Navy anticipates awarding an Engineering Development Model contract in the third quarter of fiscal year 2022.

Lionfish is a small lightweight highly portable vehicle that can be mission configured to support Explosive Ordnance Disposal and Naval Special Warfare. This effort was a partnership with the Defense Innovation Unit and used accelerated acquisition authorities such as commercial solutions opening and other transactions. Lionfish will include advancements to the artificial intelligence, machine learning

(AI/ML), Automated Target Recognition, and autonomy processes currently fielded with the MK18 MOD2 UUV, expanding the capabilities of the Navy's intelligent family of UUVs. The Navy anticipates awarding a contract in the third quarter of fiscal year 2023 to procure 10 vehicles.

The Marine Corps' Long-Range Unmanned Surface Vessel (LRUSV), approximately 45 feet in length, is intended to be capable of conducting semi-autonomous maneuver in the open ocean for extended periods of time. LRUSVs will be capable of launching the Organic Precision Fires loitering munitions to engage targets on land and at sea, and thus increase the effective range and lethality of formations, such as the Marine Littoral Regiment. The Marine Corps' LRUSV and Organic Precision Fires are specifically purposed to enhance Naval and Joint Force Commanders' sea denial campaigns. Through prototyping, experimentation, and working closely with program vendors, the Marine Corps will ensure delivered capabilities are in line with funded requirements. The Marine Corps has accepted the first of five LRUSV prototypes for experimentation and analysis, and the Marine Corps anticipates receiving additional prototypes in the 3rd quarter of fiscal year 2022 for continued testing and refinement.

The DON is continuing to invest in foundational enabling technologies in fiscal year 2023. These include autonomy, command and control, energy, and payloads, as well as establishing the interoperable standards and open architectures for ease of technology transition.

Combat Systems

The Department continues to field the most capable and lethal surface and submarine combat systems in the world. AEGIS Baseline 9 delivers unprecedented offensive and defensive capabilities, including simultaneous air and ballistic missile defense on destroyers and AMDC capability on cruisers. AEGIS Baseline 10 (BL10) with AN/SPY-6 will provide significant performance improvements over Baseline 9 with its AN/SPY-1D(V) radar, expanding the sensor coverage and enhancing the Navy's ability to perform the IAMD mission to defeat more advanced and more numerous threats with the integration of the AN/SPY-6(V)1 AMD system. Integration includes using a BL10 Virtualized AEGIS Weapon System at the AMDR test site in Hawaii, as well as BL10 integrated development and testing with the low-rate initial production AMDR system installed in the New Jersey development site.

Traditional AEGIS development has been aligned to new construction platforms or major modernization efforts. Navy's shift to open architectures seeks to take full advantage of evolving technology to rapidly deliver real-time and reliable capability to the warfighter and to break the paradigm of hardware-software dependent deliveries. The current method of combat system delivery, takes 4 to 8 years to deliver and is tied to specific hardware set limiting proliferation to a low percentage of the fleet. By employing proven industry standards of Infrastructure as a Service, Platform as a Service, and Software as a Service, Navy will be able to support the delivery of iterative updates to the AEGIS Weapon System at speed and scale. The Navy will also continue investment into its first combat system software factory, The Forge, which will enable rapid innovation and delivery of combat system improvements to the fleet. Work in this area is foundational to developing the future Integrated Combat System. As Navy continues these developmental efforts, new construction and in-service Aegis Baseline 9 and 10 ships will receive predictable upgrades in the form of Capability Packages.

The Navy continues to equip its submarines with ever-evolving undersea combat systems, utilizing the Submarine Warfare Federated Tactical Systems (SWFTS) modernization process for hardware Technology Insertions and Advanced Processing Build software upgrades. This process leverages commercial off-the-shelf technologies to provide advanced capability improvements at lower cost. SWFTS has successfully delivered a progression in warfighting capabilities for decades to our Fleet SSNs, SSGNs and SSBNs including advancements in the combat, sonar, electronic warfare, and imaging systems. SWFTS delivers the first TI-20 installs to the Fleet in fiscal year 2022, which brings added capability and improved system architecture, strengthens cybersecurity and integrates new payload capabilities to provide increased lethality. The fiscal year 2023 budget supports continued implementation of Agile and DevSecOps software development best practices at SWFTS vendors to increase quality, expedite capability delivery, and improve cybersecurity by engraining cyber resiliency into the system architecture. These efforts improve the Fleet's ability to protect against known threats, detect unknown threats when they occur, and respond and recover quickly to an operational state.

TACTICAL AVIATION

Carrier Air Wing (CVW)

The striking power of the CVW remains the cornerstone of power projection capability from 11 of the world's most survivable airfields, our aircraft carriers. The current CVW is transitioning to an optimal mix of 4th and 5th Generation strike fighter aircraft that incorporate advanced capabilities to support the objectives of the NDS. The Navy is managing 4th Generation F/A-18 inventory requirements through Service Life Modification (SLM) and 5th Generation requirements through F-35C procurement. SLM extends the existing 4th Generation capacity while adding advanced Block III capability at one-third the cost of new procurement F/A-18 aircraft. The Department has appropriate levers in place to manage the strike fighter inventory through ongoing F-35C production and F/A-18E/F SLM. Currently while the gap is not eliminated there are sufficiently funded resources and levers to support Global Force Management and operational capability through the FYDP.

The Navy continues to accelerate development of the Next Generation Air Dominance (NGAD) Family of Systems (FoS) to provide advanced, carrier-based power projection capabilities that extend the range of our carriers. The NGAD FoS will replace the F/A-18E/F Block II aircraft as they begin to reach end of service life in the 2030s and leverage Manned-Unmanned Teaming (MUM-T) in order to provide increased lethality and survivability. F/A-XX is the strike fighter component of the NGAD FoS that will be the "Quarterback" of the MUM-T concept, directing multiple tactical platforms at the leading edge of the battlespace. In fiscal year 2021, F/A-XX began the Concept Refinement Phase and it remains on schedule. The Navy will continue collaboration between Government and industry teams to develop vendor concepts that balance advanced air dominance capabilities and long-term affordability.

Marine Expeditionary Unit (MEU) Aviation Combat Element (ACE)

The MEU Aviation Combat Element (ACE) remains a uniquely critical and capable component of our national strategic demand for forward presence, crisis response, power projection, and theater security cooperation. The ACE is a capable and lethal forward-deployed, sea-based, expeditionary force that can operate across the range of military operations with a tailorable and uniquely suited complement of aircraft. The current MEU ACE is built around a squadron of MV-22B tiltrotor aircraft that deliver unmatched combat range and airspeed unlike any current vertical takeoff and landing (VTOL) aircraft. The capabilities offered by the new CH-53K heavy-lift platform allows the MEU ACE to organically support a wide variety of assault support missions and contingency operations to meet Combatant Commander needs. The future ACE will also feature a Group 3 UAS capability that provide both an organic land- and maritime-based intelligence, surveillance, and reconnaissance capability. The fixed wing component of the MEU ACE is continuing to transition to the F-35B that incorporates advanced capabilities to support the objectives of the NDS. The Navy and Marine Corps team is actively validating innovative concepts of employment of the F-35B on our amphibious fleet.

The future Marine ACE, much like the CVW, will leverage MUM-T to provide increased lethality and survivability through the Autonomous Collaborative Platform (ACP). The Marine Corps is actively working collaboration between Government and industry to develop and refine concepts through analytical simulation to balance advanced air dominance capabilities and long-term affordability within the ACP program.

AIRBORNE ELECTRONIC ATTACK (AEA)

The EA-18G Growler is a critical enabler for the Joint force, bringing fully netted electronic warfare capabilities to the fight and providing essential capabilities in the Electromagnetic Maneuver Warfare environment. Next Generation Jammer (NGJ) pods will augment and ultimately replace the legacy ALQ-99 Tactical Jamming System in the middle frequency range on the EA-18G and provide full spectrum integrated non-kinetic effects. The delivery of NGJ increases EA-18G Growler's lethality and provides a multi-generational leap in capability against radar and communication targets utilizing advanced AEA techniques as well as improved reliability and maintainability.

The NGJ-Mid-Band (NGJ-MB) program is in the completion phase of Engineering & Manufacturing Development (EMD), and completed Milestone C in May 2021. NGJ-Low-Band (NGJ-LB) successfully completed Milestone B and awarded an EMD contract in December 2020, which includes the delivery of eight operational prototypes. This contracting effort remains on hold as the protest process works through the courts.

AIRBORNE COMMAND AND CONTROL AIRCRAFT

The E-2D Advanced Hawkeye (AHE) is the Navy's carrier-based Airborne Command and Control aircraft, equipped with an advanced airborne radar, aerial refueling capability, and network connectivity required by Naval and joint force commanders to provide air and sea superiority, and counter adversaries Anti-Access and Area Denial strategies. The E-2D provides unique Theater Air and Missile Defense capabilities, and is a cornerstone of the Naval Integrated Fire Control system of systems linking Navy and Marine Corps fighter aircraft, Navy surface combatants, and Marine Corps ground units.

The fifth Full Rate Production Lot 6 aircraft was delivered in December 2021, completing the MYP contract. Modernization priorities focus on Fleet capabilities to pace the threat, including Interoperability, Crypto Modernization, Communication and Navigation Hardware; essential Command and Control; networking and sensor performance capabilities that are critical enablers to Naval Integrated Fire Control (NIFC); vital upgrades and improvements to enable Joint All-Domain Command & Control (JADC2) and Naval Operational Architecture (NOA) [Theater Combat ID (TCID) and Hawkeye Cockpit Technical Refresh (HECTR)]. These modernization efforts are interdependent and required to keep pace with the rapidly advancing JADC2 environment and equally rapidly advancing adversary capability.

ASSAULT SUPPORT AND LOGISTICS SUPPORT AIRCRAFT

Tiltrotor Aircraft (USMC MV-22 Osprey and Navy CMV-22B)

Marine Corps MV-22 Ospreys currently have a continuous presence in INDOPACOM, CENTCOM, and EUCOM. The fiscal year 2022 budget added substantial Congressional funding to the U.S. Air Force (USAF) for Nacelle Improvement implementation, successfully accelerating the timeline for this readiness- and reliability-enhancing effort within our sister service. The Marine Corps is working to coordinate and fund an acceleration commensurate with new USAF timelines to ensure a smooth transition between service tiltrotor aircraft, and preservation of an uninterrupted production line.

The Navy is leveraging MV-22 investments to recapitalize the legacy C-2 fleet with CMV-22B aircraft in support of strike group logistics. The program declared IOC in December 2021, completed its inaugural deployment in support of the USS *Carl Vinson* carrier strike group (CSG) in February 2022, and is already underway on its second deployment in support of the USS *Abraham Lincoln* CSG.

The fiscal year 2023 budget requests \$125.2 million in RDT&E for continued V-22 development and product improvements, including a Helmet Mounted Display/Degraded Visual Environment to improve pilot situation awareness and safety in degraded visual environments. Fiscal year 2023 also includes \$207.6 million in APN for long-lead materials, modifications, common configuration, and nacelle improvements. The program is funded for 359 MV-22 aircraft for the Marine Corps and 44 CMV-22 aircraft for the Navy. Fiscal year 2022 was the last year of V-22 procurement under MYP III and Bell Boeing intends to initiate V-22 production line shut-down activities if no additional V-22 orders are received.

CH-53K

Having completed IOT&E, and with declaration of IOC soon to follow, the CH-53K will support Marine Corps operational concepts as the only fully marinized heavy lift helicopter in the DOD. Work to date has expanded the CH-53K's envelope through ground and flight testing and analysis, and has incorporated impressive real-world use of the aircraft to recover a downed Navy H-60, weighing 15,500 pounds, from an altitude of 12,000 feet in the mountains of California in September 2021. CH-53Ks continue to fly with Marine Operational Test & Evaluation Squadron 1 and are assigned to Marine Heavy Helicopter Squadron 461, the first fleet squadron to transition, preparing to support MEU deployments. A contract to procure the sixth Low Rate Initial Production Lot of nine aircraft was signed in January 2022.

The fiscal year 2023 President's Budget requests \$220.2 million in RDT&E to continue the CH-53K development and test, and \$2.1 billion in APN for procurement of 10 Full Rate Production aircraft, initial spares, and modifications.

EXECUTIVE SUPPORT AIRCRAFT

The fiscal year 2023 President's Budget requests \$45.6 million in RDT&E for VH-92A Helicopter Improvements and \$55.3 million APN for Executive Helicopter Series (VH-3D, VH-60N and VH-92A). RDT&E funding is required for continued VH-92A improvements and follow-on test and evaluation activities. These efforts include

VH-92A Mission Communications System upgrades to both software and hardware, enhancements to required Wide Band Line Of Sight capabilities, test aircraft and facilities; and test and evaluation efforts for distributed network communications, high-hot aircraft performance enhancements and cockpit upgrades. APN in the amount of \$55.3 million is required for retrofit modifications to the VH-92A Mission Communications System and continued modifications to the VH-3D and VH-60N to ensure communications interoperability through the remainder of the lifecycle.

FIXED-WING AIRCRAFT

KC-130J (USMC)

The KC-130J remains a force multiplier for deployed Marine Air-Ground Task Force (MAGTF) success, bringing increased capability, performance, and survivability with lower operating and sustainment costs. The KC-130J has the highest deploy-to-dwell ratio in the Marine Corps, as it provides critical tactical air-to-air refueling and organic lift capabilities to deployed MEUs and future Marine Littoral Regiments. The fiscal year 2023 budget requests \$468.6 million in APN to procure five KC-130Js through a USAF contract. These aircraft will be fielded to a new Marine Corps active-duty squadron in Hawaii and support mobility in the Indo-Pacific region.

TAKE CHARGE AND MOVE OUT (TACAMO)

The Navy's TACAMO nuclear command, control and communications (NC3) mission provides assured communications to the nuclear triad through all phases of conflict and is a vital link to the Navy's SSBN fleet, the most survivable leg of the triad. Currently flown on the aging E-6B Mercury (Boeing 707 airframe), TACAMO recapitalization will be developed for the C-130J-30 (stretched Super Hercules) aircraft. TACAMO mission systems will be developed and integrated by a third-party contractor. In fiscal year 2023, the Navy will invest \$554.2 million of

RDT&E toward platform development and complete Milestone B. Funding in fiscal year 2023 includes \$395.2 million to fully fund the procurement of three C-130J-30 test aircraft, \$74.5 million for non-recurring engineering contracts on the C-130J airframe, and \$26.3 million for very low frequency transmit system modernization. Investments in fiscal year 2023 set the stage for a successful Milestone B and subsequent mission integration. Integration of the TACAMO mission on the C-130J-30 leverages a proven platform and the mature TACAMO capabilities to support U.S. nuclear deterrence and *Columbia's* assured second strike for decades to come.

