

**DEPARTMENT OF DEFENSE AUTHORIZATION FOR
APPROPRIATIONS FOR FISCAL YEAR 2022 AND
THE FUTURE YEARS DEFENSE PROGRAM**

HEARING

BEFORE THE

**COMMITTEE ON ARMED SERVICES
UNITED STATES SENATE**

ONE HUNDRED SEVENTEENTH CONGRESS

FIRST SESSION

ON

S. 2792

TO AUTHORIZE APPROPRIATIONS FOR FISCAL YEAR 2022 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**

JUNE 8, 2021



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DEPARTMENT OF DEFENSE AUTHORIZATION REQUEST FOR FISCAL YEAR 2022 AND THE FUTURE YEARS DEFENSE PROGRAM

TUESDAY, JUNE 8, 2021

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

NAVY AND MARINE CORPS INVESTMENT PROGRAMS

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

Subcommittee Members present: Senators Hirono, Shaheen, Blumenthal, Kaine, King, Peters, Cramer, Wicker, Cotton, Tillis, Scott, and Hawley.

OPENING STATEMENT OF SENATOR MAZIE K. HIRONO

Senator HIRONO. Sorry, See, we haven't done this in so long, I forgot to turn on the mic. Thank you very much.

Thank you for your service to the Nation and for the truly professional service of the men and women under your commands. We are also grateful for our military families, for the vital role they play in the success of the men and women of our armed forces.

I also want to, once again, welcome now that we have another Member here, welcome him and, once again, Senator Cramer. I look forward, of course, to working with all of you on this Subcommittee.

I have had the privilege of being the ranking on the Subcommittee with Chairs Wicker and Purdue, and we worked very well together on this, really, bipartisan committee. So, I think we can find broad agreement with the Subcommittee as we confront the issuing facing our sailors and marines and their families.

The Navy and Marine Corps face difficult decisions as they seek to modernize the fleet, maintaining a technical advantage over our adversaries, supporting ongoing operations, and sustaining today's readiness.

The threats we face around the world require us to consider the best way to get the Navy and the Marine Corps the resources they need; however, we must make sure that any increase in resources do not come at the expense of important programs that families, including our military families face 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 interests around the world, including the Indo-Pacific Region, and at bases in my home state of Hawaii. With that in mind, the subcommittee plays a crucial oversight role as we work to improve our acquisition stewardship to ensure we are getting good value for every shipbuilding dollar that we spend.

Late last year, former Defense Secretary Esper published I quote, "The Battle Force 2045," an updated long-term shipbuilding plan, in which he called for achieving a Navy force even larger than the 355-ship Navy that has been adopted as national policy in title 10, United States Code (U.S.C.).

I do not think that this administration has taken a position on the Esper plan because we are still, I think operating under 355-ship plan, are we not? Or it may be even fewer than that. So, all though the Defense Department will not produce a Future Year Defense Program, or FYDP, we have been promised that the Navy will deliver a 30-year shipbuilding plan that is required annually by title 10 of 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 using multi-year procurement authority to modernize the fleet more efficiently, and Congress has approved the use of this authority to procure *Virginia*-class attack submarines and DDG-51 Aegis destroyers; two platforms that had been the largest inventory shortfall, compared to the goals outlined in the 2016 force structure assessment.

It is especially troubling that the Navy budget would violate the terms of a multi-year contract for the DDG 51, and when Congress makes a multi-year commitment for such a program, we expect the administration will live up to its commitment to carry through on the program. It is not enough for the CNO [Chief of Naval Operations] to make the DDG 51 destroyers, his number one unfunded priority this year.

I wonder if the actions of the DDG 51 program reflect, in part, the fact that the Battle Force 2045 plan will propose cutting the goal for large surface combatants from 104 ships in the CNO's previous plan to a level of 73 to 88 ships in the new plan. We hope to explore these issues today.

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. We should hear today how the realignment, outlined by the Commandant in Marine Corps Force Design 2030 is reflected in the plans and programs in the fiscal year 2022 budget request.

I am also interesting in hearing from Secretary Stefany about the vital role our public Navy shipyards play in maintaining a ready and capable fleet. I am encouraged that the Navy has finally gotten serious about investing in the critical infrastructure that has been neglected for far too long.

I look forward to hearing from you this morning or this afternoon about how the fiscal year 2022 budget supports this plan. I also look forward to working with the Navy to ensure that the shipyard

modernization program stays on track. As you all well know, shipyard modernization has been a very near and dear issue for me and other members of this committee, so you will have questions on that.

Senator Cramer, I turn to you for your remarks.

OPENING STATEMENT OF SENATOR KEVIN CRAMER

Senator CRAMER. Thank you, Madam Chairwoman, and witnesses for being here and for your service and your families.

Senator Hirono and I had a wonderful discussion a few weeks ago and I look forward to working with you, as well, Senator, to accomplishing important work of the Seapower Subcommittee, and, obviously, I am a natural choice. My state is, literally, the center of the North American continent. We have a monument to prove it, and we are perfectly positioned.

I have this, as I like to say, unique vantage point to observe our Navy and Marine Corps operating in all of our adjacent seas: the Pacific, the Atlantic, the Arctic, and the Caribbean. But, all joking aside, it is a critical time for our national security and the stakes are very high as you know.

Appropriately funding the Department of Defense (DOD) in order to keep this Nation safe and defend our interests is, without question, in my mind, the most critical constitutional duty of the United States Congress and it is one that I take very seriously and I am sure all my colleagues, do as well.

To this end, I thank the Chairwoman for calling today's hearing to examine Navy and Marine Corps programs in the President's fiscal year 2022 budget request. But I must say, I am concerned, very concerned that President Biden's Defense budget request is wholly inadequate; nowhere near enough to give our Navy and Marine Corps members the resources, equipment, and training they need, quite simply, because this budget doesn't keep up with inflation. It is a cut.

There is plenty of evidence of the insufficiency of this budget within this Subcommittee's jurisdiction; for example, this budget only procures eight battle force ships, of which just four are combatant ships. It's a cut of 4 ships, as compared to the 12 in the last shipbuilding plans projection for fiscal year 2022, including one fewer destroyer, which would result in a \$33 million penalty for breach of contract, which Senator Hirono addressed.

The budget also proposes to inactivate 15 ships, buy 6 fewer F-35C Joint Strike Fighters, divest all 12 Mark VI Patrol Craft, cut the Navy and the Marine Corps munitions by roughly 10 percent, and I could go on.

A budget like this sends China and our other potential adversaries exactly the wrong message: that we are not willing to do what it takes to defend ourselves and our allies and partners. We should be worried about China for a multitude of reasons, but looking just at their Navy, their fleet surpassed our fleet size target of 355 ships just last year and is steadily climbing toward 460 ships in 2030.

That is an increase of 105 ships in 10 years, or an average growth of 10 ships per year; meanwhile, this budget supports a status quo U.S. Navy of around 300 ships. There is no growth, in fact,

the Navy is struggling to replace decommissioning ships with new ships on a 1:1 basis to avoid shrinking. This unacceptable situation is because the Navy is not being given the resources needed to grow.

My understanding is all the clever tricks have been tried. Unit manning is leaner than it should be. Maintaining an aging fleet has taken a toll on our repair yards and the marine environment is uniquely unforgiving, so new concepts, such as unmanned vessels must be technically mature before we can scale up.

A few specific areas I hope to cover today include Admiral Kilby, I am interested in the extent to which the seven cruisers slated for decommissioning could be maintained in a reduced status to enable each of these ship's 122 vertical launch system cells to remain available in a crisis.

Mr. Stefany, the last 30-year shipbuilding plan delivered in December projected rather aggressive submarine-building rates. In 4 different years, in the late 2020s and the late 2030s, for instance, the plan called for three *Virginia*-class submarines and one *Columbia*-class to be built. I am interested in your assessment of the submarine industrial base's current performance.

General Smith, the Marine Corps appears to be aggressively pursuing air defense, and missile systems in the Indo-Pacific. I am interested in better knowing how these systems can both, protect forward-postured marines, as well as help combatant commanders deny maneuver space to an adversary. I look forward to the testimony of our witnesses today.

Thank you, Madam Chair.

Senator HIRONO. Thank you very much for your very thorough opening statement. My goodness. I can see you are going to be a really fantastic partner in this effort.

Who would like to—would you like to start?

Mr. STEFANY. Yes, ma'am.

Senator HIRONO.—Mr. Secretary?

Yes?

STATEMENT OF MR. FREDERICK J. STEFANY, ACTING ASSISTANT SECRETARY OF THE NAVY FOR RESEARCH, DEVELOPMENT, AND ACQUISITION.

Mr. STEFANY. Yes, ma'am.

We are very pleased to be here for your first in-person one of these and it is a pleasure for the three of us to be here. We will do one opening statement for the three of us combined, ma'am.

Chairwoman Hirono, Ranking Member Cramer, distinguished Members of the Subcommittee, on behalf of myself, Vice Admiral Kilby, and Lieutenant General Smith, thank you for the opportunity to appear before you today to address the Department of Navy's fiscal year 2022 budget request for seapower capabilities.

We would like to thank this Subcommittee for your leadership and your support of shipbuilding, aviation, and ground programs that support our forward-deployed naval forces.

As a maritime nation, our economic prosperity and security are linked to the world's oceans. The Navy and the Marine Corps team are the Nation's maritime force, forward-deployed each and every day, protecting the vital interests of our Nation, supporting our al-

lies and partners, and providing a credible and visible deterrent to our strategic competitors. Our goal is to prevent conflict, but should deterrence fail, we are ready to answer the call, to fight, and to win.

The Department of Navy's 2022 budget balances readiness, capabilities, capacity, and people in order to advance key Department priorities to defend the Nation, to innovate and modernize our force, to increase resilience and readiness, and to build the workforce to compete and win.

As Secretary Austin highlighted in his recent testimony to the appropriation committees, the budget also reflects difficult funding decisions, necessary to ensure we have the right mix of capability that the nation needs most and supports investments in a modern, future force that can deliver integrated, all-domain naval power.

While difficult decisions are required, I would like to highlight some of the areas we were able to increase our investment in fiscal year 2022. The DOD prioritization is, first of all, the recapitalization of the Navy's portion of the nuclear triad. Then, meeting readiness needs today to field a credible, non-nuclear deterrent ready to fight tonight. Followed by investments in modernization needs for tomorrow's fleet and, finally, building the capacity of a Navy congruent with our budget controls. This ensures that we do not create a hollow force while we sustainably grow the fleet.

To that end, we continue to fully fund our number one procurement program: the *Columbia* SSBN program to the updated, independent cost estimate to ensure that we deliver all the ships in this class in time to meet STRATCOM's [U.S. Strategic Command's] requirements.

We are also investing in land-based test facilities for the frigate program and for the unmanned surface vessel programs, and we are requesting advance procurement funding for frigate to smooth out the planned ramp-up to construction of two ships per year.

Although a different mix of ships from last year's projection for fiscal year 2022, this budget request does actually provide more funding and the same number of ships, as were proposed by the Department last year. To ensure we have a total force, a whole force, the fiscal year 2022 budget invests additional funding in ship and aviation depot maintenance, and it reflects additional authorities to expand the OPN [Other Procurement, Navy] funding pilot, for ship modernization from just the Pacific Fleet to now the entire Navy.

You will see an increase in our planned funding for SIOP [Shipyard Infrastructure Optimization Plan] shipyard optimization modeling and area planning efforts that will lead to major SIOP projects in the near future that will start with the dry dock recapitalizations at Pearl Harbor Naval Shipyard and Puget Sound Naval Shipyard.

With a focus on developing a naval force capable of distributed maritime operations, as outlined in the CNO's navigation plan and the Commandant of the Marine Corps Force Design. This budget provides investments to start the development of new capabilities in collaboration with our industry partners, such as a follow-on to the *Virginia*-class attack submarine, a Next-Generation Air Domi-

nance family of aircraft, and a future, large surface combatant. It increases our ongoing development efforts for hypersonic weapons.

The budget funds key enablers to support distributed operations, such as our Project Overmatch, which is a seamless network that will leverage demonstrated progress in command and control in all domains, and facilitate the manned-unmanned teaming of the future that would be required for future warfare.

The budget continues investment in lethality and long-range fires, with a request for Naval Strike Missiles that we will use on our ships, as well as part of the Marines, Ground-Based Anti-Ship Missile program, and it achieves real advances in communication networks and control with the networking on the move and the next generation of satellite communication programs.

I would like to thank you for the opportunity to appear before your subcommittee today and for the strong support that this subcommittee has always provided to our sailors and marines. We look forward to your questions. Thank you.

[The joint prepared statement of Mr. Frederick J. Stefany, Vice Admiral James W. Kilby, and Lieutenant General Eric M. Smith follows:]

JOINT PREPARED STATEMENT BY MR. FREDERICK J. STEFANY, VICE ADMIRAL JAMES W. KILBY, AND LIEUTENANT GENERAL ERIC M. SMITH

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 2022 budget request for Seapower capabilities. First, we would like to thank Congress and this Committee for your leadership and support of the Department of the Navy (DON) acquisition, sustainment, research and development programs. The fiscal year 2021 Authorization and Appropriation Acts provided essential support for the DON's shipbuilding, aviation and ground programs that are the foundation of our maritime service and are essential to a full range of military operations in support of our national security priorities.

In an increasingly interconnected and interdependent world, a dominant naval force and a strong maritime strategy are critical to the security of the Nation. The global security environment is increasingly influenced by our competitors, requiring the Navy and Marine Corps team to operate continually to provide credible combat power forward and a ready response force to global crises and disasters. Amidst these traditional challenges, our forces have adapted global operations in response to the COVID-19 pandemic in ways that were unimaginable in early 2020. As our national security posture evolves to confront new challenges, the DON continues to invest in key capabilities that maximize our naval power contribution to the Joint Force and ensure a proper balance of readiness, capability, and capacity within the limits of available resources.

To address the growing demands placed on our warfighters, the DON is making necessary investments in lethal capabilities across a broad spectrum of platforms and programs. Since the start of fiscal year 2020 we have delivered 13 relevant and capable war ships to the Fleet including two *Arleigh Burke*-class destroyers, two *Virginia*-class submarines, four Littoral Combat Ships, two Expeditionary Fast Transport ships, one Amphibious Assault Ship, and one Expeditionary Sea Base, and one *Zumwalt*-class destroyer following its combat systems delivery. Today, the Navy has 74 ships under contract with 51 ships in construction. We expect to take delivery of an additional ship in fiscal year 2021, and plan to award contracts for three more ships this year. On the aviation side, we will deliver 54 new manned aircraft and four unmanned aircraft to Navy and Marine Corps units in fiscal year 2021, improving capability and enabling the divestiture of less affordable and less capable legacy systems.

The Navy continues the maturation of critical warfighting investments. CVN 78 successfully completed its post-delivery testing and trials (PDT&T) period in April 2021 and will conduct Full Ship Shock Trials from May-August 2021. During PDT&T the ship was at sea 50 percent of the time—certifying and testing systems and training the crew, while also being used for pilot generation, a critical need for carrier airwing readiness. In March 2021, VFA-147, the first operational F-35C

squadron, completed the longest at-sea period (approximately 5 weeks) by F-35Cs onboard USS *Carl Vinson* (CVN 70). VFA-147 completed missions in all warfare areas while reporting a 97.6 percent sortie completion and 80 percent Mission Capable rates. Fiscal year 2021 funds completed the procurement of three MQ-25A System Demonstration Test Article (SDTA) aircraft and supported the development of six SDTAs for Next Generation Jammer Mid-Band (NGJ-MB) Engineering & Manufacturing Development (EMD). These crucial investments will continue to advance our warfighting edge against adversaries.

Additionally, the Department achieved over 80 percent Mission Capable rates for the F/A-18E/F and EA-18G fleets and achieved an 80 percent Mission Capable rate for E-2Ds in fiscal year 2020. These positive trends are continuing in fiscal year 2021, on-going efforts are focused on maintaining these advances by applying lessons learned across all type model series aircraft to reduce long-term sustainment costs.

Nearly 70 percent of today's fleet will be in service through 2030, so accelerating the momentum of on-time delivery for ships, submarines and aircraft coming out of maintenance availabilities remains a priority for the Department. We continue to use available data to provide better predictability, improve performance, share lessons learned, and reduce costs. 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 in a healthier way over time. We will communicate future demand signals to our industrial partners, stabilizing the industrial base and ensuring sufficient capacity.

The Navy is seeing positive early results from the pilot program established by Congress in fiscal year 2020 to fund Pacific Fleet CNO Availabilities with multi-year Other Procurement, Navy (OPN) funding. 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 fiscal year 2022 budget requests expansion of the OPN pilot to include U.S. Fleet Forces CNO Availabilities. The Navy is demonstrating 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 have and 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 Plan* serves as a comprehensive 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 DON developed the *Unmanned Campaign Plan* to direct an enterprise-wide partnership along with industry and academia to coordinate efforts and resources and take advantage of innovation opportunities such as Commander Pacific Fleet's Integrated Battle Problem 21. We look forward to working with the Congress on advancing our naval unmanned contribution to the joint force.

The Fiscal Year 2022 President's Budget Request

The President's Fiscal Year 2022 Budget advances key DON priorities to defend the Nation, innovate and modernize the Department, increase resilience and readiness, and build a workforce to compete and win. It balances the urgent readiness needs of our force today with investments that maximize our naval contribution to the Joint Force, and reflects hard decisions to divest of less capable platforms and systems, freeing resources to invest in a future force that can deliver greater efficiency and effectiveness.

The fiscal year 2022 request 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 Navy's highest acquisition priority. The budget requests funding for eight Battle Force Ships, 107 total aircraft, and completes procurement of V-22 and P-8A, while maturing production and maintaining vital aviation platforms to support a robust and technologically advanced fleet.

The fiscal year 2022 budget supports the sustainment of our readiness recovery to deliver credible ready forces now by accelerating the Navy's Shipyard Infrastructure Optimization Program (SIOP) and fully funding two submarine overhauls in private shipyards. The request is aggressive in its pursuit of increased lethality and modernization with the greatest potential to deliver non-linear warfighting advantages. It accomplishes this by beginning significant research and development in-

vestments for future platforms, and supporting DMO that will seamlessly network sensors, platforms (manned and unmanned) and weapons for decision advantage. This includes prioritization of force design and delivery of Naval Expeditionary forces capable of imposing costs on global competitors with distributed, lethal power, and the delivery of capable capacity.