MARITIME PATROL AIRCRAFT

The P-8A Poseidon is the U.S. Navy's multi-mission maritime patrol and reconnaissance aircraft. The P-8A incorporates the commercial 737 airframes with modern avionics, military communications, and advanced sensors and weapons to provide a range of advanced warfighting capabilities. The P-8A consists of three Increments, ensuring the Navy paces the undersea threat and supports distributed net-centric maritime operations. Increments 1 and 2 have fielded and Increment 3 is scheduled to IOC in fiscal year 2026. Increment 3, which consists of ECP 6 and ECP 7, increases ASW capabilities including ASW Signal Intelligence, Wideband SATCOM, Higher-Than-Secret processing, enhanced track management and sensor fusion (Minotaur), and Enhanced Multi-Static Active Coherent (MAC-E). The first P-8A test aircraft completed the ECP 6 modification in March 2022 to support developmental and operational testing beginning in fiscal year 2022. ECP 7 (MAC-E) integration will occur prior to developmental testing.

The fiscal year 2023 budget request includes \$161.7 million in RDT&E for integration of ECP 6 and ECP 7 to complete baseline capability fielding, and rapid development efforts for evolving threats, and \$249.3 million in APN for fleet modification kits, deficiency corrections, safety upgrades, and production line shutdown activities. Boeing intends to initiate P-8A production line shutdown activities in fiscal year 2022 if no additional FMS P-8A orders are received. As of April 2022, 110 U.S. aircraft have been delivered.

UNMANNED AIRCRAFT SYSTEMS (UAS)

Naval Aviation continues to integrate unmanned systems into the Fleet to enable a fundamental shift in the way the DON conducts naval aviation operations. Broadening unmanned aviation efforts will decrease risk to personnel, allow greater persistence, longer ranges, improved data speed and accuracy, and a faster decision cycle. These capabilities offer the DON increased asymmetric operational opportuni-

ties and tactical advantages that provide the warfighters an edge to dominate and win in ongoing and future conflicts.

MQ-25A Unmanned Carrier Aviation

MQ-25A will increase the strike range, capability, and lethality of the CVW through organic mission and recovery tanking, and provide an ISR capability to the CSG. As the primary CVW mission and recovery tanker, MQ-25A will increase available CVW Strike Fighter assets, preserve F/A-18E/F Fatigue Life Expenditure. MQ-25 is integral to the Air Wing of the Future and establishes the foundation for MUM-T and autonomous operations from the CVN. The fiscal year 2023 budget continues investment in MQ-25 and the Unmanned Carrier Aviation Mission Control System (UMCS) development and begins testing of Navy MQ-25A while beginning LRIP of four MQ-25A air vehicles to increase fleet inventory. MQ-25A will IOC in late 2025. The fiscal year 2023 budget request supports the start of procurement for the MQ-25 Stingray with \$799.7 million in APN and continues RDTE funding with \$266 million.

MQ-4C Triton

The MQ-4C Triton is a persistent force multiplier that delivers unprecedented situational awareness of the battle space to shorten the sensor-to-shooter decision loop in the maritime and littoral battlespace. In 2020 two MQ-4C Triton IFC-3 variants deployed to INDOPACOM providing theater Maritime ISR coverage, executing 140 ISR missions and 3500 flight hours. One MQ-4C Triton IFC-3 remains flying in SEVENTH Fleet executing tasking of eight ISR flights per month. Multi-INT Operational Test and Evaluation and IOC are planned for fiscal year 2023. The fiscal year 2023 budget requests \$663.1 million in APN to continue procurement of three MQ-4 Tritons, and \$13.9 million in RDTE, with an additional \$163.3 million for RQ-4 modernization RDTE.

MQ-9A

The Marine Corps is adjusting to meet future operating environments that require leveraging uncrewed aerial systems at the tactical to strategic level. As a critical enabler within the MAGTF and Naval Expeditionary Force, MQ-9A squadrons will provide persistent communications extension, airborne early warning, maritime domain awareness, and electronic warfare support. As the Marine Corps builds the Unmanned Aerial Squadron of the future, the Marine Corps seeks funding for the required aircraft, ground control stations, spares, and support equipment across the next several years. Existing U.S. Air Force efforts are being leveraged actively throughout this process to reduce cost and risk, while providing advanced capabilities to the Marine Corps and the overall joint warfighting enterprise. Future potential mission sets for Marine Corps uncrewed systems include offensive air support and tactical transportation capabilities.

WEAPONS PROGRAMS

Missile Programs

As the Navy carefully manages the approach to end of life of *Ohio*-class SSBNs, addressing the viability of the Strategic Weapons System (SWS) throughout the life of the *Columbia*-class SSBNs remains a priority. The currently deployed TRIDENT II D5LE missiles will support initial load-outs of early *Columbia* hulls, but production of additional D5LE missiles is not practical due to technological obsolescence and an atrophied industrial base. Modernization of the SWS, D5LE2, is required to maintain the Sea Based Strategic Deterrent starting with the ninth *Columbia*-class submarine by ensuring sufficient missile inventory and seamlessly supporting USSTRATCOM requirements. D5LE2 incorporates the necessary flexibility and adaptability needed to maintain demonstrated performance and survivability in the dynamic threat environment until *Columbia*-class end of life. The Administrations' recently released Nuclear Posture Review (NPR) states that D5LE2 needs to begin deploying on *Columbia*-class in the late 2030s in order to sustain sufficient missile inventories to support the U.S. sea-based strategic deterrent as well as the United Kingdom's independent nuclear deterrent. The Navy will prioritize near-term investments in accordance with the NPR to ensure that D5LE2 is effective in the expected threat environment and delivers on time.

Standard Missile-6 (SM-6) is the Navy's primary air defense weapon for surface combatants providing increased battlespace against threats over-the-horizon. SM-6 leverages the proven SM-2 propulsion and ordnance sections, and adds a modified Advanced Medium-Range Air-to-Air Missile active seeker and booster for extended ranges. Each new Block brings additional capabilities and mission sets. The Navy awarded a five-year MYP contract for up to 625 SM-6 missiles in December 2019.

The fiscal year 2023 President's budget continues funding for the upgraded SM-2 Block IIIC. The program is anticipated to achieve an Initial Capability in fiscal year 2022 and plans to transition from a rapid prototyping project exercising middle tier authorities into a Major Capability Acquisition in the second quarter of fiscal year 2023. SM-2 Block IIIC leverages investments made in SM-6 Block I and Evolved Sea Sparrow Missile (ESSM) Block II to enhance performance against numerous threats and to increase depth of fire. The SM-6 Block IB program, which integrates a new government developed rocket motor with an existing SM-6 Block IA seeker, transitioned from a rapid prototyping effort to Major Capability acquisition and has been designated as major subprogram to the existing SM-6 ACAT IC program. The program intends to complete development, integration, and test efforts to field a cost-effective extended range capability in fiscal year 2027.

ESSM provides another layer to the Navy's defensive battle-space. ESSM Block 2 is in Low Rate Production and declared IOC in December 2021. The inner layer of the Fleet's layered defense is the Rolling Airframe Missile. The RAM Block 2B includes hardware and software updates to counter complex raid scenarios, upgraded IR seeker to enhance multi-object and closely-spaced object discrimination, a missile-to-missile link, and an improvement in firepower. RAM Block 2B is on track to declare IOC in fiscal year 2024.

Strike Weapons

The DON continues to focus on delivering a strong balance of offensive strike weapons by maintaining the readiness of our strike weapons inventories, enhancing capacity and performance of existing strike weapons, and developing next-generation strike missile capabilities. Through these efforts, the DON will increase overall force effectiveness and continue to address emerging threats from adversarial forces.

Tomahawk

In the fiscal year 2023 budget request, the Department sustains the Tomahawk as the Nation's premier all-weather, long-range, survivable deep strike offensive weapon to include new production of and recertification of current inventory into modernized BLK V Tomahawk missiles. BLK V(a) Maritime Strike Tomahawk (MST) provides a long range moving maritime strike capability to meet current and future threats, supporting the Surface Warfare Mission area through the inclusion of a seeker suite in the Tomahawk BLK V missile. The fiscal year 2023 budget request for MST provides continuation of Test and Evaluation (T&E) plans that include missile functional ground testing and missile test flights from a ground launcher apparatus to assess seeker performance, mature and refine seeker algorithms, and provide verification and validation data for Modeling and Simulation. MST IOC is planned for fiscal year 2025. The fiscal year 2023 budget request continues engineering, manufacturing, and development of the Joint Multiple-Effects Warhead System (JMEWS), which will deliver a hardened target penetration capability with the Tomahawk BLK V(b) missile in fiscal year 2027. The fiscal year 2023 budget request continues engineering, manufacturing, and development of the Military Code Global Positioning System (GPS) receiver, which will deliver significant increased resiliency in spoofing and jamming threat environments capability to the Tomahawk BLK V missile in fiscal year 2026.

Offensive Anti-Surface Warfare (OASuW) Increment 1/ Long Range Anti-Ship Missile (LRASM), OASuW Increment 2

The fiscal year 2023 President's Budget requests \$226.0 million to fund Long Range Anti-Ship Missile (LRASM) efforts associated with filling congressionally directed Operational Testing, which includes telemetry kit installations and test support. Fiscal year 2023 also funds procurement and installations of updated Weapon Data Link to satisfy compliance of NSA crypto modification mandate, and procures 60 DON LRASM weapon systems. The fiscal year 2023 President's Budget also requests \$12.8 million for completion of the LRASM 1.1 capability improvements.

The fiscal year 2023 President's Budget requests New Start authority to begin Technology Development in support of OASuW Increment 2, now referred as Hypersonic Air Launched OASuW (HALO). HALO supports the national imperative to mature hypersonic capabilities. The program represents a longer-term capability that encompasses increased performance and will provide the Navy a necessary air launched, carrier based weapon to address evolving long range high speed threats from near peer competitors. In order to deliver this capability to the warfighter when needed, the Navy will collaborate heavily with the USAF.

Advanced Anti-Radiation Guided Missile (AARGM) & AARGM Extended-Range

AARGM procurement completed in fiscal year 2021 with the award of the last DON Full Rate Production (FRP) contract. There have been 1366 AARGMs (All Up

Rounds, Training Missiles, and Spares) delivered to the Fleet (as of March 2022). Program of record delivery is 1803 missiles. Deliveries continue through fiscal year 2024 in support of the transition to AARGM-ER. AARGM-ER provides the DON with a 5th generation compatible extended range asset to project power and provide Suppression of Enemy Air Defenses, both at-sea and on land. The fiscal year 2023 President's Budget requests \$90.8 million in RDT&E to support operational and Integration testing of production representative hardware. The fiscal year 2023 President's Budget requests \$131.3 million in WPN to procure 69 AARGM-ER All Up Rounds and six Captive Air Training Missiles.

Hypersonic Program

U.S. near-peer competitors have weaponized and fielded hypersonic missile systems, creating warfighting asymmetry that must be addressed. The Conventional Prompt Strike (CPS) Program Office is developing a hypersonic weapon system that will enable precise and timely strike capability against deep inland targets in contested environments. CPS and the Army Hypersonics Project Office are jointly leveraging a common All Up Rounds missile design and test opportunities to field a non-nuclear hypersonic weapon system. *Zumwalt*-class DDGs will be the first Navy platform to field this hypersonic capability in the mid-2020's, followed by Block V *Virginia*-class SSNs in the late-2020's. In March 2020, the Services executed a highly successful flight test of the Common Hypersonic Glide Body (CHGB), and in 2021 successfully conducted three static fire tests of the newly developed Two Stage Solid Rocket Motor, tests to validate the Navy's launch approach, and tests of advanced capability for future insertion into the CHGB. The first flight testing of the common All Up Rounds is scheduled to occur in fiscal year 2022. This rapid development and demonstration of hypersonic strike weapon systems supports the U.S. ability to deter, and if necessary, defeat potential adversaries. The Department's fiscal year 2023 budget begins procurement of the first three All Up Rounds to be delivered to the first *Zumwalt*-class DDG in fiscal year 2025 as well as two test rounds to support the Joint Flight Campaign. The request totals \$1.2 billion in CPS RDTE. \$18.6 million in funding is also dedicated to building supply chain resilience for hypersonic weapons components.

Navy Laser Weapons

The Navy is continuing its path forward for shipboard integration of High Energy Laser (HEL) systems, pursuing multiple projects to accelerate fleet integration with initial capabilities, assess operational concepts and platform options through experimentation, mature advanced technologies, perform lethality assessments against anti-ship missiles, and inform development of requirements for future acquisition. Initial capabilities, such as Solid State Laser-Technology Maturation (SSL-TM) on USS *Portland* (LPD 27), continue to be valuable for shipboard experimentation and integration to inform the Navy's long term consideration of other ship classes as host platforms for laser weapons. Future Navy surface combatants, FFG-62 and DDG(X), have included space, weight and power reservations to accommodate high power lasers systems. DDG(X) design includes reservations to accommodate HEL systems with power levels capable of countering ASCMs in a self-defense role when those systems are mature and proven.

In the fiscal year 2023 budget request, the Department will further advance capabilities of laser weapons to meet ship defense missions, installing an eighth Optical Dazzling Interdictor, Navy (ODIN) system on DDG 51 Flight IIA ships. Additionally, the first fully combat system integrated laser weapons system, HELIOS, onboard a DDG 51 Flight IIA destroyer will be fielded. The DON will continue collaboration and partnering with the DOD and other Services to mature these advanced laser technologies and increase power scaling to defeat more challenging threats to support and shape the future acquisition of these systems.

Torpedoes

The Department is investing heavily in increasing the capacity and capability of both the Heavyweight and Lightweight Torpedo inventories to maintain our advantage in the undersea domain against our strategic competitors. The MK48 Heavyweight Torpedo is the Navy's primary submarine-launched ASW and ASuW weapon. The Department is increasing both production of the MK48 MOD 7 and development of new capabilities with the MK 48 MOD 8 and MK48 MOD 9 to maintain our advantage over the threat today and in the future. The MK54 Lightweight Torpedo, which is employed by both surface ships and aviation ASW assets, continues to be produced and upgraded to keep pace with the ASW threat. Production of the upgraded MK54 MOD 1 continues, and development of the MK54 MOD 2 is underway to rapidly meet the high-end threat. The Department is also investing in developing a Very Light

Weight Torpedo capability to further our advantage in the undersea domain. The Compact Rapid Attack Weapon will deliver multi-mission capability as both a hard-kill torpedo countermeasure and a short range ASW weapon. These investments are critical to the Navy's efforts to prepare for both today's fight and the future fight, where ASW and submarine ASuW are vital to our warfighting readiness.