The fiscal year 2022 budget prioritizes a capable and lethal force, delivering platforms that are more capable, networks, combat systems and weapons while divesting of less capable legacy platforms. The budget balances resources and requirements to weigh the effects of program decisions on the industrial base, maximizing efforts in support of the President's Executive Order on Ensuring the Future is Made in All of America by All of America's Workers, and the Build Back Better initiatives. The budget shows a realistic and forward-thinking approach to planning the future force, while providing future capability requirements within projected budgets. The budget takes into consideration the need to keep America's industrial base loaded at an executable level that encourages industry investment in capital improvements, capital expansion, and a properly sized world-class workforce.

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 requisite capability to address the maritime challenges of today with an eye to the evolving security environment of tomorrow. To achieve the most capable Navy, we are instilling affordability, stability, technical rigor, and capacity into our programs to deliver these vital platforms to the warfighter faster within the resources provided. With Congress' continued support, we will provide the Nation with the Integrated All-Domain Naval Power for the Joint Force that is required to win today and tomorrow.

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

U.S. NAVY AND MARINE CORPS SEAPOWER 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. The *Columbia*-class program remains the Navy's number one 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 by 2030.

The fiscal year 2022 budget supports the continued 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 procurement beginning in fiscal year 2026. Supporting overall program risk reduction and required schedule execution to minimize strategic deterrence coverage gaps, the fiscal year 2022 budget request also funds Continuous Production of Missile Tubes (and associated components) and Propulsors, and Multi-Program Material Procurement/Production Back-up Units. *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. Also included in the fiscal year 2022 budget are development efforts to make submarines more capable.

The Navy delivered two *Virginia*-class submarines in fiscal year 2020, including the first Block IV ship, the USS *Vermont* (SSN 792). The Navy continues to build on past success with the Block V multi-year procurement (MYP) contract for the construction of nine ships, and the fiscal year 2021 award of an option to add a tenth ship to the Block. This Subcommittee's leadership and guidance played an integral role in ensuring funds were authorized and appropriated for the Navy to rapidly award the option for the 10th boat of the Block V. The second ship of Block V introduces the *Virginia* Payload Module, and all Block V ships will incorporate Acoustic Superiority program improvements.

The Navy, shipbuilders and related suppliers recognize that vigilance in execution and oversight of the *Virginia* and *Columbia* programs is critical. In fiscal year 2021 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. Additionally, the Navy

is implementing Continuous Production for *Columbia* on selected shipyard-manufactured items to reduce cost and schedule risk, and help strengthen the industrial base with a focus on critical vendors. Advance Construction activities began June 2019 at General Dynamics Electric Boat and Huntington Ingalls Industries-Newport News to proactively manage schedule margin and reduce controlling path risks for *Columbia*.

AIRCRAFT CARRIERS

The Navy continues to focus on making USS *Gerald R. Ford* (CVN 78) ready for operational use, and continues to see increased reliability on the new critical technologies. The Advanced Weapons Elevators (AWEs) have been cycled over 15,000 times, including 7,803 at sea, and are performing as designed. CVN 78 successfully completed 8,157 aircraft launches and recoveries. Ready for deployment is a Navy priority and the Department is working collectively with the Navy shipbuilding industry to transition *Ford* into Fleet operations.

John F. Kennedy (CVN 79) is 79 percent construction complete. *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. CVN 79 is on schedule to deliver in 2024 with a complete combat systems suite and fully outfitted with F-35C ship modifications. Enterprise (CVN 80) construction is eight percent complete by construction man-hours and *Doris Miller* (CVN 81) has commenced material procurement. Additionally, CVN 80 is on schedule to meet its first major construction milestone, keel laying, in the second quarter of fiscal year 2022.

The *Nimitz*-class Refueling Complex Overhaul (RCOH) is key to both the maintenance and modernization of each carrier in support of the second half of its 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 89 percent complete with re-delivery planned for August 2022. USS *John C. Stennis* (CVN 74) commenced RCOH in May 2021 and USS *Harry S. Truman* (CVN 75) will begin RCOH in fiscal year 2025.

Large Surface Combatants

The *Arleigh Burke*-class (DDG-51) program remains one of the Navy's most successful shipbuilding programs with 69 ships delivered to the Fleet. Over the course of the fiscal year 2018 to 2022 MYP, the Navy will procure a total of 11 Flight III DDGs, more than the planned 10 ship procurement. From a warfighting perspective, procuring one DDG-51 in fiscal year 2022 will still provide the near-term capacity required. The shipbuilders have a total of 20 DDG-51s under contract, with 11 under construction. We assess that there is adequate near-term backlog of work at each shipyard. Navy intends to evaluate the benefits of DDG-51 FLT III follow-on MYP contracts in fiscal years 2023 to 2027 to maintain the industrial base and continue to provide the latest capability to the Fleet while the DDG(X) design and risk reduction efforts are executed in parallel. These Flight III ships will provide enhanced Integrated Air and Missile Defense with the AN/SPY 6(V)1 Air and Missile Defense Radar (AMDR) and AEGIS Baseline 10. 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. AN/SPY 6(V)1 arrays for the first Flight III ship have delivered and will support Flight III delivery and Initial Operational Capability (IOC). The first DDG 51 Flight III ship (DDG 125) will deliver in fiscal year 2023. 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 (AN/SPY-6(V)1, Aegis Baseline 10, and power systems) will occur at land based test sites, to reduce risk prior to lead ship activation. The Land Based Engineering Site began electrical plant testing in fiscal year 2021, and the Combat Systems Engineering Development Site achieved stand-alone activation of the SPY-6 array in April 2021.

Complementing the DDG 51, the DDG 1000 *Zumwalt*-class 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 PDT&T, train the crew on ship functions, and demonstrate operational performance. USS *Zumwalt* (DDG 1000) is scheduled to reach IOC in December 2021. *Michael Monsoor* (DDG 1001) final delivery is planned for March 2022. Completion of the planned construction and HM&E test and activation of *Lyndon B. Johnson* (DDG 1002) at General Dynamics Bath Iron Works is 98 percent complete. Delivery of the

ship is now planned for a single delivery approach following the completion of Combat Systems installation, test and activation follow-on work.

DDG 51 Flight III is highly capable, but after over 40 years in production and 30 years of upgrades, the hull form cannot accommodate the future capabilities identified by the Future Surface Combatant Force Analysis of Alternatives (FSCF AoA), including high power Directed Energy, larger missiles, increased magazine depth, sensor growth, and efficient integrated power. The future Large Surface Combatant, DDG(X), will provide the flexibility and margins necessary to succeed DDG 51-class as the Navy's next enduring large combatant. In its initial form, DDG(X) will combine the DDG 51 Flight III combat system elements with a new hull form, an efficient Integrated Power System and greater endurance reducing the Fleet logistics burden. DDG(X) will reduce combat system development risk by utilizing mature technologies that leverage the DDG 51 Flight III Navy standard program of record combat system elements and reduce engineering system development risk by land based testing of the propulsion and electrical system integration prior to detail design. Top Level Requirements were approved by the CNO in December 2020 as the basis for the Draft Capability Development Document. The Navy partnership with industry will include shipbuilder participation driving to a stable requirements baseline, concept design, and a ship designed for producibility as well as flexibility.

Small Surface Combatants

Strategic competition and the on-going focus on the Indo-Pacific requires a more capable Small Surface Combatant for operations in contested environments. The FFG 62 *Constellation*-class is the evolution of a ship design with increased lethality, survivability, and improved capability to support the full range of military operations as part of a more lethal Joint Force. FFG 62 Capability Requirements are mature and have been 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 will establish a FFG 62 Land Based Engineering Site to test power and propulsion systems prior to ship activation. The lead ship is under contract and is expected to start construction in fiscal year 2022, and the second ship of the class, future USS *Congress*, was put on contract last month. The Navy is confident in the capability FFG 62 will deliver to the Fleet.

The Littoral Combat Ship (LCS) program has delivered 23 of the 35 total planned ships. By the end of calendar year 2021, 27 LCSs will have been delivered and 20 will be available to the Fleet commanders. The program plan for these ships is: 4 dedicated test ships; eight Surface Warfare (SUW) ships; 8 Anti-Submarine Warfare (ASW) ships; and 15 Mine Countermeasure ships. The initial two test ships will decommission in fiscal year 2021 and the third and fourth test ships will complete testing and decommission, along with LCS 7 and 9, by the end of fiscal year 2022 to re-prioritize funding for modernization, capability upgrades, and sustainment.

The Navy has installed Naval Strike Missile (NSM) on four Independence-variant 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 upgrades is on track for the first installations in fiscal year 2023. Eleven LCS will have conducted their inaugural deployments to 7th or 4th Fleet by the end of fiscal year 2022, providing a significant increase in contact layer assets for Fleet Commanders which will continue to grow as the remaining ships are delivered to the Fleet.

Following the theme of divesting legacy capacity and force structure, the Navy's plan to divest two additional cruisers (CGs) in fiscal year 2022, beyond the five previously planned for fiscal year 2022, enables continuation of funding for the five CGs in modernization. CGs remain Navy's primary Air and Missile Defense Commander platform until Flight III destroyers are delivered in the mid 2020's.