MARINE CORPS GROUND PROGRAMS

Fiscal year 2023 USMC investments enable the Marine Corps to close kill webs and deter strategic competitors. Some of the programs are emerging, while others are more mature in the acquisitions process. Maintaining momentum for the Marine Corps' modernization efforts expedites the USMC's ability to meet the requirements for critical warfighting concepts, such as A Concept for Stand-in Forces. Proactive modernization, balanced with the readiness needed to "fight tonight," will ensure the Marine Corps remains a naval expeditionary force-in-readiness. This budget provides a relevant and modern force that can sense, make sense, and act today and in the future in support of Naval and Joint campaigns.

Navy/Marine Corps Expeditionary Ship Interdiction System (NMESIS)

In this budget request, the Navy/Marine Corps Expeditionary Ship Interdiction System (NMESIS) continues to be the Marine Corps' top modernization priority and is the critical lethality component to our anti-ship missile capability. In conflict, NMESIS will allow the Stand-in Force to deny or protect key maritime terrain from the enemy. Additionally, this system can be employed to herd the enemy into areas where Joint and Coalition forces can exploit their relative advantages. NMESIS will create cost impositions for adversaries by introducing a credible threat into their decision-making at a relatively low cost to U.S. Forces.

The NMESIS consists of two NSMs mounted on a remotely operated Joint Light Tactical Vehicle-based chassis. Due to the mature technology in NMESIS, the Marine Corps has reduced programmatic risks. Indicative of this, the Marine Corps has successfully tested NMESIS twice, once in November 2020 and more recently in August 2021. Given the performance metrics over the last two years of testing, we believe NMESIS will have immediate effects in the operational environment. This year's budget request builds the NMESIS launcher and missile capacity.

Organic Precision Fires (OPF)

Organic Precision Fires (OPF) will provide multiple echelons of the Fleet Marine Force with an organic, loitering, beyond line-of-sight precision strike capability. The system is comprised of a surveillance capability, separate loitering munitions, and a command and control station. OPF will provide continuous surveillance before, during, and after conducting lethal strikes. OPF offers Marines less exposure to enemy fires by offering range outside of adversary direct fire weapons. The associated loitering munitions will have sufficient lethality to defeat armored, water-borne, and personnel threats. Funding requests will continue to support testing, experimentation, and user evaluations with Organic Precision Fires prototypes.

Ground/Air Task-Oriented Radar (G/ATOR)

The Ground/Air Task-Oriented Radar (G/ATOR) is a proven platform that continues to exceed expectations. G/ATOR is a multi-role, ground-based, 3D radar system that is designed to detect air threats, rockets, missiles, and mortars, while aiding in the performance of air traffic control mission sets. The radar is transportable by organic Marine Corps means and provides a significant "engage on remote" capability in support of Expeditionary Advanced Base Operations. The Marine Corps has fielded these radars throughout the force, with several located in the Indo-Pacific region.

The Marine Corps, as the forward element of the Joint force, continues to invest in and improve the sensor capabilities of G/ATOR. In 2021, at the Army's Project Convergence exercise, G/ATOR successfully integrated with and supported a Navy-Marine Corps live-fire kill-chain event. This is yet another meaningful step towards greater Naval integration and adding existing Marine Corps platforms to the Joint and Naval IAMD mission. The Office of Naval Research (ONR) also developed an advanced, complementary system to the G/ATOR, the Multi-Domain Radar for a Contested Environment (MuDRaCE). ONR is maturing the technology and will transition this capability to the Marine Corps for incorporation as a program of record.

Marine Air-Ground Task Force (MAGTF) Electronic Warfare Ground Family of Systems (MEGFoS)

The MAGTF Electronic Warfare Ground Family of Systems (MEGFoS) is an electromagnetic warfare (EW) system designed to advance our capabilities in the electromagnetic domain. MEGFoS protects friendly spectrum access, senses spectrum usage, and provides a means for disrupting an adversary's decision-making cycle. MEGFoS is comprised of three variants—mounted, dismounted, and team portable. All three variants are networked and able to share data and coordinate EW missions with one another. In the 1st quarter of fiscal year 2022, the Marine Corps began experimentation with a prototype of the MEGFoS team-portable variant. In this year's budget request, the Marine Corps is seeking to procure a mixture of mounted, dismounted, and team-portable systems.

Networking On The Move (NOTM)

Network on the Move (NOTM) is a satellite communications (SATCOM)-based command and control system mounted on a ground combat vehicle or aviation platform. NOTM provides terrestrial line-of-sight and beyond line-of-sight communications for Marines at-the-halt and while on-the-move. The system is purpose built for Marines fighting in a distributed manner, in alignment with naval and joint concepts, to effectively command and control forces in a contested all-domain environment. The Marine Corps continues to procure and field these systems to distributed Fleet Marine Force units, enabling command and control, now and in the future.

Senator HIRONO. Thank you.

So, Mr. Secretary, in my opening statement I referred to the fact that you are responsible for acquisition and sustainment matters, to include maintenance and the importance of our maintenance availability, in both the private and public shipyards. What have you done since the last year to improve the performance of ship maintenance programs and to keep individual overhauls from being late?

Mr. STEFANY. Yes, ma'am. So we have taken a multiple-pronged approach. We started with the planning phase and we are putting more resources into planning up front for an availability, getting the work packages defined, getting the long-lead material bought sooner in the process than we have in the past.

In the contracting phase, we have moved to what we call an A-minus-120, where we try to award the contracts—I am talking about private shipyards now—120 days before the availability, to give the contractor a chance to get up to speed and understand the work before we get into the actual project. Then we have really done a focused effort, what we call “plan to perform” of what are the key criteria for the success of an availability, and then make sure we understand the levers that we would pull in order to be able to succeed, what are the key things, and make sure we are focusing on the most important data to be able to effect the availability once it has started.

Except for the contracting part, ma'am, we are doing the same type of items on the public shipyards as well. Looking at the availability of equipment up front at the public shipyards and then doing that “plan to perform” process, where we are really pulling the thread hard on processes within those shipyards.

Senator HIRONO. So, Mr. Secretary, as with the shipbuilding side, on the maintenance and repair side, you are probably seeing issues of workers, not enough trained workers, and supply chain issues. So what specifically are you doing to address those particular problems?

Mr. STEFANY. Yes, ma'am.

Senator HIRONO. On the shipyard, the repair side.

Mr. STEFANY. Yes. On the repair side, yes, we are seeing both supply chain delays due to COVID impacts as well as workforce, where we are not having the workforce that we need appear, and it is happening in new construction as well, so your point is very valid.

We are working with the shipyards, regional shipyard associations, on pipelines for future workforce, to try to get skilled workers from out of the colleges and trade schools into the trade. That is a longer-term thing. It is not happening immediately. But we are seeing younger folks coming into the business through the trade schools we have set up. For the actual work, we actually are, I will say, illuminating. We have tools to illuminate where our supply chain is really having trouble and trying to attack that in advance, ma'am.

Senator HIRONO. So I think that the lack of trained workers has been an issue long before COVID, and it has been exacerbated by COVID. So I hope that you are doing something to turbocharge the focus on recruiting and retention, shipyard works, both on the shipbuilding side as well as on the repair side. I do not have the answers to the lack of workers, but it is a major concern ongoing. So you are going to get asked those questions every time you come before either SASC or this Subcommittee.

There is going to be a gap in the number of *America*-class LHAs, the amphibious ships. So my information is after the force total of the 11 originally planned is finished in 2023, then you are not going to get any more of these LHAs for another 8 years or so. Was that a budget decision, and if so, what happens when you need to resume production or construction of these LHAs and then the shipyard is going to have to ramp up? What happens regarding the construction of these ships at that point, what that kind of a long gap?

Mr. STEFANY. Yes, ma'am. Quickly, on the last one, for workforce we do have funding in the 2023 budget to actually go and try to accelerate those workforce development programs. I just wanted to finish that last question.

With this question, ma'am, yes, the LHA-type ships, about 5 years apart. We call it 5-year centers. So the previous ship was in 2023, and the next ship, most efficiently, would be built in 2028. It is affordability reason of why it is not in as a 2028 ship. It is just in the overall budget, why it is sitting out there in 2031. But we will relook at that in the coming budget cycle, ma'am.

Senator HIRONO. I would ask that you do that.

I have a lot of other questions and I will probably do a second round, but I will turn to Senator Cramer.

Senator CRAMER. Thanks, Chairwoman, and since you have primed the pump so nicely on shipbuilding strategies let's hang out there for a little bit and maybe drill down a little more, because I appreciated many of the questions.

Let's see. Mr. Stefany, I said there are five shipbuilding issues, so I will try to tackle them one at a time here in the first round.

First of all—and by the way, thank you for the DDG(X) acquisition report that you delivered last week. Can you elaborate a little bit on the benefits, potential benefits of, and the Navy's interest in maximizing collaboration and design and early construction be-

tween Ingalls shipbuilding, Bath Iron Works, and the Navy for DDG(X) program? Explain why that makes sense.

Mr. STEFANY. Yes, sir, and it is what we have learned on the submarine program, frankly, where the shipyards working together with the Navy we get the best breed. We get the best engineers and the best planners at both shipyards, working with the Navy to lay out those original specs and to lay out the plan for building it. Which shipyard maybe can do this better, what can do that better, and we take the strengths of each.

The other part is we do not have downtime, where we have competitive pressures, where the companies have to go apart, in their separate corners, and do a bidding process. We can continue the design spirals until we can get to the construction of those first two ships. Again, we have committed that each shipyard will be involved in the construction, and so knowing we are going to have them involved, having both companies working together on the best product, using a single design tool, a single computer-based model, is what we have seen in the *Virginia* program as the best way to design and build, at least build the initial ships of a new, from-scratch program, sir.

Senator CRAMER. Sure. So let's then talk about multi-ship acquisition and procurement as well. So there are eight *Lewis*-class oilers to be procured in fiscal year 2022 through 2027. It seems like a good opportunity to provide stability to the industry, including workforce, and save some money through the multi-ship procurement, including economic order quantity authorities.

Can you support an approach like this, and can you provide a rough estimate of what maybe could be saved with an approach like that?

Mr. STEFANY. Yes, sir. I would say from an acquisition point of view, absolutely. Buying eight ship sets worth of equipment at the same time, from an economic quantity and items like that would be the most efficient way to buy it. I think when we looked at the amphibious ship multi-ship it was about a 7 percent savings, and that was with two different kinds of ships. So I would expect in this case we would see more than 7 percent, because they are all the same type of ship, right. But I can take for the record, sir, an actual estimate for you.

Senator CRAMER. No, that sounds great. Thank you.

So the chairwoman brought up the issue of workforce. I want to spend a little bit of time on that as well. Is workforce one of the reasons that this budget shows a *Virginia*-class submarine? Construction durations are extended by 2 years. Is that fair?

Mr. STEFANY. That is one of a number of reasons, but probably the primary reason, sir, yes.

Senator CRAMER. So when you talked about workforce development programs, tell me about opportunities that might exist for—by the way, I am a former state economic development director. I know you think you knew everything about me. I knew you wanted to know that. So unfortunately, in North Dakota, we just do not have any shipbuilders, so I was thinking that if I was the head of economic development somewhere, what kind of incentives can we do together—local state, you know, along with whatever incentives.

When I say “we,” the Federal Government could provide. I am sure you have thought through this a couple of times.

Mr. STEFANY. Yes we have, sir, and even before COVID and our recent issues, local companies with local governments, Senator Kaine and the *Virginia* waterfront, very, very active, even before we had the COVID-type issues.

What we are looking at going forward, though, is to take that across other parts of the country. I think we have—I will not say “tapped out” but we have kind of maxed out the *Virginia* and up in Connecticut, that area of the country, from the skilled workers, so we want to expand out to other parts of the country. We have started programs in Danville, Virginia, in Pennsylvania, in the Philadelphia area, that would take local city, state, as well as the Navy working together to come up with pipelines of non-traditional pipelines.

Now, sir, we are just now starting to look at, with the influx from Afghanistan and Ukraine coming into the United States, potentially there are skilled workers there as well, that we could take advantage of, sir.

Senator CRAMER. I appreciate that. Well, I am near the end of my time so I will reserve my next question about the double accounting issue that I brought earlier for you in Round 2. Thank you, Madam Chair.

Senator HIRONO. Senator Kaine.

Senator KAINE. Thank you, Chair Hirono, and to all of our witnesses thank you for your service.

So this is just us. I am sure it is on C-SPAN, but I want to dig into an issue that I am confused about. So I want to ask about two things. I want to ask about amphibians and I want to ask about the marine force posture discussion and budgetary ramifications of that.

So on amphibians, the Marine Corps continues to state that its minimum amphib requirement is 31, but we are hearing different estimates from OSD and the Navy about that. So if the Marine Corps is the principal end user and they are saying the minimum acceptable is 31, how do we explain confusing messages that I am getting? I am hoping we can clear up the confusion. It seems to me like there is either probably one of three options. Either the Marines want 31 and Navy and OSD agrees it should be 31, and we will fund 31. Or the Marines want 31 and Navy and OSD agree with the 31, but say that there is a budgetary challenge that means we are going to have a temporary gap to get to 31. Or the Marines want 31 and Navy and OSD different and do not think 31 are necessary.

So maybe there are other forks in the decision tree but it seems like it is one of those three answers. Can I start with you, Mr. Stefany? What is going on?

Mr. STEFANY. Yes. I would say that Secretary Del Toro, when he came in, kind of had the same question, right?

Senator KAINE. Yeah.

Mr. STEFANY. So he got the NAVY, the CNO staff, and the Commandant's staff together and chartered an amphibious ship study, without OSD, with Navy, Marine Corps.

Senator KAINE. Yep.

Mr. STEFANY. That study is just completing, and the briefing process, I do not know if the SECDEF has been briefed it is very, very near term. That will feed into a force structure assessment that we are doing that will go with the National Defense Strategy, the classified version I think you have just seen, right?

Senator KAINE. Right.

Mr. STEFANY. So we do that, and that will ultimately get us to what is the final number of amphibious ships—traditional amphibious ships we are talking about—and if it is, whatever it is. We will then resource, given a constrained budget, to at some point get to that number, sir.

Senator KAINE. What is the likely timing of this, because obviously our hope on the committee would be to get done with the NDAA probably between Memorial Day and July 4, so we have the capacity to try to shape what we do in the authorizing bill to meet what the recommendation is, and I hope it is a consensus recommendation and not a thug war.

But what do you think the timing is?

Mr. STEFANY. I can tell you I believe that the Commandant and the CNO are on the same page, and they are coming to the committee, I think, in a week and a half, and their plan is to give you the results, or at least to talk about it, all three of them together.

Senator KAINE. Okay.

Mr. STEFANY. That obviously would have to go to OSD and we would update you through the other steps.

Senator KAINE. Right. Okay. Good. We will save those questions for then.

The other one I want to talk about is the Commandant's force structure ideas, and I am a supporter of them. I like what I see. I know that they are generating some controversy, and that is fine. People have different ideas about the way to do something, and sometimes folks are reluctant to make a change. I get that. I have seen it in organizations I have been part of.

But the piece of it I want to ask you about is in the planning guidance that the Commandant put out about 3 years ago he said, quote, "If provided the opportunity to secure additional modernization dollars in exchange for force structure, I am prepared to do so. So I will let go of some force structure if I can modernize to the mission of tomorrow, as we see it."

Some do not want to let go of force structure, but there is another question that I am really interested in, which is, if you do let go of force structure to get modernization, I do not want the force structure dollars taken away and then not put to modernization, and I have been hearing that is a concern, that if the Marines make a pivot in this way to try to prepare for tomorrow's battle, I do not want their money taken away on the force structure side. I want the money plowed back into modernization.

So if I could ask you, Mr. Stefany, and General Heckl, at this point, you know, April 26th, sitting here, are you comfortable with the direction things are going, that as the Marines pivot and set aside some force structure for modernization they are going to be able to hold onto those resources to actually do what the Corps needs to do?

Mr. STEFANY. I will start and turn it over quickly. I would say, you know, that has always been a discussion in the building, but I think so far, if you trace the dollars, you would see it has been pretty much money moving from here to there. It has been relatively even. But I will turn it over to the general.

General HECKL. Senator, thank you very much for the question, and the bottom line, up front, is yes, we are comfortable. I actually just met with the money guy for the Marine Corps, Lieutenant General Mahoney, this afternoon.

But again, sir, I think—and really, great thanks to this Committee and to others, to include the Navy. We knew there was risk, sir, that that force structure could be harvested, if you will. We have not seen that. But I will simply say that some of the funding that is being reinvested, it is being specified, or as the money people talk, it has been ZIP-coded. So it has been limited in our ability but overall, sir, no, we are not concerned.

Senator KAINE. All right. Well, both of these are helpful, and I will obviously get into these questions further when we have the posture hearing in a week and a half, but thank you for shedding light on it. I appreciate it. I yield back.

Senator HIRONO. Senator Hawley.

Senator HAWLEY. Thank you, Madam Chair. Thanks to all of you for being here.

Admiral, if I could just start with you. Can we talk a little bit about the shipbuilding, the three different profiles that are included in the plan released, I think, on April 20th. My question, I guess, is this. Is the Navy confident that each of those profiles would allow it to meet the operational requirements for deterring a Chinese fait accompli, vis-&-vis Taiwan?

Admiral CONN. The first two profiles, Alternatives 1 and 2, were fiscally constrained in terms of no real budget growth in the types of forces you could have, at the same funding line with differences in manned and unmanned between the two. Alternative 3 was industrial-base limited, as we understand it today, and for an additional \$75 billion—it equates to about 2 percent a year—what type of options in force structure could that develop?

I will say in the shipbuilding plan itself it says that Alternative 3 most closely approaches the previous analytical work that was used to generate the ship-owning plan.

Senator HAWLEY. But my question—I appreciate that, but can I just drill down on that a little bit? I want to be clear. Do each of these profiles—1, 2, and 3—will they allow the Navy—is the Navy confident that they will allow you to meet the operational requirements necessary to respond to what is the pacing challenge in the pacing theater, the pacing scenario in the pacing theater?

Admiral CONN. I would say we have the most confidence in Alternative 3.

Senator HAWLEY. Okay. So not in 1 and 2. You have less confidence in 1 and 2.

Admiral CONN. That is correct.

Senator HAWLEY. Okay. Thanks. That is very helpful.

General Heckl, can I turn to you? I want to ask you about anti-ship missiles. The Marine Corps has put anti-ship missiles at the top of the unfunded requirements list for the last 2 years, I think,

if I have got that right. It did not do so this year. Can you just explain why that is?

General HECKL. Sir, the NMESIS, the Navy Marine Expeditionary Strike Interdiction System, which is the naval strike missile you are referring to—very successful, by the way—is still our number one priority, sir. Are you referring to the UPL, where the Commandant put the LPD-33 for advanced procurement?

Senator HAWLEY. I am sorry. I am having—can you repeat that, General?

General HECKL. Yes, sir. So right now the NMESIS remains our number one priority.

Senator HAWLEY. Yeah.

General HECKL. Yes, sir. No question. Are you talking about the unfunded priorities list—

Senator HAWLEY. Yes.

General HECKL.—LPD-33, sir. Obviously, force design, we, the Marine Corps, are very confident, and I think the Navy, they are on a good trajectory. Our concern right now is primarily amphibious ships.

Senator HAWLEY. Okay. I guess what I am driving at here is, are you satisfied that you are getting everything that you need to accelerate fielding the capabilities that you are going to need for the expeditionary advanced base operations?

General HECKL. Absolutely, sir. Absolutely.

Senator HAWLEY. Good, and while I have got you here, General, I just want to register my thanks. I think the work on the Force Design 2030 has been outstanding, and I know that, as Senator Kaine alluded to a minute ago, that there is some controversy about that. I know some people are upset that, for instance, Marine Corps is cutting tanks. But, you know, the Indo-Pacific is primarily a maritime theater, and I think you are doing a great job on that, and I really think this kind of a bold rethinking is a model for everybody else.

General HECKL. Senator, thank you, and, you know, Liddell Hart, the British strategist, said, “The only thing harder than getting a new thought into the military mind is getting an old one out.” So, yes.

Senator HAWLEY. Well, good work. Very good work.

Admiral, can I come back to you? I want to ask you about anti-ship missiles as well. It looks like the Navy has chosen not to prioritize them. You have not fully funded requirements related to the SM-6, LRASMs. They are on the unfunded requirement list. I am just wondering why that is.

General HECKL. We have LRASM upgrades. Yes, that is part of the unfunded list in terms of capability. But we have tried to get all other important anti-ship weapons, to include SM-16B, which should deliver in the future, if not at maximum capacity but near maximum capacity of the industrial base to produce.

Senator HAWLEY. Okay. So you anticipated my next question. Is it your view then that we are maxing out—Mr. Stefany, weigh in here if you want to—but are we maxing out the base’s ability—let us stick with the LRASMs if we could—have we maxed out? Is that your view? Does this request max out the industrial base’s ability to produce LRASMs, or are we—

Admiral CONN. That is my understanding, sir, that we are maxing out. It is a joint Air Force-Navy——

Mr. STEFANY. Across all services, right? You have got to look at everybody.

Senator HAWLEY. Right. Right.

Mr. STEFANY. Same with SM-6, sir. We are at the max, without an investment.

Senator HAWLEY. Okay. So what would it take to expand those production lines further, so we can field as many as possible now and also surge production if have a potential conflict?

Mr. STEFANY. We have done that analysis. I do not have it with me but I will take that for the record.

Senator HAWLEY. Okay. Would you? That would be very helpful.

My time has expired. If we have time later I will come back for a second round. Thank you, Madam Chair.

Senator HIRONO. Senator Blumenthal.

Senator BLUMENTHAL. Thank you, Chair Hirono. As I am sure you know, in fiscal year 2020, the Navy unilaterally reversed a decades-long indemnification policy and stated that going forward it would no longer cover unusually hazardous risks involving conventional weapons that rely on high-energy propellants. This decision essentially shifted a very significant risk to private industry entities working on missiles, for example. It essentially risks losing a lot of private partners who cannot tolerate the risk that is imposed, and possibly the ability to build major weapon systems and technologies essential for future conflicts. In some sense the hazardous risk is a cost of producing the weapon, and under existing law the military services can and do indemnify contractors for unusually hazardous risks.

For four decades, the Navy has borne the risk of catastrophic loss for incidents relating to missiles that rely on high-energy propellants, like the Tomahawks. Private industry carries commercial insurance, which will respond first in the case of catastrophic loss. But my question is, Mr. Stefany, can you explain why the Navy reversed its position on this kind of indemnification, and does this change affect major acquisition programs?

Mr. STEFANY. Yes, sir. I appreciate that question, and as a matter of fact, I was discussing this topic with the president of Electric Boat earlier today, so very much on our mind.

Historically, the Department of Navy has provided a blanket indemnification, a blanket—you know, no matter what the issue is, it is a blanket insurance, if you will, because industry cannot buy it, for nuclear weapons and nuclear propulsion for submarines and aircraft carriers.

What happened, of course, over time is particular weapon systems did not have a nuclear warhead anymore and we, as a navy, decided that we would not do a blanket indemnification, but if a company had a specific issue, a specific use case, we call it, we would be happy to walk through exactly where the risk was for that weapon, at that production facility, and we would talk about it with the Secretary. That is what I relayed to the president of Electric Boat and others. We are not against necessarily indemnification. We are against a blanket, across-the-board, no matter what kind of indemnification.

So maybe we are talking with industry maybe past each other a little bit, but I think there is a way ahead here, sir.

Senator BLUMENTHAL. You are actively engaged in discussion, I hope constructive discussions with contractors like Electric Boat.

Mr. STEFANY. Yes, we are, you know, Lockheed, Northrop, all of the big companies we are having these discussions with. But again, the point is, what is the specific concern you have, not just a blanket indemnification, sir.

Senator BLUMENTHAL. Let me ask you a question about the CH-53Ks, Lieutenant General Heckl. I was very pleased to see that the CH-53K has reached initial operational capability very recently, I think, maybe yesterday afternoon. As the CH-53E Super Stallions reach the end of their service lives, the 53K I think is urgently needed, and so I am hopeful that we will remain committed to getting this new helicopter on board, operational, as quickly as possible.

Can you speak to how the Marine Corps air combat element will use the 53-K and what its importance is to your capabilities?

General HECKL. Sir, that is impossible to answer in the time we have available, I will simply tell you, sir, simply because this is such an incredible aircraft.

You know, sir, the Kilo lifts three times what the Echo lifted, its predecessor, and we are the Navy family here, but last September we went up in a 53-K, looked at a downed MH-60 helicopter off of a mountainside in California, at 12,500 feet. Unbelievable. The Navy thought they were going to have to cut that thing into thirds or quarters to get it off the mountain.

So the 53-K, sir, absolutely vital to what we are doing in the Indo-Pacific. To be able to lift that kind of payload, 27,000 pounds, 120 nautical miles, will be absolutely critical to the intra-theater mobility, sir, that is so important to the Marine Corps, particularly from the organic mobility perspective, which is what is unique to the Marine Corps. The KC-130J, the 53-K, the MV-22, and our surface lift, absolutely vital, sir. So the Kilo is going to be a critical asset, sir, and we are seeing a lot of success with it right now.

Senator BLUMENTHAL. Thank you. Thanks, Madam Chair.

Senator HIRONO. Senator Scott.

Senator SCOTT. Thank you, Chair.

I know it is your responsibility, I guess, to defend the President's budget, but I guess what surprises me is there is a substantial cut to the force structure of the Navy. You are going to retire nine combat ships. The most recent was commissioned less than 2 years ago.

So with fewer ships—is that right?

Mr. STEFANY. That is right.

Senator SCOTT. So with fewer ships, a combatant commander, how are you going to deal with any requests? I mean, it does not seem like we have fewer problems. I mean, you have got Russia and what China is doing. So how are you going to deal with fewer ships? Are you just going to send fewer ships to request, or is there some way you are going to make them work longer, which is very difficult to do? So how are you going to do this?

I know your job is you have to defend the Administration.

Mr. STEFANY. Sir, certainly the number of ships will increase the risk to meeting the COCOM's requirements, but we never meet 100 percent of the COCOM's requirements. But I will turn it over to the Admiral to give more of the specific look at that.

Admiral CONN. So in looking at specifically the LCS, that ship was designed or thought about in 2002, over 20 years ago, and the world has changed. When we looked at the LCS, is it not that it has no military value. It has less military value in a high-end fight with China, in the Pacific. When you look at all the bills we have to pay, and when you look at where proprietary investments in some of our weapons between conventional prompt strike, which we are delivering in the middle part of the decade on DDG-1000, the investments we have to make in LRASM, in JASMMM, other investments we have to make in our unmanned systems, if we were to buy back those LCS, our estimate is it would be \$4.2 billion inside the FYDP, and we believe that those resources are better spent on high-end capabilities that we are going to need to fight and win. Some of those investments deliver inside the decade, in the decade of concern.

Senator SCOTT. Do you feel comfortable that you have the resources to be able to do when you watch what China is doing, expanding their navy, when you look at the expectation we are going to be able to defend Taiwan? When you look at all these problems, do you really believe you are going to have the capability to be able to do the job you are going to be asked to do?

Admiral CONN. I would talk to CNO's Nav Plan, which the revision will come out here shortly, which in it there is a Nav Plan Implementation Framework that describes, in concert with Distributed Maritime Operations, which is how we must fight in the Pacific, what are the investments that we need to make in terms of how we shoot; how we intend to shoot from multidomains and from long-range fires; how we maneuver, not just in terms of physical space in maneuvering in the domains but how we maneuver in the electromagnetic spectrum to deny, deceive, delay our opponent? How are we going to resupply? How are we going to defend terminal defense for our ships, and looking for other means other than missile-on-missile, which is a cost-imposing strategy on ourselves? We have to come up with different solutions.

Then the investments we have to make in all the enablers, in our networks, in Project Overmatch, and moving information around the task force differently. How unmanned systems are going to be force multipliers across the domains, whether in the air, on the surface, or undersea. Then live virtual constructive investments, to making sure our people, our sailors that are going to be operating forward can actually use those weapon systems to their designed limits and beyond.

Then artificial intelligence. What are the specific use cases we need to go after to deliver those capabilities, that software, those algorithms, and the bottom line is to drive simplicity down to the tactical edge?

That is in the CNO's Nav Plan. Those are some of the priority investments they were going after and reason, because we are a multidomain force that works from the seabed to space, and we have to be able to produce effects across all of them.

Senator SCOTT. But do you believe you are going to have the resources to be able to do the missions that you anticipate we are going to have?

Admiral CONN. As always, we will have more requirements than resources, and within this budget we will make do with the resources we have to be able to fight and win.

Senator SCOTT. This morning we heard, at another Armed Services Committee, that—there was testimony that we could save 30 to 50 percent of the money that DOD spends on procurement. Do you believe that, and what are you all doing to try to get some of that savings so we can allocate the money to make our military big and lethal?