Amphibious Ships

Amphibious warfare ships remain a key component of the Nation's global forward presence, playing a pivotal role in responding to world crises and supporting a broad range of missions across the spectrum of conflict. Today, these ships are persistently forward deployed, competing below the level of armed conflict while living within the range of enemy fires, building partner capacity, and deterring enemy aggression. Partnered with industry, the DON is committed to delivering the most capable multi-mission amphibious warfare ship.

America-class (LHA 6) will replace the decommissioned LHA 1 *Tarawa* and aging LHD 1 *Wasp*-class ships. USS *America* (LHA 6) returned from deployment as the

centerpiece of the America Amphibious Readiness Group/Marine Expeditionary Unit with the F-35B operating from the flight deck. USS *Tripoli* (LHA 7) delivered in February 2020 and is completing its post-delivery efforts to make the ship Joint Strike Fighter-capable and ready for its planned deployment in fiscal year 2022. *Bougainville* (LHA 8) is 33 percent construction complete with 107 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. All LHAs will be F-35B capable.

San Antonio-class (LPD 17) provides the ability to embark, transport, and land elements of a landing force by helicopters, tilt rotor aircraft, landing craft, and amphibious vehicles. Fort Lauderdale (LPD 28) is 91 percent complete and planned for delivery in January 2022, while Richard M. McCool Jr. (LPD 29) is 53 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, integrating more high-level capabilities. The Navy awarded the first Flight II ship, *Harrisburg* (LPD 30), in March of 2019. It is eight percent complete with a planned delivery in the second quarter of fiscal year 2025. In addition, the Navy awarded the *Pittsburgh* (LPD 31) Detail Design and Construction contract in April 2020 with delivery planned in the second quarter of fiscal year 2027.

Light Amphibious Warship

In support of maritime competition and potential conflict, the Navy is conducting an Analysis of Alternatives and will commence with Concept Studies and Preliminary Design to evaluate a new medium intra-theater amphibious platform. Studies will primarily focus on commercial designs tailored for military application to enable maneuver and mobility for our integrated naval forces conducting DMO. The Department is driving towards a lead ship contract award as early as fiscal year 2023 that will support the Marine Corps' future Marine Littoral Regiments in the Indo-Pacific region. The Light Amphibious Warship is complementary to traditional large amphibious ships; both types of ships are required to deliver Marine Corps forces to expeditionary locations.

Connectors

The Ship to Shore Connector (SSC) program provides the capability to rapidly project assault forces within the littoral operational environment to ensure the Joint Force Commander's ability to conduct amphibious operations maneuvering over-the-beach, over ice, mud, rivers, swamps and marshes. The Landing Craft, Air Cushion (LCAC) 100-class craft are the functional replacement for the legacy LCAC craft, which began reaching end of their service life extensions in 2015. The Department remains committed to maintaining this critical non-displacement craft capability with the procurement of the new LCAC 100-class and the LCAC extended service life extension program (E-SLEP) initiative for the current LCAC-class. Technical issues have been resolved and production has stabilized, with craft deliveries proceeding in support of the program plan. 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.

Auxiliary Ships, Expeditionary, and Other Vessels

Expeditionary support vessels are highly flexible platforms used across a broad range of military operations supporting multiple operational phases. The Expeditionary Sea Base (ESB) is part of the critical access infrastructure that supports the deployment of forces and supplies to provide prepositioned equipment and sustainment with flexible distribution. The Navy commissioned USS *Miguel Keith* (ESB 5) on May 8, 2021. The ESB 6 and ESB 7 have planned deliveries 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, providing combatant commanders high-speed sealift mobility with inherent cargo handling capability and agility to achieve positional advantage over operational distances. USNS *Newport* (T-EPF 12) was delivered in September 2020. *Apalachicola* (T-EPF 13) and *Cody* (T-EPF 14) are under construction with deliveries planned in fiscal year 2022 and fiscal year 2023, respectively. T-EPF 13 will include installation of evolutionary autonomy functions; serving as important point of learning as Navy advances its unmanned vessel efforts. T-EPF 14 and T-EPF 15 will incorporate fact-of-life and operational improvements that will enable an

embarkable Role 2 Enhanced medical capability that allows naval forces to effectively deploy, survive, operate, maneuver, and regenerate in support of DMO.

The Combat Logistics Force (CLF) consists of T-AOE fast combat support ships, T-AKE dry cargo and ammunition ships, and T-AO fleet replenishment oilers. CLF ships fulfill the vital role of providing underway replenishment of fuel, food, repair parts, ammunition and equipment to forward-deployed ships and embarked aircraft, to enable them to operate for extended periods at sea. The *Kaiser*-class (T-AO 187) fleet replenishment oilers will be replaced with the *John Lewis*-class fleet replenishment oilers, designated T-AO 205 class. T-AO 205 is 91 percent complete and planned for delivery in March 2022. The two follow-on ships of the class, are 73 and 18 percent complete, respectively. Construction on the fourth ship, future USNS *Robert F. Kennedy* (T-AO 208), began in May 2021. The fiscal year 2022 budget requests funding for one T-AO.

Navajo, the first of a new class of combined towing, salvage, and rescue (T-ATS) ship is scheduled to deliver in August 2022. 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 expects to award two ships in fiscal year 2021, and requests funding for two additional ships in fiscal year 2022. The fiscal year 2022 budget also requests funding for a T-AGOS(X) to begin recapitalizing the Navy's Auxiliary General Ocean Surveillance ships.

The Navy's shipbuilding plan provides sustained demand for commercial shipbuilding with the aforementioned Fleet Replenishment Oiler Recapitalization (T-AO 205 Class) and Towing, Salvage, and Rescue Ships (T-ATS 6 Class), as well as Cable Ships (T-ARC(X)), Submarine Tenders (AS(X)) and Next Generation Logistics Ship (NGLS).

Strategic Sealift

The Navy continues execution of its sealift recapitalization plan, and has worked closely with USTRANSCOM to develop an effective acquisition plan to recapitalize the Department's aging strategic sealift capability at a level of moderate risk. This three-phased approach includes acquiring used commercial vessels for the surge sealift force, constructing new ships for the Maritime Prepositioning Force (MPF) to replace capacity that will begin to reach end of service life in 2029, and extending the service life of viable platforms. The fiscal year 2022 budget continues the readiness and recapitalization commitments by providing additional used vessel procurements to replace surge sealift capability, increased material readiness of existing ships, retirement of the least ready vessels, and service life extensions. The Navy projects the newly procured used sealift vessels will require conversion and upgrade work to fully meet military requirements. This work will be performed in U.S. shipyards. We appreciate this Committee's support for the authority to procure additional used ships to recapitalize the surge sealift fleet and request that Congress remove remaining obstacles to used ship procurement. Additionally, Navy and U.S. Marine Corps are teaming to produce MPF Next Generation requirements and transition plans. Sealift new construction is most appropriate for the replacement of fully operational status ships in the MPF which support Marine Corps.

Sustainment, Modernization and Service Life Extensions

Sustaining the Navy's force structure through the maintenance and modernization of its naval vessels is key to ensuring they can meet operational demands over their design service lives and provide required capability to Fleet Commanders. The Navy has implemented targeted initiatives aimed to reduce maintenance backlogs and improve outcomes of maintenance availabilities covering the spectrum of work planning, contracting, and execution. In our public yards, the Navy is growing the capacity of the shipyards to meet the workload demand, improving the training and productivity of the workforce, and making the needed investments in our shipyards to ensure they are optimally sized, configured and modernized to best execute their mission requirements. In the private shipyards, the Navy has focused on improving the completeness, accuracy, and timeliness of planning; working to ensure material availability; adjusting Fleet maintenance schedules to level load the ports; revising acquisition strategies to continue to promote competition, learning, stability and predictability; and streamlining Navy inspection points to improve efficiencies.

The fiscal realities facing the Navy make it imperative to maintain our in-service ships to achieve their expected service lives and maintain their relevant combat systems through modernization efforts. The fiscal year 2022 budget requests funding for the modernization of three destroyers to sustain combat effectiveness, ensure mission relevancy, and achieve the full expected service lives of the AEGIS Fleet. Stand-alone and incremental modernization efforts and execution will continue to be assessed and aligned to defeat our adversaries throughout the life-cycle of the DDG

51 class. The Navy has evaluated the most effective balance between costs and capability by extending the service life of the most capable ships in the cruiser fleet while removing the cruisers that have the least effective ballistic missile defense capability to provide the Air and Missile Defense Commander coverage. Planning is in progress for the inactivation of the first *Nimitz*-class aircraft carrier. Upholding prior commitments by the Navy to utilize the *Nimitz*-class to the maximum benefit of the Nation, technical analysis of USS *Nimitz* (CVN 68), in conjunction with the latest maintenance and operational schedules, supports a limited service life extension of approximately one year past fifty years.

Shipyards Infrastructure Optimization Program (SIOP)

The Navy's four public shipyards are essential elements of our national defense. Government owned and operated, the public shipyards provide depot-level maintenance to ensure that the Navy's nuclear powered aircraft carriers and submarines are available to meet the Nation's defense priorities. The Navy is in year three of the SIOP effort to transform the shipyards, positioning them to execute complex maintenance availabilities required to support a growing Navy. The plan focuses on three major areas for each of the Navy's public shipyards: dry dock recapitalization to support both current and future classes of ships; facility layout to optimize workflow within the shipyards; and capital equipment modernization to increase productivity and safety. The Navy is currently conducting a detailed analysis to support updated cost estimates.