Admiral CONN. In the essence of time I think we have to drive our costs across everything we do.

Senator SCOTT. Thank you.

Senator HIRONO. Senator King.

Senator KING. Thank you, Madam Chair.

First, Mr. Stefany, I want to compliment you. These hearings are not always about compliments, but both houses asked for reports about the transition to DDX and you issued two, one to the House and one to the Senate. They were excellent—succinct, clear, written in plain English, and I think very important.

Madam Chair, I would like to have both of those reports, 117–39 and 117–118, inserted in the record of this hearing.

Senator HIRONO. Without objection.

[The information follows:]

[The information has been retained in the Committee files.]

Senator KING. The important part of the reports are that you talked about lessons learned, from the *Columbia*, from the *Nimitz*, to the *Ford*, and how that will apply to the DDG. I would like to ask about a couple of those.

One of the important things is that this is handled in such a way that we do not have a trough in the industrial base between DDG and DDG(X). Can you speak to me about that?

Mr. STEFANY. Yes, sir. That is maybe a fault that we have had in the past, right? You stop one program and you start the next one, not recognizing it is going to take a little time for that second program to get going and you have a workforce that atrophies, if you will, in between.

So in the DDG–51 to DDG(X) case, we recognized that in the first couple of years where we buy a DDG(X) we also need to buy a DDG–51 for the other shipyard, so that they can keep their workforce going and avoid that trough, keep the skills up so that ultimately we can get to two DDG(X)s per year, one at each shipyard.

Senator KING. Well, my comment is hold that thought, because I think that is critically important. I have seen the graphs at Bath Iron Works, for example, that show DDG, and then you have got a loss of a couple thousand workers, and you cannot just turn that off and on, particularly in this economy where workers are in short supply.

I think the other piece that I wanted to touch upon is the industrial base itself and their involvement in the development of the new ship, so that we do not have the Navy handing something to

the yards and saying, “Here it is. Build it.” Comment on that too, because I know Huntington Ingalls and Bath are in discussions. I think it is a very productive way to avoid some of the problems that have been incurred in the other programs.

Mr. STEFANY. Yeah, it is a lesson, sir, that we learned in the *Virginia* submarine program—bring the two shipyards and the major suppliers, the engine-makers and others in, up front. Talk to the Navy as we are putting together the spec and come up with the design criteria to take the best of all, and to learn from each other and come up with a single computer model and a single design that then both shipyards could build to. That is the most efficient way we have seen to actually get—we call it the collaborative design process—to get to a final state that has the least errors, the least defects in it.

Senator KING. As I have sat through hearings on the *Ford*, I could not help but notice the provisions in the report that talked about, let’s not do all new technology at one time, and let’s test it on the ground first. I think clearly that is an important lesson learned.

Mr. STEFANY. Yes, sir, and we actually, in the 2023 budget, funded the land-based test facility for DDG(X), to do that land-based testing.

Senator KING. Finally. At the hearing that Senator Scott mentioned this morning, Former Secretary Lord was one of the witnesses, and she confirmed the importance of multiyear, multiyear procurement. She used a term, frankly, I had not heard before, but maybe I have not been around this stuff enough. She said the problem is “lumpy” procurement, and you want procurement that can provide some continuity to the industrial base so that they can make the investments necessary.

Do you share the importance of multiyear? I think it is also better for the taxpayers, frankly.

Mr. STEFANY. I want to completely agree that planning for investment and planning for the workforce and those other things that the shipyards and the suppliers need to do completely benefits from a long-term, 4- or 5-year commitment on multiyear type process. I totally agree with Ms. Lord on that case.

To the previous question about cost, that is one of our main ways to reduce the cost of our programs is to make those long-term, multiyear contracts and put them in place.

Senator KING. Well, there is no question. We have built three *Zumwalts*, and the learning curve just on those three—and there should have been a dozen—but those three was quite remarkable, from ship to ship to ship. You are not going to ameliorate those learning curve costs, particularly on DDX, without a long-term, multiyear procurement.

Mr. STEFANY. Yes, sir. I agree with you completely.

Senator KING. Thank you. Let the record show that the witness said he agreed with me completely.

Mr. STEFANY. You complimented me to start with, sir.

Senator KING. Thank you.

Senator HIRONO. Senator King, I note that every time one of our testifiers agrees with you, you make a point of noting that.

[Laughter.]

Senator HIRONO. So noted.

We will start on round two of our questions. Just to make sure, regarding the funding for the shipyard modernization, does your fiscal year 2023 budget fully fund this year's plan for the shipyard modernization plan?

Mr. STEFANY. Yes, ma'am. The budget this year increased almost \$1.8 billion and fully funds all of our plans for 2023 through 2027. Yes, ma'am.

Senator HIRONO. When we talk about a multiyear contract, is inflation an issue with regard to how you are going to come up with the negotiations for these multiyear contracts? How do you account for inflation and some of the other factors that may need revisions to the contract?

Mr. STEFANY. Yes, ma'am. So in our shipbuilding contracts we have an economic price adjustment clause, a special clause we put in that accounts for inflation. It actually makes an assumption, and then if it gets outside of that, higher or lower, we can adjust the contract as we go. So in our shipbuilding contracts, we do not have that in other places, but in our shipbuilding contracts we do have what we call an EPA clause, to protect the company from risks going up or down.

Senator HIRONO. That is good because Asia had come up in the SASC hearing this morning.

The Navy has presented a 5-year shipbuilding plan that includes two destroyers per year for a total of 10 ships, and I understand that the Navy intends to request another round of multiyear procurement authority for destroyers but for nine ships, with an option to add another ship to the multiyear contract at some point in those 5 years and an option to buy a third each year for a maximum possible of 15. That is what you are contemplating.

Mr. STEFANY. Ma'am, yes. We are modeling the planned multiyear after the one we have right now, and the one we have right now has 10 ships in the multiyear with a competitive option for a third ship in each year. That is the basis for what we plan to do in the future one, the one exception, as you noted, being that we would have 9 firm ships instead of 10 firm ships in that baseline contract. But otherwise the terms that we are anticipating for the new contract will be the same for the one that is in place right now. That has not been approved yet. That is just our initial, you know, plan as we are going forward.

Senator HIRONO. Just so I understand then, I know that there is interest in this Committee for 15 destroyers instead of the 10. So you are creating a situation where we can get to 15 if you exercise that option, provided that we fund that option, which means that you will request funding for that option to be exercised. Is that correct?

Mr. STEFANY. It is.

Senator HIRONO. Am I understanding this?

Mr. STEFANY. It is our Navy plan at this point to go forward so that if we did request a third ship we have the ability to buy it. But again, we are in the early stages, ma'am. I do not want to make that commitment from the Department yet.

Senator HIRONO. Okay. When you say “commitment from the Department,” does that mean that you do have to request the money for the addition 5?

Mr. STEFANY. We would have to request the money for the additional 5, yes.

Senator HIRONO. Would you do that?

Mr. STEFANY. It is a budget process.

Senator HIRONO. You said if there is an interest in——

Mr. STEFANY. You have seen the 2023 budget, ma’am, and 2024 we will have to play out through the normal requirements process. So I cannot make a commitment on 2024 and out, and you have seen our budget proposal for 2023, which is only 2 ships in 2023.

Senator HIRONO. Okay. But going forward, though——

Mr. STEFANY. We are kind of in a little——

Senator HIRONO. You see what I am getting at, right? I think some of us would like to get you to 3 ships instead of 2 ships.

Mr. STEFANY. So our plan is to have a contract that will allow that, but we would have to discuss in the budget process actually how it gets paid for, if we were to do that.

Senator HIRONO. Okay. I personally would encourage that, because I assume that we need more of these ships, right? We need more destroyers.

Mr. STEFANY. I will have to let the Admiral discuss, actually, the requirements for destroyers.

Senator HIRONO. Admiral?

Admiral CONN. The requirements for Large Surface Combatant is 96, at least from the latest INFSA and the—I am sorry, the Integrated Naval Force Structure Assessment that was done in 2019. Then the Future Naval Force Study reduced that number a little bit, and in Alternative 3 we get up to 80, and again that was based on our understanding of industrial capacity. But it is Large Surface Combatants, Small Surface Combatants, to number of frigates, I do not look at any particular capability. I have to look across a task force, if you will, and how we are going to employ that force, with our submarines, and the dominance they have in the undersea domain, with the Large Surface Combatants, the Small Surface Combatants, and the carrier and the carrier wing.

Senator HIRONO. So do I understand you correctly, Admiral, that Option 3 of the three options you laid out, that Option 3 gets you where you would like to be?

Admiral CONN. It gets us closer to where we need to be.

Senator HIRONO. But how realistic is that option compared to the other two options, in terms of the funding that would be made available, and other considerations?

Admiral CONN. The fiscal certainty of that option I really cannot speak to right now. I can say in terms of where we are today the answer would be no. But again, this is starting growth per the shipbuilding plan in 2028 and out in order to get to the, whether it be three DDGs per year, three frigates per year, three submarines per year, getting into an SSN(X) by the 2040s. I mean, all that, I will say, there is some uncertainty in that path forward.

Senator HIRONO. Thank you. Senator Cramer, would you like to do a second round.

Senator CRAMER. Yes, I would. Thank you.

So, Mr. Stefany, as promised I am going to come back to the issue I mentioned in my opening statement about the double-counting of the LHA-9, and just for everyone's clarity I am just going to go through the history real clearly, as best as I can.

So the LHA-9 was previously authorized in fiscal year 2020, when we approved the procurement of the ship with incremental funding authority in the NDAA and added \$650 million in the final appropriations bill.

Subsequent appropriations bills have provided additional funding. After the 2021 budget request showed LHA-9 as a future procurement in 2023, the 2021 NDAA removed the ship to avoid double-counting it, and clarified in Section 126 that any ship added by Congress may not be specified as a new procurement quantity in future budget submissions.

So the simple question is why does this budget request again show the LHA-9 as a new procurement in fiscal year 2023, and how is this consistent with Section 126?

Mr. STEFANY. Yes, sir. So I would say the 2023 budget, the goal of the folks who put together the budget was to show the year that we are going to award the contract for the ship, to construct the ship, which we are planning to do at the end of this year, at the beginning of fiscal year 2023. So those who put together the budget exhibits had the best intentions of showing when we are going to award the contract for the ship, and I believe, with the change in administration, not all were aware of the NDAA language that actually told us to do something different.

So I do not think there was anything, you know, purposeful here. I think it was really just different parts of the Department not communicating well on providing you the budget exhibits that showed the ship as a 2023 ship in what was provided.

What I do know is we would like to discuss with you further, you and the staff, when we do an incremental-funded ship, what the right metric is for that one in the accounting process. Is it when we order the contract? Is it when it is funded initially? What is the right method? CVN-81 is a little different story. CVN-80, a little different story. We would like to have a consistent approach. I know the Department, at the comptroller level, and we in the Navy want to get to a common understanding with you, so we would love to have that conversation, sir.

Senator CRAMER. Well, I think going forward that would be very helpful. If we did have a consistent pattern, protocols, that would help you. That would help the Congress. That would help the taxpayer better understand and have the type of transparency.

In this case, I mean, it was so clear, I think so clearly laid out that to see this has been problematic.

Mr. STEFANY. Exactly, and what matters to me is we are going to start construction later this year and deliver that ship in 2028. That is what really matters to me.

Senator CRAMER. Well, I appreciate that and we appreciate the clarification. We will see whether something else can be done to improve going forward, for sure.

General Heckl, I want to follow up on a line of questioning that Mr. Stefany had answered earlier, relating to the Commandant's

requirement for traditional amphibious ships. What was his requirement?

General HECKL. Sir, the Commandant's absolute requirement for traditional L-class amphibious warships is 31, more specifically, 10 LHA/LHD class and 21 LPD.

Senator CRAMER. So how important is continuing the LPD amphibious ship production line to meeting the Commandant's requirement?

General HECKL. It is critical, sir, to meet that requirement.

Senator CRAMER. You have already answered how many more LPDs are needed.

I see that the Commandant's top unfunded priority is \$250 million in advanced procurement funding for LPD-33. Can you explain how critical that request may be?

General HECKL. So sir, again, within force design is our ongoing requirement as a Marine Corps by law to be the crisis response force for the Nation. Without those LPDs, sir, and the other amphibious, traditional L-class amphibious warships we cannot be there, and we are already struggling now. Case in point was the 22nd Marine Expeditionary Unit off the East Coast. General Wolters, the Supreme Allied Commander, Former Supreme Allied Commander of Europe, requested that that MEU, that Marine Expeditionary Unit and that amphibious unit sortie early to be on-station as the Ukrainian situation evolved or devolved, and we were not able to sortie the ship. When a reality, sir, based on the way we typically conducted heel-to-toe deployments, the MEU should have been on-station and available for combatant commander tasking, and it was not.

Senator CRAMER. Thank you, General, and I yield. Thank you.

Senator HIRONO. Senator King, would you like round two?

Senator KING. I am going to submit a question for the record of a classified response to the admiral and the general in terms of defensive capabilities to emerging Chinese capabilities. I do not think I need to say more than that. I want to understand better what our strategy is for defending our forward-deployed naval and the marine littoral regiment. So I will be submitting that question. I look forward to your response.

Thank you, Madam Chair.

Senator HIRONO. Senator Hawley.

Senator HAWLEY. Thank you, Madam Chair. Just two more quick things. Mr. Stefany, I want to ask about Quickstrike mines if I could and then vertical launch tubes. On the Quickstrike mines, I see that they are at the bottom of the unfunded priorities list. Can you just walk me through that? This seems like an important defensive capability. Offensive mining is certainly important for the pacing scenario in the pacing theater, namely the fait accompli scenario. So can you help me understand the thinking here, or Admiral, if you prefer.

Mr. STEFANY. Yeah, I think since this is the CNO's list—

Senator HAWLEY. Yeah. Go ahead. Go ahead, Admiral. That is fine.

Admiral CONN. The Quickstrike extended-range mine is what is on the unfunded list, which gives you—I cannot talk ranges here but it is a little bit different system that is still under R&D.

Senator HAWLEY. That is why it is at the bottom of the unfunded list—

Admiral CONN. Correct.

Senator HAWLEY.—because it is still in R&D?

Admiral CONN. Correct.

Senator HAWLEY. Okay. Fair enough. Let me ask you about vertical launch tubes. The Navy plans to cut a large number of these. Admiral Davidson has testified before the full committee and others that they expect the coming years to be particularly a dangerous zone, let us say, for Chinese aggression. How does the Navy plan to offset the loss here of strike capacity between now and the late 2020s, so end of this decade?