Phase II of the SIOP—focused on executing enhanced industrial engineering analysis and the modeling and simulation of industrial processes—is well underway. The Navy is building shipyard Digital Twins and Area Development Plans (ADPs) that will guide infrastructure modifications within the shipyard to enhance productivity. ADPs for the four public shipyards are scheduled to complete by fiscal year 2025, with the program moving into the execution of the SIOP upon completion.

Concurrent with the ADP effort, SIOP is moving forward with dry dock recapitalization projects, facility restoration, and capital equipment investments required to meeting the demands of the Navy's Fleet Commanders. In addition, the Navy continues integrating SIOP efforts with ongoing shipyard focused initiatives including Industrial Process Innovation, Shipyard Performance to Plan and Naval Sustainment System Shipyards to meet projected maintenance demands. These efforts represent a substantial capital investment to deliver efficient and modernized shipyards to support the Navy fleet.

Unmanned Surface and Undersea Vehicles

The DON is using a Family of Systems strategy to develop and employ unmanned surface and undersea capabilities that augment the manned force, and increase the cost imposed on our competitors. The Department is developing modular and capable force-multiplying unmanned surface systems that significantly increase the standoff, reach, and protection of our manned platforms. These unmanned surface systems will be teamed with manned platforms to achieve surface dominance as outlined in the initial unmanned surface vehicle (USV) Concept of Operations (CONOPS) document completed by the Surface Development Squadron in January 2021.

As directed in the fiscal year 2021 National Defense Authorization Act, the Navy is conducting a Distributed Offensive Surface Fires AOA to compare the currently planned large unmanned surface vessel (LUSV) with an integrated missile launcher payload against a broad range of alternative surface platforms and capabilities to determine the most appropriate vessel to deliver additional missile capability and capacity to the surface force. We expect to complete this analysis and report our findings to Congress before the end of this calendar year.

The Navy's LUSV builds upon work funded by DOD's Strategic Capabilities Office (SCO) and experimentation executed by the Navy USVs in Project Overlord. LUSV will be a high-endurance vessel based on commercial specifications, capable of weeks-long deployments and trans-oceanic transits. With a large payload capacity, the LUSV will be designed to conduct a variety of warfare operations initially in conjunction with manned surface combatants while under the positive control of a man-in-the-loop for employment of weapons systems. The Navy is taking an iterative, systems engineering approach to obtaining this technology and has designed an integration and experimentation plan that will validate high reliability mechanical and electrical systems, autonomous navigation and maneuvering, integration of combat system, and platform command and control capabilities prior to employment opportunities.

LUSV Design Studies contracts were awarded in September 2020 to six Industry teams to provide robust collaboration with government and industry to assist in

maturation of platform specifications, and ensure achievable technical requirements are in place for a follow on development contract. Both Industry and the Navy are using these collaborative interactions to significantly advance the knowledge base that will feed into the LUSV program.

Medium unmanned surface vehicle (MUSV) is an unmanned sensor-ship, built to carry modular payloads, and standardized for easy integration with current Navy systems. Inexpensive compared to manned combatants, MUSVs can be built in numbers, quickly adding capacity to the Fleet. MUSV delivers a distributed sensor network that can navigate and operate with man in/on the loop oversight, and will be capable of weeks-long deployments and trans-oceanic transits. The Navy awarded a design and fabrication contract to develop the first MUSV prototype which is targeted for delivery in fiscal year 2023.

The Navy has benefited through its prototyping and experimenting with Sea Hunter and Overlord unmanned surface vessel prototypes accumulating over 3,100 hours of autonomous operations to include teaming with other manned ships. The Navy will continue experimentation and reliability demonstration efforts in fiscal year 2021 and fiscal year 2022 on the two SCO-funded Overlord vessels as ownership shifts to the Navy. The Navy is also building two additional Overlord prototypes that will deliver in fiscal year 2022 to support continued experimentation, and future mission CONOPS. The Navy is evaluating other DMO applications to include logistics supply and refueling, Marine Corps expeditionary options, and enhancements to other surface platform missions. As part of this evaluation, the Navy is collaborating with Military Sealift Command and the Marine Corps to modify a T-EPF with autonomy to gain more autonomy knowledge and reliability on a class of ship equipped with V-22 landing capability, a large logistic and personnel size, weight and power capability, and the ability to operate at high speeds.

The Mine Countermeasures (MCM) USV program is development and production of MCM USV craft and Payload Delivery Systems to meet MCM Mission Package requirements. It leverages the mature craft and sweep payload developed for the Unmanned Influence Sweep System program that achieved Milestone C and Low Rate Production in fiscal year 2020. Mine hunting payload integration (with the AN/AQS-20 towed sonar) is in progress and mine neutralizing payload integration is beginning development with the Barracuda program. Additionally, the Navy awarded a Multi Award Contract Indefinite Delivery/Indefinite Quantity in fiscal year 2020 to provide the key enabling technologies for the unmanned surface Family of Systems.

In the undersea domain, the Navy has begun fabrication of Orca Extra Large Unmanned Undersea Vehicle (XLUUV). A competitive RFP was issued in fiscal year 2020 for initial production of Snakehead, the Large Displacement UUV, and for production of a Medium UUV that supports both the submarine launched Razorback environmental sensing mission, as well as the Maritime Expeditionary MCM UUVs mission. In support of these new capabilities, the Navy is also investing in enabling technologies, such as autonomy, command and control, energy, and payloads, as well as establishing the interoperable standards and open architectures for ease of technology transition. These technologies and standards are the foundation necessary to ensure integration and transition to the fleet using a disciplined approach.

The Navy recently made a significant advance in UUV autonomy by integrating artificial intelligence, machine learning (AI/ML) automated target recognition for naval mines aboard the current expeditionary UUV program of record, the MK 18 Family of Systems. The deep learning algorithm now fielded for the MK 18 detects mine-like objects in the water for sailors operating the UUVs. By the end of the year, software aboard the UUV will also adapt the UUV's mission pattern to identify objects of interest, making the MK 18 the Navy's first intelligent UUV. The Navy is assessing the utility of AI/ML for mine identification as we develop the enabling technologies critical to affordable and scalable unmanned systems.

The Navy has undertaken an aggressive approach through competitive prototyping in collaboration with industry to accelerate these new technologies utilizing the new authorities granted by Congress over the past few years, such as middle-tier acquisitions and acquisition agility legislation. This affords the Navy the ability to prudently prototype, experiment, and demonstrate new capabilities prior to commencing with Programs of Record. Unmanned vessels are key elements in the future naval force and the Navy fully intends to leverage the progress to inform new concepts of operation, new means of integrating unmanned and manned vessels, and new capabilities afforded by these advances.

Combat Systems

The Department continues to field the most capable and lethal surface and submarine combat systems in the world. AEGIS Combat System Baseline 9 delivers un-

precedented offensive and defensive capabilities, including offensive strike and ASW, and simultaneous air and ballistic missile defense on destroyers and Air Defense Commander capability on cruisers. AEGIS Baseline 10 will incorporate the AN/SPY 6(V)1 AMDR for DDG 51 FLT III ships providing significant performance improvements over the AN/SPY 1D(V) radar and expanding the sensor coverage and enhancing the Navy's ability to perform the Integrated Air and Missile Defense mission.

The DON uses open architecture that takes full advantage of evolving technology to rapidly deliver real-time, reliable, and actionable information to the warfighter and works towards breaking the paradigm of hardware-software dependent deliveries. Using virtualization technology, the AEGIS virtual twin system—a prototype of the AEGIS Virtual Combat Management System—is able to support the delivery of iterative updates to the AEGIS Weapon System. Navy is investing in accelerating upgrades to Integrated Combat Systems in order to ensure continuous combat superiority at sea. In addition, the Navy just stood up its first weapons system software factory (The Forge) which, in cooperation with industry, will enable rapid innovation and delivery of combat system improvements to the fleet.

The Department continues to aggressively pursue affordable systems that are employable from multiple platforms. By leveraging the investment in AMDR, the Navy plans to replace the AN/SPY-1 D(V) radar on select existing DDG 51 Flight IIA ships with scaled variants of the AN/SPY-6(V). Additionally, AN/SPY-6(V) EASR variants will become the primary Air Search Radar for aircraft carriers, amphibious ships, and the guided missile frigate. The use of a common core technology and support strategy enables significant life cycle efficiencies in maintenance support, training, and overall cost for the Navy's primary surface ship radars.

Traditional AEGIS development has been aligned to a major new construction or modernization effort. To meet new challenges to our maritime superiority the Navy is transforming the AEGIS development model. Baselines 9 and 10 enable regular updates, without significant modernization efforts and costs, maximizing return on investment. Future growth capacity advantages of the modern computing infrastructure in Baselines 9 and 10 will allow the Navy to continuously field capability across the AEGIS fleet via stable and continuous Capability Packages. The Capability Package model will allow Navy to bring stability to AEGIS development and outpace the threat; delivering capability at regular intervals with predictable cost, and providing the framework for the Integrated Combat System.