Admiral CONN. In terms of the VLS tubes we have to be careful. A comparative view is part of Appendix 7, which is a classified annex to the shipbuilding plan. So you get the full view of not just we will have but what intel tells us China will have. So you have to look at that. We must be careful that we do not go domain-versus-domain and make that comparison. We have significant advantages in the undersea domain that we will continue to make modernization to maintain that dominance, and how, through operational art, we use our submarines and the capabilities they have to open up maneuver space for the air wing coming off the carriers and the long-range fires from our surface ships and distributed maritime operations. Yes, are taking risk in VLS between now and about 2030.

I will say we have, with the DVGs that are delivering inside the FYDP, it is about 1,344 VLS tubes on new ships that are coming into the fold.

So I fully acknowledge we are taking risk in VLS, but the investments we are making by getting rid of those VLS gives us a more capable, a more lethal Navy inside the FYDP.

Senator HAWLEY. I guess what I am driving at, Admiral, is between now and 2030, when we are in this potential danger zone, are you confident—you are taking a chance and you have to make tough decisions—are you going to be able to offset any loss of striking ability? That is what I am driving at here.

Admiral CONN. As part of the broader Joint Force, if you are asking me to characterize that risk, I do not think I would say it in a public hearing. But it is a fair question and I can take it for the record if you would like.

Senator HAWLEY. Yeah, I appreciate that. Thank you, Madam Chair. That is all I have got.

Senator HIRONO. Thank you. I would like to thank all of you for coming before this Committee, and this hearing will come to a close. The record will remain open for 5 days. Thank you very much, everyone.

[Whereupon, at 3:49 p.m., the Subcommittee adjourned.]

[Questions for the record with answers supplied follow:]

QUESTIONS SUBMITTED BY SENATOR SENATOR MAZIE HIRONO

VIRGINIA-CLASS SUBMARINES

1. Senator HIRONO. Mr. Stefany, the contractors have started work on some of the boats in the latest multiyear contract for attack submarines, called the Block V multiyear contract. That is a contract to build two Virginia boats per year. However, before much work had begun on the Block V program, serious problems were emerging with achieving on-time deliveries of the boats from the previous contract, the Block IV program. The shipyards had been running 12 to 18 months behind contract delivery dates on the Block IV boats. It appears that this has led to increasing the cost estimates for Block IV boats yet to be delivered, cost and schedule increases for all the Block V boats, and cost increases for the boats in the *Columbia*-class program. It is apparent that, among other problems, the yards are struggling to find sufficient skilled workers and the supplier base is struggling to keep up. I also understand that the Navy now may be predicting additional schedule delays in the Block IV and Block V programs. What is the current status of the *Virginia*-class program?

Mr. STEFANY. The *Virginia*-class Submarine (VCS) program has delivered 21 submarines to date with 17 under contract through fiscal year 2023. The Navy is executing two multiyear procurement (MYP) contracts; fiscal year 2014 to 2018 (Block IV) and fiscal year 2019 to 2023 (Block V).

The submarine industrial base performance remains challenged to meet two per year construction. At the start of this year, the Navy conducted a detailed schedule analysis based on demonstrated shipbuilder performance and current impacts related to suppliers and workforce availability/experience. The review resulted in a shift in estimated delivery schedules for the remaining submarines in Block IV (7 ships) and Block V (10 ships) in President's Budget 2023. Block IV deliveries are anticipated to be approximately one year delayed from previous schedules provided with President's Budget 2022. Shipbuilder performance, supplier impacts and inflation are also resulting in the estimated cost increases seen in the fiscal year 2023 Budget submission. Block V is experiencing early schedule challenges with deliveries anticipated to be up to two and a half years later than originally planned.

The VCS program is not causing cost increases on *Columbia*.

The main drivers of the shifts in construction schedules are changing workforce demographics and shipbuilders failing to adapt their management practices to those realities, increasing first-time quality issues, and supply chain challenges, which were all exacerbated due to the rapid growth in submarine shipbuilding workload. The Navy is teaming with the shipbuilders to develop and execute a comprehensive plan focused on improving program performance. Efforts in strategic outsourcing, workforce development and proficiency, supplier base expansion and development, and new technologies are all necessary.

Despite current cost and schedule challenges, VCS continues the trend of high operational readiness performance at delivery—as demonstrated by satisfactory Board of Inspection and Survey (INSURV) scores on the recent deliveries of USS *Oregon* (SSN 793) and PCU *Montana* (SSN 794) in February and March of 2022 respectively.

2. Senator HIRONO. Mr. Stefany, can you give us an update on the schedules for the Block IV and Block V procurement programs?

Mr. STEFANY. The Navy's fiscal year 2023 budget request for the *Virginia*-class submarine program reflects revised projected delivery dates for all VCS under contract. The *Virginia*-class program has delivered 21 submarines to date with 17 under contract through fiscal year 2023. The Navy is executing two multiyear procurement (MYP) contracts; fiscal year 2014 to 2018 (Block IV) and fiscal year 2019–2023 (Block V).

While these updated delivery dates reflect a delay for remaining Block IV (7) and Block V (10) submarines, they provide a realistic baseline by which to address and measure future program performance. The Navy is teaming with the shipbuilders, General-Dynamics Electric Boat (GDEB) and Huntington Ingalls—Newport News Shipbuilding (HII–NNS), to execute a comprehensive plan focused on stabilizing and balancing the production system, building resiliency and efficiency in the Submarine Industrial Base (SIB), and meeting the two per year delivery requirement in the future.

3. Senator HIRONO. Mr. Stefany, what are the shipyards proposing to do to solve the problems?

Mr. STEFANY. The Navy is teaming with shipbuilders to stabilize production and execute a comprehensive plan to effect program performance. Efforts in strategic outsourcing, workforce development and proficiency, supplier base expansion and development, and new technologies are all necessary. The effort includes significant government and industry investment in building resiliency in the Submarine Industrial Base (SIB) to address supply chain capacity, capability and efficiency; partnering with state and local governments, and industry to develop the future shipbuilding workforce; outsourcing non-core shipyard work to the vendor base; and working with the shipbuilders to improve production efficiency within the shipyards, including first-time quality. Additionally, the Navy and the shipbuilders are investing in building the shipyard infrastructure required to meet current and future workload demands.

4. Senator HIRONO. Mr. Stefany, what is the Navy going to do to get the cost and schedule back under control for these programs?

Mr. STEFANY. The Navy and shipbuilders are committed to delivering the best submarines in the world to our sailors. This requires a continuous assessment of performance to build upon efforts that deliver results while redoubling focus on areas that underperformed. The Navy expects that the comprehensive improvement efforts will mitigate current unfavorable performance and stabilize schedules as the submarine enterprise ramps to one per year *Columbia*-class (CLB) and two per year VCS construction.

The Navy is teaming with the shipbuilders to execute a comprehensive plan to effect performance improvements. Efforts in strategic outsourcing, workforce development and proficiency, supplier base expansion and development, and new technologies are all necessary. These include significant government and industry investment in building resiliency in the Submarine Industrial Base (SIB) to address supply chain capacity, capability and efficiency; partnering with state and local governments, and industry to develop the future shipbuilding workforce; outsourcing non-core shipyard work to the vendor base; and working with the shipbuilders to improve production efficiency within the shipyards. Additionally, Navy and the shipbuilders are investing in building the shipyard infrastructure required to meet current and future workload demands. The Navy is taking proactive steps to improve the shipbuilding industrial base, which is essential for VCS schedule recovery and CLB on time delivery.

DEPARTMENT OF THE NAVY AVIATION SHORTFALLS

5. Senator HIRONO. Vice Admiral Conn, the Navy's strike fighter shortfall estimate has fluctuated widely over the past several years. In simple terms, there are two pieces to solving the strike fighter inventory gap. Buying new aircraft and extending the services lives of the ones we already have. The budget does not include buying new F/A-18E/F aircraft, only F-35B and F-35C aircraft. What is your latest assessment of the strike fighter shortfall?

Vice Admiral CONN. The Department of the Navy's (DON) assessment is that our current Strike Fighter Shortfall (SFSF) is best mitigated with a combination of extended service life of FA-18E/F and procurement of F-35C. The DoN has adequate 4th generation F/A-18 Super Hornet aircraft inventory, but requires more 5th generation F-35C aircraft to increase the lethality of the Carrier Air Wing (CVW) to meet current and emerging threats. The existing F/A-18 inventory is going through the Service Life Modification (SLM) program that extends service life while inserting the same Block III capabilities of new production aircraft. SLM Block III aircraft can be delivered for approximately one third the cost of a new a production F/A-18 Super Hornet.

Any new procurement or investments need to be directed toward F-35 and follow on capabilities to ensure the CVW maintain an ability to compete with emerging threats. Currently, the Navy has 559 F/A-18E/F aircraft with 68 new production aircraft still being delivered between now and fiscal year 2025. In conjunction with the SLM program, these numbers are enough to meet the operational demands placed upon Naval Aviation for deployments and also enough to meet the required 4th Generation/5th Generation mix inside a CVW. As more F-35Cs enter the Fleet, the overall requirement for F/A-18E/F aircraft will decrease while the combat capability of the CVW increases.

6. Senator HIRONO. Vice Admiral Conn, has as the situation improved since last year?

Vice Admiral CONN. The Strike Fighter Shortfall (SFSF) situation has not improved since last year due to competing DON funding priorities. The DON is still

able to manage current and projected Strike Fighter inventory to meet all operational requirements.

7. Senator HIRONO. Vice Admiral Conn, if not, why aren't you buying more aircraft to fill the gap?

Vice Admiral CONN. The Navy is procuring new F-35C in order to increase the capability and lethality of the Carrier Air Wing (CVW) to meet current and emerging threats. The Navy physically has enough F/A-18 Super Hornets to meet the 4th generation aircraft demands. These existing F/A-18 Super Hornets will be upgraded through our Service Life Modification (SLM) program that extends service life while inserting the same Block III capabilities of new production aircraft. SLM Block III aircraft can be delivered for approximately one third the cost of a new a production F/A-18 Super Hornet.

Any new procurement needs to be F-35C aircraft to ensure the CVW advanced capabilities outpace adversaries for a future conflict. The Navy has requested six additional F-35C aircraft in the fiscal year 2023 Unfunded Priorities List (UPL) and is committed to achieving the most lethal and capable CVW as soon as possible.

8. Senator HIRONO. Admiral Conn and General Heckl, the Air Force has been experiencing significant shortfalls in both pilots and in aircraft maintainers. Have the Navy and Marine Corps been suffering shortages in pilots and maintainers as well?

Vice Admiral CONN. Naval Aviation continues to meet all operational requirements; however, pilot inventory challenges exist in certain type/model/series, specifically within the strike fighter (VFA) community primarily with operational Department Head (DH) and Instructor Pilot (IP) manning levels.

All enlisted aviation maintenance ratings are manned between 98 percent to 102 percent of requirement with the exception of the Aviation Ordnanceman rating, which is manned at 96 percent.

Lieutenant General HECKL. The Marine Corps has had issues with F-35 pilot and maintainer shortfalls. However, maintainer inventory levels for F-35 are now projected to be healthy for the duration of the transition. Pilot inventory levels continue to grow and improve, and it is important to clarify that every F-35 operational squadron is sufficiently staffed with F-35 pilots. The shortfall exists with staff and other non-flying billets, which have a lower-than-desired number of jet pilots, but that shortfall continues to improve each year.

9. Senator HIRONO. Vice Admiral Conn, Lieutenant General Heckl, if so, how large are the shortages and what are you doing to correct them?

Vice Admiral CONN. The strike fighter (VFA) community currently has Department Head (DH) gaps in 22 of 34 squadrons with only 104 of 126 (82.5 percent) of VFA DH billets filled. Naval Aviation is mitigating this shortfall by slating only three DHs per squadron. Additionally, although overall VFA junior officer manning has improved to 89 percent of billets authorized (BA), strike fighter instructor pilot (IP) manning remains below requirements at 86 percent of BA with mitigations that include tour length extensions and the utilization of post-DH pilots, activated reservists, and Professional Flight Instructors.

The Navy has been working to address the pilot manning shortfall through both monetary and non-monetary incentives. The fiscal year 2022 Aviation Department Head Retention Bonus program approved the VFA pilot community to remain at the highest tier level (\$35,000 per year). In addition to the DH bonus, Navy has pursued and encouraged non-monetary incentives to address manning shortfalls including increased professional growth opportunities such as in-residence graduate education; Career Intermission Program and concierge detailing to assist with family planning; addressing quality of life and service challenges at remote locations such as Lemoore, CA, Fallon, NV, and China Lake, CA; and offering the Professional Flight Instructor program to allow some aviators to serve continuously as flight instructors.

The Aviation Ordnance (AO) rating is short by 331 of 8,922 sailors, mainly in the Journeyman payband (E5-E6). Our current efforts to remedy the shortage consists of retention levers:

- Professional Apprenticeship Career Track (PACT) is a program designed for enlisted sailors to enter into an apprenticeship program that provides apprentice-level formal and on the job training that leads to a permanent rate/career field within 2 years. AO is historically a popular rating chosen by PACT sailors.
- Selective Re-enlistment Bonus is being offered for the targeted Journeyman pay grades.
- Sea Duty Incentive Pay (SDIP) is being offered to incentivize sailors to voluntarily remain on or transfer to sea duty billets in order to prevent critical man-

ning gaps on sea duty. SDIP levels for the AO rating in the journeyman paygrades of E-5 and E-6 are set at \$800 per month and \$700 per month respectively.

- Convert-in opportunity to the AO rating is being offered to sailors who either by choice or by necessity leave their current rating for another.
- High Year Tenure waivers are being used where possible.
- Assignment Incentive Pay (AIP) aims to increase voluntary assignment to billets determined to be historically hard to fill. Eligible sailors in paygrades E5-E9 can request a maximum bid of \$250 per month in the detailing marketplace for commands located at Lemoore, CA, China Lake, CA and Fallon, NV.

Lieutenant General HECKL. Both F-35 pilot and maintainer numbers are projected to be healthy for the duration of the F-35 transition. Maintainer inventory levels were improved by capitalizing on the experience base in other platforms and converting them to F-35. The Marine Corps continues to look at ways to further capture the experience base from sun-setting platforms, like the AV-8B and FA-18, and transition that to F-35. The Marine Corps has increased pilot inventory levels by prioritizing pilot production through resourcing our flight schools and fleet replacement squadrons with the necessary manpower and equipment. However, the Marine Corps recognizes that pilot production is only half the equation, and retention is equally important. The Marine Corps' Manpower branch is working aggressively on ways to retain our experienced aviators so that in the future we can possess the most proficient pilots for our fifth-generation fighter aircraft. The Marine Corps continues to be on a positive sustainment path, and F-35 squadron staffing is not at risk.