The Navy continued to equip its submarines with the ever-evolving undersea combat system utilizing bi-annual hardware Technology Insertions on even years and software Advanced Processing Builds on odd years. This process leverages commercial off-the-shelf (COTS) technologies via the Acoustic Rapid COTS Insertion program mitigating COTS obsolescence while providing more capability improvement at lower costs.

TACTICAL AVIATION

Carrier Air Wing (CVW)

The current CVW is transitioning to an optimal mix of 4th and 5th Generation strike fighter aircraft necessary to compete with potential adversaries in the 2020's. 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 active F-35C production line and the F/A-18E/F SLM effort are the critical levers for the Navy to manage strike-fighter inventory into the 2030s, ensuring the service maintains the capacity required to meet Global Force Management (GFM) demand while investing in the new technologies required to win in the great-power competition.

The Navy remains committed to the accelerated development of the Next Generation Air Dominance (NGAD) Family of Systems (FOS) and other key aviation wholeness investments. This decision ensures the CVW will maintain capable strike fighter capacity to pace the most stressing threat through the 2030s. NGAD FOS supports increased lethality and the CNO Navigation Plan by providing advanced carrier-based power projection within the CVW and maintaining CVN relevance in contested threat environments. In fiscal year 2021, Navy's Next Generation Fighter program (F/A-XX) begins the Concept Refinement Phase. During this phase, iterative collaboration will occur between Government and industry teams leading to the development of vendor concepts that balance advanced air dominance capabilities and long-term affordability.

With a primary focus of increasing the lethality of the CVW and associated weapons capabilities, the Navy is investing in enhancements for both F/A-18 and F-35. These enhancements include increasing F-35C internal weapons bay capacity by 40 percent and the integration of AARGM-ER. Additionally, Infrared Search & Track (IRST) improvement for F/A-18E/F will bring critical out-of-band detection and weapon-quality-track capability. Delivering 4th and 5th Generation transformational capabilities to front-line forces as soon as possible remains a top priority.

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 eventually replace the legacy ALQ-99 pods on the EA-18G and provide full spectrum integrated non-kinetic effects. The delivery of Next Generation Jammer (NGJ) increases EA-18G Growlers 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.

Next Generation Jammer-Mid-Band (NGJ-MB) Engineering & Manufacturing Development (EMD) phase is focused on the development and delivery of test pods for ground and flight test activities, as well as the continued build of 6 System Demonstration Test Articles (SDTA). Next Generation Jammer Low Band (NGJ-LB) had a successful Milestone B event and awarded an EMD contract in December 2020, which includes eight operational prototypes.

AIRBORNE COMMAND AND CONTROL AIRCRAFT

The E-2D Advanced Hawkeye (AHE) is the Navy's carrier-based Airborne Command and Control aircraft, equipped with advanced sensors and networking equipment enabling airborne multi-domain command & control, sensor awareness, combat identification, 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.

This year the program will take delivery of 5 aircraft. In the 4th year of a 5 year, 27 aircraft MYP contract, the fiscal year 2022 budget requests \$884.9 million in APN for 5 aircraft and Advance Procurement for fiscal year 2023 aircraft. The fiscal year 2022 budget also requests \$386.9 million in RDT&E to continue development, integration, and test efforts to outpace the evolving threat. Modernization priorities include Hawkeye Cockpit Technical Refresh, Theater Combat ID and National Technical Means integration, Naval Integrated Fire Control development and test, ALQ-217 Electronic Support Measures updates, Cyber Protection, Secret Internet Protocol Router chat, Counter Electronic Attack, Multifunctional Information Distribution System/Joint Tactical Radio with Tactical Targeting Network Technology, Sensor Netting, Cooperative Engagement Capability (CEC) Signal Data Processor (SDP) and Data Fusion.

ASSAULT SUPPORT AND LOGISTICS SUPPORT AIRCRAFT

Tilt-Rotor 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 Marine Corps has a requirement to procure 20 additional aircraft through the MYP (fiscal year 2018 to 2022). The MV-22 Common Configuration-Readiness and Modernization (CC-RAM) is executing, and while still early in the program, yielding improved readiness rates. The fiscal year 2022 budget requests \$90.0 million in RDT&E for continued MV-22B development and product improvements, including a revolutionary capability (Helmet Mounted Display/Degraded Visual Environment (HMD/DVE)) to improve pilot situation awareness and safety in degraded visual environments; \$458.7 million in APN for 5 MV-22s and long-lead materials; and \$300.1 million for modifications, of which \$150.6 million is for CC-RAM.

The Navy is continuing development of Carrier On-board Delivery mission aircraft, leveraging MV-22 investment to recapitalize the legacy C-2 fleet with CMV-22B tilt-rotor aircraft. CMV-22B's first flight occurred in December 2019 and the aircraft transitioned into developmental test in January 2020. The program is currently in operational test leading to IOC and its first deployment in the fourth quar-

ter of fiscal year 2021. The fiscal year 2022 budget requests \$18.0 million in RDT&E for continued development, testing, and product improvements; \$293.0 million in APN for three CMV-22Bs and long-lead materials; and \$12.7 million for readiness and interoperability improvements.

Fiscal year 2022 will be the last year of V-22 procurement and Bell Boeing intends to initiate V-22 production line shutdown activities if no additional V-22 orders are received. This will bring the Marine Corps' MV-22 procurement to 355 aircraft and Navy's CMV-22 procurement to 44 aircraft.

CH-53K

As the only fully marinized heavy lift helicopter in the DOD, the CH-53K supports both current and future warfighting concepts by providing agile maritime logistical connectors with greater payloads and speed than any current or emerging rotorcraft. The CH-53K contributes to a more lethal joint force by enabling forces to rapidly transition from contact to blunt layer activities—and back again. In the past year, the CH-53K program has demonstrated significant progress in executing development and flight test activities, continued training of aircrew and maintainers at the Marine Corps' operational test and evaluation squadron, VMX-1, and continued Low Rate Initial Production. To date, the CH-53K has flown nearly 2,300 developmental flight test hours and is nearing completion of all test activities in support of operational testing. Notably, the fire suppression system uses a more ecologically friendly HFC-125 suppressant, a technical milestone only a few other Department of the Navy platforms have achieved. The program is well positioned to begin Initial Operational Test and Evaluation (IOT&E) this summer. During fiscal year 2022, the program will complete IOT&E and Live Fire Testing, continue to expand the CH-53K's envelope through ground and flight testing and analysis, and procure the sixth Low Rate Initial Production Lot.

The fiscal year 2022 President's Budget requests \$256.9 million in RDT&E to continue the CH-53K development and test, and \$1.5 billion in APN for procurement of nine low rate initial production aircraft, including advanced procurement and initial spares.

EXECUTIVE SUPPORT AIRCRAFT

The fiscal year 2022 President's Budget requests \$45.9 million in RDT&E and \$40.3 million of APN for the H-92A Presidential Helicopter Replacement Aircraft. RDT&E funding is required for Follow-On Test and Evaluation activities and improvements. These efforts include Mission Communications System upgrades (both software and hardware), enhancements to required Wide Band Line Of Sight capabilities, cockpit upgrades, shipboard interoperability, maintaining test aircraft and facilities; as well as, initiates test and evaluation efforts for distributed network communications, and vehicle performance enhancements. APN in the amount of \$40.3 million is required for retrofit modifications for the incorporation of the of the Federal Aviation Administration mandated Automatic Dependent Surveillance Broadcast Out system capability, upgrades to the Mission Communication System servers, and shipboard interoperability.

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 is in high demand as it provides tactical air-to-air refueling and organic lift capabilities to deployed Marine Expeditionary Units and future Marine Littoral Regiments. The fiscal year 2022 budget requests \$588.9 million in APN to procure six KC-130Js through an Air Force contract. This request supports a fourth Marine Corps active-duty squadron that will be postured in the Indo-Pacific region.

Take Charge and Move Out (TACAMO)

The Navy's TACAMO nuclear command, control and communications (NC3) mission, flown today on the E-6B Mercury (Boeing 707) aircraft, provides communications to the nuclear triad through all phases of a nuclear conflict. In fiscal year 2022, the Navy will accelerate recapitalization of this vital NC3 mission from the aging fleet of 16 E-6Bs onto the C-130J-30 (stretched Super Hercules) aircraft. Funding in fiscal year 2022 includes \$60.1 million of RDT&E for non-recurring engineering and long-lead procurement for three C-130J-30 test aircraft and \$58.7 million of RDT&E for mission systems design and development. Recapitalization of the TACAMO mission on the C-130J leverages a proven platform for integration of ma-

ture TACAMO capabilities, supporting U.S. nuclear deterrence and *Columbia's* assured second strike for decades to come.

MARITIME PATROL AIRCRAFT

The P-8A Poseidon combines the proven reliability of commercial 737 airframes with modern avionics, military communications, and advanced sensors and weapons to provide a range of advanced warfighting capabilities. P-8A capabilities include full-spectrum, wide area, cue-to-kill Anti-Submarine Warfare; Anti-Surface Warfare; and networked Intelligence, Surveillance, and Reconnaissance (ISR). The P-8A program will complete the replacement of the legacy P-3C Orions, and P-8A squadrons now deploy continuously to all areas of the globe to maintain United States maritime dominance, freedom of maneuver, and access to sea-lanes supporting global commerce.

The warfighting requirement is 138 aircraft, including U.S. Naval Reserve squadrons and quick reaction capable aircraft, with 128 aircraft funded. Boeing intends to initiate P-8A production line shutdown activities in fiscal year 2022 if no additional P-8A orders are received. As of April 30, 2021, 106 U.S. aircraft have been delivered.

Since inception, the P-8A has consisted of three Increments. Increments 1 and 2 have fielded and Increment 3 is scheduled to IOC in fiscal year 2025. Increment 3, which consists of ECP 6 and ECP 7, increases ASW capabilities including ASW Signal Intelligence (SIGINT), Wideband SATCOM, Higher-Than-Secret (HTS) processing, enhanced track management and sensor fusion (Minotaur), and Enhanced Multi-Static Active Coherent (MAC-E). P-8A test aircraft began the ECP 6 modification in April 2021 to support developmental and operational testing beginning in fiscal year 2022. ECP 7 encompasses advanced algorithms to the acoustic processors, software improvements, and MAC-E sonobuoy improvements. The fiscal year 2022 request includes \$201.1 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 \$175.9 million in APN for fleet modification kits, deficiency corrections, safety upgrades, and production line shutdown activities. P-8A incremental upgrades ensure the Navy paces the undersea threat and supports distributed net-centric maritime operations.

UNMANNED AIRCRAFT SYSTEMS (UAS)

Consistent with DMO, Naval Aviation fully supports the continued integration of unmanned systems into the Fleet to enable a fundamental shift in the way the DON conducts naval aviation operations. Advantages for continuing and broadening unmanned aviation efforts include decreased risk to personnel, greater persistence, longer ranges, improved data speed and accuracy, and a faster decision cycle. These capabilities offer the DON increased asymmetric operational opportunities and tactical advantages that provide the warfighters an edge to dominate and win in ongoing and future conflicts.

Naval Aviation has successfully deployed a variety of unmanned aircraft systems (UAS) to the Combatant Commanders. For example, MQ-4C and MQ-8B/C UASs are deployed and in operation with the Navy, and the Marine Corps is increasing operational requirements with the MQ-9A Reaper as the Marine Corps shifts focus to the INDOPACOM region. The DON continues to mature the concept of employment of these systems as we fly, integrate and increase quantities into the Navy/Marine Corps Fleet. Of note, reliability, maintainability and availability of UASs are comparable to manned platforms, and we continue to collaborate with our industry partners to increase readiness and lower overall sustainment costs.

Naval Aviation is continuing the development of new unmanned aviation capabilities.

The MQ-25 UAS will provide a critical organic aerial refueling capability to the Carrier Air Wing (CVW) and extend the CVW mission effectiveness range, increase the number of F/A-18E/Fs available for the strike fighter mission by relieving F/A-18E/Fs from the refueling mission, and mitigate future strike fighter and organic CVW ISR shortfalls.

The Marine Corps will sundown the RQ-21 Blackjack (Group 3 UAS), and future operating concepts will focus on Group 2 and Group 5 operations. The Marine Corps has identified the MQ-9A UAS (Group 5) as the materiel solution for the Marine Air-Ground Task Force Unmanned Expeditionary – Medium Altitude Long Endurance (MUX MALE) capability. The Marine Corps seeks to procure six MQ-9A Extended Range systems in fiscal year 2022, and a total of 18 systems over the next several years, to form three UAS squadrons. The Marine Corps will leverage prior existing Air Force and Marine Corps efforts to reduce risk, while providing ad-

vanced capabilities to the Marine Corps and overall joint warfighting enterprise. These squadrons will provide persistent airborne data relay in support of overall maritime domain awareness and command and control capabilities. The MQ-9A Extended Range is a critical enabler to the Naval force in building an alternate Precision, Navigation, and Timing network.

The Naval Special Warfare (NSW) command will continue to operate the RQ-21 Blackjack as their organic UAS with SOF peculiar payloads to avoid a capability gap until the next generation small tactical UAS (STUAS) is fielded in fiscal year 2026. The NSW is coordinating with the Marine Corps to leverage the supply chain from the sundown of the Marine's RQ-21 program.

Manned/unmanned teaming development efforts currently underway include the development of CONOPS/Concepts of Employment for integrated operations of and development of a common control architectures and common standard interfaces and protocols. MQ-25 is currently leading many of our current manned/unmanned teaming efforts via the development and maturation of complex sea-based C4I UAS technologies and software algorithms that pave the way for future multi-mission UASs to keep pace with emerging threats. Towards that end, we also envision MQ-4C teaming with P-8A and MQ-8C teaming with MH-60S rotary-wing platforms.

DON unmanned programs are proceeding on a steady course and speed. The DON has successfully developed/employed a number of new unmanned technologies and systems, observed the operational benefits of UASs in not only combat but also drug interdiction, logistics, and day-to-day operations. We see a future where further investment and maturation in unmanned air system is not only practical – but essential to addressing the Nation's current and future threats and needs.

WEAPONS PROGRAMS

Missile Programs

As the Navy carefully manages the approach to end of life of *Ohio*-class SSBNs, addressing the viability of the SWS throughout the life of the *Columbia*-class SSBNs remains a priority. The currently deployed TRIDENT II Life Extended (D5LE) missiles will support initial load-outs on *Columbia*, but production of additional D5LE missiles is not practical due to technological obsolescence and lack of an industrial base. The missiles cannot be extended due to the expiration of critical safety components. A modernization of the D5LE SWS, TRIDENT II D5 Life Extension 2 (D5LE2), is required to support later *Columbia*-class missile inventory and seamlessly sustain USSTRATCOM requirements. D5LE2 will ensure the SWS will be flexible and adaptable in order to maintain demonstrated performance and survivability despite facing a dynamic threat environment until *Columbia* end of life. The fiscal year 2022 budget includes D5LE2 development efforts to modernize the Submarine Launched Ballistic Missile design and industrial base whose production lines were shut down over the last decade.

SM-6 missiles provide theater and high value target area defense for the Fleet, and with Integrated Fire Control, has more than doubled its range in the counter-air mission. The Navy awarded a 5-year MYP contract for up to 625 SM-6 missiles in December 2019. The fiscal year 2022 President's budget continues funding for the upgraded SM-2 Block IIIC as a rapid prototyping project exercising middle tier acquisition authorities and prepares the program for a rapid fielding decision. 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 completes design and continues integration and test efforts to field a cost-effective extended range capability in response to Joint, Fleet and Navy Urgent Operational Needs by integrating a new government developed rocket motor onto an existing SM-6 Block 1A seeker.

ESSM provides another layer to the Navy's defensive battle-space. ESSM Block 2 is in Low Rate Production on track and plans to achieve IOC in early fiscal year 2022. The inner layer of the Fleet's layered defense is the Rolling Airframe Missile designed to pace the evolving anti-ship cruise missile threat and improve performance against complex engagement scenarios.

Strike Weapons

The Department continues to support a wider, more systematic approach towards delivering offensive weapons balance. By preserving the readiness and capacity of our key strike weapons inventories, pursuing strike weapon capability enhancements, and developing next-generation strike missile capabilities, the DON will increase overall force effectiveness to address emerging threats.

Tomahawk

In the fiscal year 2022 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 and recertification of current inventory. For Maritime Strike Tomahawk (MST), the fiscal year 2022 budget request provides continuation of initial shipboard and shore-side mission planning and funds software builds to support first test of all MST system segments at NSWC in the first quarter of fiscal year 2022. fiscal year 2022 MST Test and Evaluation (T&E) plans 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 the fiscal year 2024.

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

OASuW Increment 1/LRASM provides Combatant Commander the ability to conduct ASuW operations against near/mid-term high-value surface combatants protected by Integrated Air Defense Systems with long-range Surface-to-Air-Missiles and to deny adversaries sanctuary of maneuver. The program achieved Early Operational Capability on the Air Force B-1B in early fiscal year 2019 and on the Navy's F/A-18E/F aircraft in early fiscal year 2020. The fiscal year 2022 President's Budget Continuation of and completion of USN LRASM 1.1 development, which will deliver incremental upgrades to keep pace with emerging threat capability and increase in LRASM quantities through the FYDP.

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

AARGM procurement completed in fiscal year 2021 with deliveries continuing through fiscal year 2024 in support of the transition to AARGM-ER. AARGM-ER provides the Department of the Navy with a 5th Generation compatible extended range asset to project power and provide Suppression of Enemy Air Defenses, both at-sea and on land. There have been 1218 AARGMs (All Up Rounds, Training Missiles, and Spares) delivered to the Fleet (as of 26 May 2021). Program of record delivery is 1803 missiles. The fiscal year 2022 President's Budget supports an AARGM-ER ramp in production through FYDP and supports transition into system-level developmental testing and operational testing of production representative hardware.

Hypersonic Program

The Navy 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 missile design and test opportunities to field a non-nuclear hypersonic weapon system. The Navy plans to make USS *Zumwalt* the first Navy platform to field hypersonic capability, currently planned for the mid-2020s. In March 2020 the Services executed a highly successful flight test of the Common Hypersonic Glide Body (C-HGB), and in late May successfully conducted a test of the First Stage Solid Rocket Motor (SRM). All Up Round testing is scheduled for fiscal year 2022. This rapid development and demonstration of hypersonic strike weapons systems supports the U.S. ability to deter, and if necessary, defeat potential adversaries.

Directed Energy

In fiscal year 2020, the Navy provided Congress its path forward for shipboard integration of High Energy Laser systems and the risk reduction plan to continue to improve technology while growing the industrial base for these systems. 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. In the fiscal year 2022 budget request, the Department will further advance capabilities of laser weapons to meet ship defense missions and will install and field the first fully combat system integrated laser weapons system, HELIOS, onboard a DDG 51 Flight IIA destroyer. The Department is also collaborating and partnering with the DOD and other Services to continue to mature these advanced laser technologies to defeat more challenging threats to support and shape the future acquisition of these systems.

Counter Unmanned Aircraft Systems (C-UAS)

The Navy continues implementation of integrated C-UAS solutions designed to protect high value and critical naval assets afloat and ashore as well as provide

basic defensive measures at priority shore installations against the threats posed by unmanned aircraft systems. Our efforts focus on maintaining commonality of current C-UAS solutions while rapidly evaluating, improving and implementing an integrated family of systems to defeat evolving threats afloat and ashore. We are rapidly pursuing refinement of material solutions, threat-based mission assessments, and development of advanced target discrimination and defeat capabilities while continuing installation, integration, improvement, and sustainment of C-UAS capabilities worldwide. We continue engaging with the Army in their role as Executive Agent (EA) for counter small unmanned aircraft systems (C-sUAS) to develop and execute a deliberate, repeatable process to identify prioritized areas for investment and focuses for development. Additionally, in partnership with the C-sUAS EA, we are refining an open architecture solution and interoperability standards as well as identifying or developing additional detect and deter capabilities to integrate into the C-UAS family of systems.

MARINE CORPS GROUND PROGRAMS

The Marine Corps' ground programs are a vital contribution to the integrated Naval and Joint force that can achieve success in both maritime gray zone competition and traditional conflict. The Marine Corps is developing ground-based, long-range precision fires as an anti-ship capability to contribute to Distributed Maritime Operations. Additionally, the Marine Corps will provide intelligence and communication capabilities on a daily basis, enabled through a system of sensors and communication networks, which will be employed by our Marine Littoral Regiments.

Long-Range Precision Fires

As the Nation's Stand-In force, the Marine Corps is uniquely suited to provide precision fires from land-to-sea in the prosecution of naval campaigns. While this is a significant change from the past two decades of land-based operations, we are implementing this change to maximize the Marine Corps' deterrent and combat capabilities in support of future naval campaigns. Simultaneously, we retain our national crisis response force capability.

Ground-Based Anti-Ship Missile (GBASM)

GBASM is the Marine Corps' top modernization priority and is the key lethality component for the Marine Corps to facilitate sea denial in support of naval and joint operations. The current materiel solution for GBASM is the Navy-Marine Expeditionary Ship Interdiction System (NMESIS) which consists of two Naval Strike Missiles mounted on a remotely operated JLTV-based chassis. The capability creates cost impositions for an adversary by introducing a new and highly credible threat into their decision-making, while providing us with a relatively low cost and highly effective capability.

By combining existing technologies in the missile and the platform, the Marine Corps has reduced programmatic risks through the use of proven capabilities, which enables us to move faster. The Marine Corps successfully tested this system in November 2020, and in our fiscal year 2022 budget request, we are seeking funding for 10 test systems for further developmental and operational testing. With the ability to strike enemy ships at ranges of 100 nautical miles and beyond, we believe it will be a "game changer" for the Marine Corps, the Naval Fleet Commander, and combatant commanders.

Organic Precision Fires (OPF)

OPF is a family of loitering munition systems that will provide multiple echelons of the Fleet Marine Force with beyond-line-of-sight, precise fires capabilities. As a "hunter-killer" capability, OPF will provide continuous surveillance before, during, and after conducting lethal strikes against targets, while reducing potential for collateral damage. Furthermore, these systems will be capable of engaging targets at extended range with sufficient lethality to defeat armored, water-borne, and personnel threats.

Long-Range Unmanned Surface Vessel (LRUSV)

The Marine Corps envisions LRUSV as an uncrewed vessel, approximately 45 feet in length, capable of conducting semi-autonomous maneuver in the open ocean for extended periods of time. The vessel will serve as a platform for the launching of Organic Precision Fires, thus providing reconnaissance and surface-launched strike capabilities. Through extensive wargaming, the LRUSV has demonstrated the potential to generate significant operational impact, benefitting the Navy and Marine Corps' anti-surface warfare campaigns. The Marine Corps is taking a deliberate approach to capability development using prototyping and experimentation to reduce

technical and integration risk, validate designs, and better inform achievable and affordable requirements, with the ultimate goal of delivering capabilities to the Marine Corps and Joint Force in the mid- to late-2020s. The Marine Corps has already contracted for three prototypes, and with our fiscal year 2022 budget request, we will seek to procure two additional prototype vessels to begin experimentation.

Resilient Sensors and Communication Networks

To enable naval and joint force commanders across the competition continuum, the Marine Corps must not only become lighter and more lethal, but also must enhance its ability to enable joint command and control, as well as reconnaissance and counter reconnaissance operations. Thus, the Marine Corps is working on more resilient and interoperable networks and data systems that will support Marines' sensing and communication capabilities, enabling the Navy Tactical Grid and Joint All-Domain Command and Control. This creates advantages for Marines across key maritime locations and provides the required information for uniformed and civilian leaders to make sound judgments.

Ground/Air Task Oriented Radar (G/ATOR)

G/ATOR is a state-of-the-art, ground-based, short-to-medium range, expeditionary radar system designed as a single materiel solution to satisfy air surveillance, air defense, ground counter-fire and counter-battery, with the ability to perform air traffic control mission sets. The radar is transportable by organic Marine Corps means. G/ATOR enables Marines to control designated airspace by way of detecting, tracking, classifying, and accurately determining the origin of enemy projectiles and air threats. Notably, G/ATOR will support forward-postured Marines by providing surveillance and detection of enemy air threats, not easily identified by other radar assets in congested littoral environments. The G/ATOR radar is already in service in the Pacific region, and the Marine Corps will continue to procure and field this highly capable radar system. In addition to G/ATOR, the Marine Corps is developing the Multi-Domain Radar for a Contested Environment (MuDRaCE). This advanced system is complementary to the G/ATOR and will enhance the Marine Corps and Joint Forces' situational awareness.

Marine Electronic warfare Ground Family of Systems (MEGFOS)

MEGFoS is an electronic warfare system that serves to counter improvised explosive devices and unmanned aerial surveillance threats while also providing limited counter-communications capabilities. This family of systems, which includes mounted and dismounted variants, is in development. Through the use of the electro-magnetic spectrum, MEGFoS will have the ability to locate and identify adversary forces while simultaneously providing friendly forces feedback on their signature management operations. MEGFoS will enable the Marine Corps to maneuver, fight, and sustain itself through the exploitation of the electro-magnetic spectrum.

Network On The Move (NOTM)

NOTM is comprised of a robust communication system mounted on a ground combat vehicle or aviation platform. NOTM provides terrestrial line-of-sight and beyond line-of-sight satellite communications for Marines at-the-halt and while on-the-move. NOTM is purpose built to support our naval and joint concepts that require our forces to fight in a distributed manner by allowing dispersed commanders the ability to effectively command and control forces in a contested all-domain environment. The Marine Corps is currently fielding these systems that will allow for seamless command and control for maneuvering units in the future.

Next Generation Satellite Communications

Marine Corps Wideband Satellite Communications Family of Systems (MC-WSATCOM FoS) is a comprehensive, integrated, and sustainable solution designed to address current and future warfighting capability needs using military and commercial SATCOM systems in both contested and permissive electro-magnetic spectrum environments. The MC-WSATCOM FOS will replace legacy very-small-aperture terminal communications systems, enable command and control of forward postured marines, and be fully interoperable with naval and joint wideband SATCOM systems.

Senator HIRONO. Thank you, Mr. Secretary.

In my opening statement, I referred to the fact that you are responsible for acquisition and sustainment, including maintenance matters. I would note that you have challenges before you in this tasking and the Navy has been experiencing delays and cost over-

runs in maintenance availabilities in both the private and public shipyards.

What has been done, under your leadership since last year, to improve the performance of ship maintenance programs and keep individual overhauls from being late?

Mr. STEFANY. So, yes, ma'am. Thanks for that question.

First of all, we have taken a systematic and data-driven approach to looking at how our shipyards are doing, their availabilities and the maintenance of the work we have right now. We learned through the aviation model that we did a year or two ago, that when you look at actual drivers of maintenance delays, if you look at where the data is telling us those delays are, that is not always where we thought they were.

So, by taking, what we call a plan to perform, an actual looking at all of at data of the availabilities we have done in the past at the shipyards, both private and public, and running through the data, we have been able to determine where we have bottlenecks or other choke points that we did not expect. So, we are using that information to both rightsize our availabilities, so on day one, we don't say optimistically say the ship will get done early, right; we get an actual schedule that we can stand behind, and then we are able to attack those bottlenecks that have been holding us up.

As a result, we have reduced the days of delay significantly from 2019 to 2020 and now into 2021, we are seeing ships coming out closer to on time from our availabilities.

Senator HIRONO. Well, you mentioned that you found some surprises when you analyzed what were some of the factors causing the delays such as? What was an unexpected revelation?

Mr. STEFANY. So, I don't know if