USMC GROUND MODERNIZATION

10. Senator HIRONO. Lieutenant General Heckl, while ground based anti-ship missile launching systems do add a layered threat against a maritime adversary, those that will be operated within the weapons engagement zone, as the Marine Corps is developing as a concept, will be inherently vulnerable. How is the Marine Corps balancing offensive and defensive capabilities development in its Littoral Regiments in a manner that keeps the new organization truly expeditionary and effective against a peer competitor?

Lieutenant General HECKL. The Marine Corps concept of operations is as a stand-in force that has the ability to gain and maintain custody of adversary targets—and hold some of those targets at risk continuously in support of targeting for the naval and joint force. We recognize that our value, largely, is in daily competition, building a strong coalition of partners, and being ready at a moment's notice to hold the adversary to task. In the realm of the defense, we recently finalized a functional concept which addresses integrated air and missile defense and force protection. These concepts reinforce the employment of systems which enable forces to leverage deception, mobility, and early detection in order to provide an additional layer of defense within the weapons engagement zone. While this functional concept—and its suggested force multiplying capabilities—require further development, planning, resourcing, training and a unified effort across the Naval Expeditionary Force, this concept will greatly strengthen our defensive and force protection capabilities. Meanwhile, we are also developing logistic capabilities to move small forces quickly and constantly in order to overcome the adversary's ability to find, fix, target and track us. Through enhanced signature management and decoy/deception capabilities, combined with high-mobility, we believe adversary weapons effects can be overcome.

11. Senator HIRONO. Lieutenant General Heckl, as the Marine Corps continues to transform into a more flexible amphibious force, where do you see the most potential for joint systems to facilitate your efforts?

Lieutenant General HECKL. Joint systems are critical to the completion of the digital kill web and must have a robust command and control architecture that will enable joint decisionmaking and interoperability. Joint exercises conducted with Marine units on the ground allow the Marine Corps to improve both its concept for stand-in forces and expeditionary advanced based operations. Additionally, the capabilities provided by the Common Aviation Command and Control System, especially its ability to communicate with joint systems, such as Link-16, have been used to integrate all elements of the Marine Air Ground Task Force into the joint fight.

CHANGE FOR LOGISTICS FLEET

12. Senator HIRONO. Mr. Stefany, the Navy has indicated that operations in a contested environment meant that the Navy's logistics fleet will need to include small-

er, faster, multimission transports. Two year ago, Secretary Guerts indicated in his prepared testimony that, “the Navy will commence with Concept Studies to evaluate the next generation medium lift intra-theater amphibious platforms and logistics ships.” What progress have you made progress on implementing these concepts or sorting through alternatives since last year, and has the situation improved?

Mr. STEFANY. Industry Studies for the Next Generation Logistics Ship (NGLS) program were awarded on 17 December 2021 for initial Concept Studies to Austal, Bollinger, and TAI Engineers. The results from these studies will inform a commercial alternative to be analyzed during the Analysis of Alternatives (AOA) phase for the NGLS program. The AOA is anticipated to complete in fiscal year 2023. Additionally, Next Generation Logistics Tactics, Techniques & Procedures Ship (NTS) Charter Demonstrations and Operational Logistics (OPLOG) studies are ongoing. These demonstrations and studies are intended to provide proof of concept for NGLS Concept of Operations (CONOPS).

Regarding amphibious intra-theater platforms, the AOA is complete and concluded that a purpose built ship is best suited for the mission from a cost and effectiveness perspective. The Navy awarded the Concept Study/Preliminary Design effort to five industry partners June 2021 (Austal, Bollinger, Fincantieri, VT Halter, and TAI Engineers). The Concept Study phase completed in October 2021. The Navy exercised the Preliminary Design options with all five industry partners in January 2022. Early industry engagement for refinement of concepts and requirements will aid the Navy in reducing risk to cost-effectively meet mission needs.

13. Senator HIRONO. Mr. Stefany, what is the schedule for getting to decisions on the appropriate path forward?

Mr. STEFANY. The NGLS AOA is ongoing and expected to complete in fiscal year 2023 with a preferred material solution. The Navy is on track to support the acquisition timeline to procure the lead ship, which is notionally planned in fiscal year 2026.

The Navy recently approved the medium lift intra-theater amphibious platform AOA and is incorporating the AOA results and feedback from the five industry concept studies and preliminary design efforts into the Capabilities Development Document (CDD). Next steps include preliminary design, and formal definition of requirements in the CDD. The Navy is on track to have an approved CDD to support the acquisition timeline to procure the lead ship, which is notionally planned in fiscal year 2025.

14. Senator HIRONO. Lieutenant General Heckl, what are the implications for amphibious shipping of operations in a contested environment?

Lieutenant General HECKL. Naval forces must campaign, by persisting forward to respond quickly to a crisis, and enable integrated deterrence. Fleet Marine Forces deployed on and employed from multi-mission capable amphibious warfare ships as part of a Naval force provide unique attributes that generate options and decision space for national leadership and combat credible options for Fleet and Joint force commanders when strategic agility, combat credible deterrence and prompt crisis and contingency response is required, regardless of access to overseas bases.

Amphibious Ready Groups/Marine Expeditionary Units (ARG/MEUs) exemplify globally deployable, integrated all-domain naval power. As one of several standard combat credible fleet constructs, each ARG/MEU is organized, trained, equipped, and certified to operate forward to cooperate with our allies and partners in key regions, yet remain capable of strategic, operational, and tactical maneuver in support of regional crisis and global contingency response. It represents a combat credible and operationally suitable force effective for competition, countering gray zone activities and setting the conditions for the joint force. The Navy-Marine Corps team persistently operates forward to compete below the level of armed conflict and respond to crises while remaining ready, if necessary, to swiftly transition to conflict and achieve Joint Force and Fleet objectives.

To operate in the future environment, future MEUs must have the right mix of capabilities, which requires an updated conceptual foundation for employment that is informed by analysis and experimentation. To address this concept of employment we are developing a “Concept for 21st Century Amphibious Operations.”

As adversary capabilities and tactics improve, updating our mission, enemy, troops/fires, terrain, space, time, and logistics (METTSTL) analysis will enable a partnered maritime defense in depth as part of an integrated Naval kill web that can deny the adversary freedom of action.

Moreover, amphibious warfare ship survivability and lethality should not be viewed through a lens of an organic single ship capability, but rather through its

holistic aggregate (system of systems) capability and capacity enabled by embarked naval forces and in the context of cross-functional Fleet operations.

The Marine Corps is designing, building, and investing in a relevant and capable Fleet Marine Force that will operate in contested environments and that requires no less than 31 ready, lethal and survivable amphibious warfare ships in order to meet our national imperative as a Naval expeditionary force.

15. Senator HIRONO. Lieutenant General Heckl, how will this contested environment affect the Marine Corps' ability to conduct amphibious assault operations?

Lieutenant General HECKL. The Marine Corps is designing, building and investing in a relevant and capable Fleet Marine Force that will be capable of operating in contested environments and that requires no less than 31 ready, lethal, and survivable amphibious warfare ships to meet our national imperative as a naval force.

The Marine Corps is entering the fourth year of a 10-year modernization effort to create a single, integrated total force that supports joint maritime campaigning and other joint operations, yet retains the ability to perform traditional Marine Corps roles and functions, such as global crisis response. Understanding that the pacing threat for Force Design 2030 and the National Defense Strategy is the armed forces of the People's Republic of China (PRC), the Marine Corps is modernizing to build a force capable of executing concepts against this pacing threat, not one exclusively tailored to them.

In the most recent Force Design 2030 Annual Update issued in May 2022, the Commandant of the Marine Corps tasked the Marine Corps with developing a "Concept for 21st Century Amphibious Operations." This concept will be linked to how the Marine Corps' thinking has evolved after 3 years and is continuing to evolve in its ongoing Campaign of Learning through wargaming, analysis, experimentation, and large-scale Fleet Marine Force exercises.

As amphibious warships are being decommissioned faster than they are procured and delivered, the inventory of amphibious warfare ships under the current plan will decrease to 25 ships over the next few years. With this lower inventory, we will likely still support the Indo-Pacific region, while accepting risk elsewhere in the world. For instance, Marines from amphibious warfare ships in the past decade evacuated the US embassy in Yemen; reinforced the embassy in Iraq; put artillery units ashore to bombard ISIS in Syria; and most recently in August, were the first on the ground to support the evacuation efforts out of Afghanistan. The Marine Corps' ability to respond to crises like these in AFRICOM, CENTCOM and EUCOM will be at risk as the number of amphibious warfare ships decrease below 30.

QUESTIONS SUBMITTED BY SENATOR JEANNE SHAHEEN

LIGHT AMPHIBIOUS WARSHIP

16. Senator SHAHEEN. Vice Admiral Conn, the fiscal year 2023 shipbuilding plan defers the start of procurement of Light Amphibious Warships by two years, from fiscal year 2023 to fiscal year 2025, and it shows only a slow ramp-up in annual procurement quantities over the final three years of the FYDP. This does not appear to align with the Marine Corps' desire to get these ships into service sooner rather than later. The Navy states that it deferred the procurement start of these ship two years because it is still examining requirements for these ships. Continually examining and adding requirements increase costs and complexity of the platform. What additional requirements is the Navy considering and how will it impact the program?

Vice Admiral CONN. The Navy is following the deliberate requirements process for LAW in order to determine the material solution that will meet the Marine Littoral Regiment's need for maneuver, mobility and sustainment. Due to the requirement to operate in highly contested environment, the Navy is working closely with our industry partners to help define the level of survivability required for LAW. The shift of the lead ship from fiscal year 2023 to fiscal year 2025 and ramp-up in the FYDP aligns the program milestones to ensure the Navy is procuring the best ship to complete the mission.

Additionally, the Navy-Marine Corps team is evaluating a broad range of options to provide a bridging strategy until the Light Amphibious Warship (LAW) enters the fleet in sufficient numbers to meet Marine Littoral Regiment maneuver, mobility and sustainment requirements.

17. Senator SHAHEEN. Lieutenant General Heckl, since 2020, the Marine Corps has been undertaking a transformation effort known as Force Design 2030 as a way

to ready the service for the possibility of a sea-based conflict in the Indo-Pacific region. Some critics say the Light Amphibious Warship's design may not survive Marine Corps operations, adding to production costs down the road. How is the Marine Corps balancing affordability with operational survivability?

Lieutenant General HECKL. A comprehensive analysis of alternatives was conducted to examine Light Amphibious Warship (LAW) survivability. The findings reveal that by improving design, employing proper operational methods, and applying technological means the LAW can significantly reduce the probability of detection and intercept, which in turn drastically improves survivability. Survivability is important, and by working with experts throughout DOD and industry, the LAW will be designed and built to an affordable survivability standard.

CONSTELLATION-CLASS FRIGATE

18. Senator SHAHEEN. Mr. Stefany, the Navy previously planned on procuring *Constellation*-class (FFG-62) frigates at a steady rate of two per year. In the Navy's fiscal year 2023 5-year shipbuilding plan, that has been reduced to three ships every two years, or an average rate of 1.5 ships per year. Why did the Navy do that, and how is that consistent with the Navy's goal of moving toward a more-distributed fleet architecture that includes a larger proportion of smaller ships like the FFG-62?

Mr. STEFANY. The fiscal year 2023 Shipbuilding Plan restructures the FFG 62 procurement profile to 1/2/1/2/1 for fiscal year 2023–2027 due to affordability and design maturation. The reduction to one ship in fiscal year 2023 manages execution risk in the FFG program for fiscal year 2023 as the shipyard works to start construction on the lead ship later this year.

Assuming no real budget growth, the plan beyond fiscal year 2024 does not procure all FFGs at the desired rate (2–3 per year), but does maximize capability within projected resources, industrial factors, and technology constraints to build the most capable force. Overall, this approach accepts risk in capacity in order to field a more capable and ready force.

QUESTIONS SUBMITTED BY SENATOR ANGUS KING

DEFENSE AGAINST HYPERSONIC MISSILES AND EVOLVING CHINESE THREATS

The Committee has received multiple briefings about China's progressive leaps ahead in hypersonic weapon development and other offensive capabilities. I am concerned that our joint force elements in the Indo Pacific region would be at high risk in a fight with China.

19. Senator KING. Vice Admiral Conn, please provide a classified response on the ability for the aircraft carrier and the carrier strike group to operate and impose cost on People's Republic of China (PRC) elements, in a potential fight, while concurrently defending against evolving threats (including advanced anti-ship missiles and hypersonic weapons) in a denied/degraded electromagnetic spectrum environment.

Vice Admiral CONN. [Deleted.]

20. Senator KING. Lieutenant General Heckl, please provide a classified response on the ability for the Marine Littoral Regiment to operate and impose cost on PRC elements, in a potential fight, while concurrently defending against evolving threats (including hypersonic weapons) in a denied/degraded electromagnetic spectrum environment.

Lieutenant General HECKL. [Deleted.]

QUESTIONS SUBMITTED BY SENATOR THOM TILLIS

DEPOT-LEVEL SUSTAINABILITY

21. Senator TILLIS. Vice Admiral Conn and Lieutenant General Heckl, in the National Defense Authorization Act for Fiscal Year 2022, the Committee called on the Navy and Marine Corps to focus on depot-level sustainability, especially at FRC East aboard MCAS Cherry Point. FRC East is the Vertical Lift Center of Excellence and is a leader in pioneering public-public partnerships with the State of North Carolina, which I strongly support. What are the Navy and Marine Corps doing to ensure the long-term stability and sustainability of its organic aviation depots?

Vice Admiral CONN. The Department of the Navy is currently developing a long-term plan to transform the organic Naval aviation maintenance organization by

modernizing and optimizing facilities and equipment, developing a clear human capital strategy and transitioning to the digital depot required to support the Air Wing of the Future.

On 29 April 2022, the Navy submitted a 5-year plan to the Subcommittee on Readiness, Committee on Armed Services, which outlines the near-term infrastructure efforts at the three aviation depots. This Infrastructure Modernization and Optimization plan is a key enabler for providing the Fleet the mission capable aircraft they need at a cost the Navy can afford. The plan integrates all infrastructure and industrial plant equipment investments at the Navy's three aviation depots to improve Navy maintenance capabilities by expanding depot capacity and optimizing depot configuration. The Department of Navy has resourced an H-53K Gearbox Repair and Test facility as part of the President's Budget 2023 submit and has programmed with the HQMC an F-35 Aircraft Sustainment Center on MCAS Cherry Point.

This plan will enable the aviation depots to synchronize business process improvements with facility, equipment and digital technology upgrades to improve repair cycle times and reduce operating costs. It is the foundation for strategic investment in the Navy's organic industrial base necessary to ensure that industrial facilities are properly positioned and optimized to maintain legacy aircraft, as well as the next generation family of systems under the Naval Aviation Enterprise (NAE) governance.

Lieutenant General HECKL. The Department of the Navy is currently developing a long-term plan to transform the organic Naval aviation maintenance organization by modernizing and optimizing facilities and equipment, developing a clear human capital strategy and transitioning to the digital depot required to support the modern Marine Corps Aviation Combat Element.

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22. Senator TILLIS. Vice Admiral Conn and Lieutenant General Heckl, what support can you lend to partnerships with the State of North Carolina, especially at the Global TransPark?

Vice Admiral CONN. The Navy and Marine Corps are committed to leveraging public-private partnership opportunities and are specifically looking at current opportunities with the State of North Carolina at Global TransPark. The Navy will look at all opportunities that are in the best interest of the government to maximize our depot capacity, reduce cost of ownership, and foster cooperation with private industry in accordance with all applicable laws and DOD guidance. North Carolina businesses—the Global TransPark among them—provide critical competition undergirding this public-private partnership supporting Navy and Marine Corps Aviation, both now and into the future.

Lieutenant General HECKL. The Navy and Marine Corps are committed to leveraging public-private partnership opportunities that are in the best interest of the government to maximize our depot capacity, reduce cost of ownership, and foster cooperation with private industry in accordance with all applicable laws and DOD guidance. North Carolina businesses, including the Global TransPark, provide critical competition undergirding this public-private partnership supporting Navy and Marine Corps Aviation both now and into the future.

QUESTIONS SUBMITTED BY SENATOR DAN SULLIVAN

AMPHIBIOUS WARSHIP REQUIREMENT

23. Senator SULLIVAN. Lieutenant General Heckl, in a statement to Defense News on April 4th, you stated, "the Marine Corps has a requirement for absolutely no less

than 31 amphibious warfare ships,” and also highlighted that the current fiscal year 2023 funding plan would shrink the amphibious force to just 25 ships in the next five years. Could you please elaborate on the operational imperative for 31 amphibious warfare ships?

Lieutenant General HECKL. The Marine Corps has a requirement for no less than 31 amphibious warfare ships. As ships are being decommissioned faster than they are procured, delivered, and eventually employed, the inventory under the current plan will decrease to approximately 25 ships over the next few years. With this lower inventory, we will likely still support the Indo-Pacific region but will have to accept risk elsewhere in the world. For instance in the past 12 years in AFRICOM and CENTCOM, Marines from amphibious warfare ships evacuated US embassies in Libya and Yemen; reinforced the embassy in Iraq; rescued a downed Air Force pilot in Libya; put artillery units ashore to bombard ISIS in Syria; and most recently in August, were the first on the ground to support the evacuation efforts out of Afghanistan. The Marine Corps’ ability to respond to crises like these in AFRICOM, CENTCOM and EUCOM will be at risk as amphibious warfare ship numbers decrease to approximately 25 ships in the next few years and remain at that level for the remainder of the decade.

24. Senator SULLIVAN. Lieutenant General Heckl, how would having only 25 amphibious warships degrade our ability to deter and, if necessary, defeat an adversary?

Lieutenant General HECKL. The primary deployed formation of America’s crisis response force is a Marine Expeditionary Unit (MEU) aboard a Navy Amphibious Ready Group (ARG). The ARG consists of 1 LHA and 2 LPDs. Removing 7 amphibious warfare ships reduces the battle force inventory by one-third, or over two ARGs worth of expeditionary warfare capacity.

With our current inventory of 32 amphibious warfare ships we can produce an average campaigning global presence of 2.5 deployed ARG/MEUs at any given time. This readiness allows for consistent campaigning activities that do not cede key areas of the global commons to the enemy, making it difficult to retake that terrain after a conflict has commenced. This same formation enables joint force maneuver during the early stages of conflict—a key factor in denying the enemy’s ability to achieve fait accompli objectives as observed in campaign analyses.

With 25 ships and based on historical readiness rates, the Marine Corps projects an average global presence of 1.9 ARG/MEUs deployed. Gaps between the consecutive ARG/MEUs and our forward presence will become pronounced and are likely to increase substantially over time due to a proportionally higher demand on a smaller set of aging platforms. Moreover, if the Nation decides to conduct an amphibious assault in a formation larger than an ARG/MEU, our war planning requirements dictate 15–20 amphibious warfare ships. The Marine Corps estimates that with an inventory of 25 ships, a significant effort would be required to assemble an amphibious task force of that size.

An inventory of 25 amphibious warfare ships reduces our Nation’s forward presence that supports campaigning and limits our Nation’s ability to respond to crisis. Moreover, the limited amphibious warfare ship inventory increases the time necessary to assemble assets in conflict. Last, an inventory of 25 amphibious warfare ships poses a significant risk for training and readiness as substantiated by the KEARSARGE ARG’s inability to deploy inside of 30 days prior to its scheduled departure, despite the fact that today’s battle force inventory includes 32 L-class ships.

25. Senator SULLIVAN. Vice Admiral Conn, how are the Navy and Marine Corps working together to resolve their differences regarding the amphibious ship requirement?

Vice Admiral CONN. The Navy and Marine Corps team have been in constant dialog to assess our requirement for amphibious ships from an analytical perspective. The Navy and Marine Corps co-lead the Amphibious Fleet Requirement Study with the Navy’s Assessment Division (OPNAV N81) and the Marine Corp’s Operations Analysis Directorate (OAD) leading the analysis. Three table top exercises conducted as part of the study were held in Quantico, VA at the OAD with stakeholders from the OPNAV staff alongside Marine Corps subject matter experts from Concepts Development and Integration (CD&I), NAVSEA, and the Fleet Marine Force. The study was a joint effort to determine requirements across the range of operations to support presence, deterrence and crisis response with the study providing the Department of the Navy the requirement for both traditional amphibious ships and the Light Amphibious Warship. The study team is in the process of briefing senior leaders on the results of the study.

DIVEST TO INVEST

26. Senator SULLIVAN. Lieutenant General Heckl, in your statement submitted to this subcommittee, you write, “[i]n this budget request, the Navy/Marine Corps Expeditionary Ship Interdiction System (NMESIS) continues to be the Marine Corps’ top modernization priority and is the critical lethality component to our anti-ship capability.” Continuing later in the statement, you write, “the Marine Corps has successfully tested NMESIS twice, once in November 2020 and more recently in August 2021.” What did these two operational tests show you that allowed the Marine Corps to request \$345 million for the program in the fiscal year 2023 budget?

Lieutenant General HECKL. Guided Flight Tests, Characterization Tests, and Early User Evaluations for the Navy/Marine Corps Expeditionary Ship Interdiction System (NMESIS) have been ongoing since 2020 with positive results, leading to a planned fiscal year 2022 3d Quarter Operational Assessment that includes Ballistic Flight Tests. Characterization Testing has assessed leader/follower operations, cross country movements, road movement, and deep water fording. Early User Evaluation has reported positive results in execution of three different mobility field exercises and two raid missions utilizing KC-130’s with simulated firing missions and 11th Marines continues to evaluate the system. Additionally, testing and certification for transport via helicopter (externally), landing craft air cushion, and KC-130 has been completed.

Based on the NMESIS program’s positive trend, the Service has request \$343.8 million to procure 24 NMESIS systems and 115 Naval Strike Missiles. These procurements will build on the initial fiscal year 2022 procurement, increasing inventory levels to support operational requirements.

27. Senator SULLIVAN. Lieutenant General Heckl, the Marine Corps is quickly divesting of several legacy weapon systems to field capabilities like NMESIS. This process has not been without some internal Department of Defense (DOD) controversy regarding whether the Marine Corps would keep the \$8 billion in savings it generated through divestment so it could invest in new capabilities. How is the Marine Corps balancing the need to validate new concepts with the need to rapidly field necessary new capabilities?

Lieutenant General HECKL. The Marine Corps must be ready to respond to a crisis and be ready to fight, both now and in the future. The balance needed to execute Service responsibilities while modernizing is a question of risk of what, to what, and of when. The Service balances this risk by fielding modernized systems with capabilities that are applicable in a peer fight, as well as across the range of military operations. Moreover, the Marine Corps recognizes that any delay in modernization only exacerbates that risk, especially when considering the context that the pacing threat continues to increase its defense spending to develop and field advanced systems. This balance between tempo of modernization and capabilities is continually assessed through experimentation—live, virtual, and constructive—to inform Service-level decisions.

LIGHT AMPHIBIOUS WARSHIP

28. Senator SULLIVAN. Lieutenant General Heckl, the Navy announced recently that the Light Amphibious Warship would be delayed again, this time until fiscal year 2025. In your estimate, how close is the Marine Corps to validating the Light Amphibious Warship (LAW) requirements for production and delivery?

Lieutenant General HECKL. The Light Amphibious Warship (LAW) analysis of alternatives (AoA) and final report is complete. Next actions include AoA sufficiency analysis by the Cost Assessment and Program Evaluation office, a Joint Staff Review, a Joint Requirements Oversight Council (JROC) review, and JROC memorandum publication. These actions are scheduled to occur between now and July 2022. This process, coupled with inputs from industry, will inform the writing of the capabilities development document (CDD), planned to be approved in early fiscal year 2023. Prior to CDD publication, preliminary design is expected to be complete in August 2022.

29. Senator SULLIVAN. Lieutenant General Heckl, I understand the Marine Corps plans to lease two commercial stern-ramp landing vessels starting in late summer 2022 to experiment with the LAW concept. Is this a preliminary effort to validate the LAW’s requirements, give Marine Littoral Regiments platforms to experiment, or both?

Lieutenant General HECKL. The Marine Corps is leasing an existing civilian Off-shore Support Vessel, modified with a stern beach landing capability, to support service level experimentation over the next 5 years. While experimentation is the

primary purpose, the Marine Corps anticipates these actions will help inform and validate Light Amphibious Warship requirements.

30. Senator SULLIVAN. Lieutenant General Heckl, some DOD officials and commentators have questioned the survivability of these Light Amphibious Warships given their comparative lack of defensive systems. Can you explain why and how these ships are survivable?

Lieutenant General HECKL. A comprehensive analysis of alternatives was conducted to examine Light Amphibious Warship (LAW) survivability. The findings reveal that by improving design, employing proper operational methods, and applying technological means the LAW can significantly reduce the probability of detection and intercept, which in turn drastically improves survivability. To operate effectively in key maritime terrain littoral maneuver is a primary function to enable success. The survivability of the entire Stand-in Force is enhanced when they can be delivered to a shoreline, a littoral transition point, at the time and place of our choosing and execute the functions outlined in expeditionary advanced base operations. The unit's survivability is further enhanced when the unit can rapidly displace from key maritime terrain and reposition via LAW.

QUESTIONS SUBMITTED BY SENATOR JOSH HAWLEY

LONG RANGE ANTI-SHIP MISSILE (LRASM) PRODUCTION

31. Senator HAWLEY. Mr. Stefany, what would it take to expand LRASM production lines so we can field as many LRASMs as possible now, while also increasing our ability to surge LRASM production prior to or during a potential conflict?

Mr. STEFANY. The Navy Long Range Anti-Ship Missile (LRASM) production line is shared with the Air Force Joint Air to Surface Standoff Missile (JASSM). The maximum production capacity is 720 missiles of either variant with 120 maximum allotted to LRASM, since current world events have driven the planned production of Air Force JASSM in consuming all additional production capacity. The President's Budget 2023 Request does not currently max out the production capacity of 120 LRASMs. With an additional \$109.8 million provided in fiscal year 2023, 28 more LRASMs can be produced to max out the production capacity.

The prime contractor is currently working with sub vendors to provide a proposal for the increased production capacity of both missiles. A Rough Order of Magnitude provided by the contractor identified \$36.0 million for LRASM unique tooling and components to increase the production line quantity to 240 LRASMs of the C-1 variant. A full proposal to include all common JASSM/LRASM tooling and components is expected in the July 2022 timeframe.

VERTICAL LAUNCH SYSTEM (VLS) CAPACITY

32. Senator HAWLEY. Admiral Conn, how many VLS tubes will the Navy lose from the fleet between now and 2030?

Vice Admiral CONN. Based on the Navy's Annual Long-Range Plan for Construction of Naval Vessels for Fiscal Year 2023, Alternative 1 force structure, the Navy is forecasted to decommission 3932 surface and undersea VLS tubes from fiscal year 2022 through the end of fiscal year 2030.

33. Senator HAWLEY. Admiral Conn, how many VLS tubes will the Navy add to the fleet between now and 2030?

Vice Admiral CONN. Based on the Navy's Annual Long-Range Plan for Construction of Naval Vessels for Fiscal Year 2023, Alternative 1 force structure, the Navy is forecasted to gain 2560 surface and undersea VLS tubes through new construction from fiscal year 2022 through the end of fiscal year 2030.

34. Senator HAWLEY. Admiral Conn, you testified, "Yes, we are taking risk in VLS between now and about 2030." When asked further about the character of that risk, you offered to provide a response for the record. This in mind, how would you characterize the risk generated by the Navy's net loss of VLS tubes between now and 2030?

Vice Admiral CONN. There is a reduction in the overall number of VLS cells but warfighting capability and capacity can't just be measured by the number of VLS cells, it also needs to take into account the weapons that can be employed from those cells as well as the combat system elements supporting the engagements. The older ships that will decommission are not as capable as the newer ships in terms of Anti-Air Warfare or Ballistic Missile Defense, with less capable weapons being employed

paired with less capable combat systems and radars in many cases restricting effectiveness to Anti-Air Warfare only within the ships own radar horizon.

The Navy had to make a value decision on the investment required to get these older platforms with less capable combat systems forward versus the investments we need to make to deliver a more capable, more lethal Navy in the future. These decisions were made within the context that the Navy fights from the seabed to space, our submarines, our surface ships and aviation assets all contribute to the fight in addition to those platforms hosting VLS cells.

The new era of strategic competition requires a more capable, global, forward, and multi-domain Navy. The National Defense Strategy (NDS) underscores the need for DOD to move away from systems that provide less capability and do not significantly support our strategy and ability to win in a future fight.

In the fiscal year 2023 budget, Navy prioritized technologies, systems and platforms that need to be fielded quickly and at scale to be operationally relevant in the coming years to ensure that Navy meets Joint Force operational requirements, and made difficult choices to divest of older and less capable ships in order to make investments that better support warfighting requirements.

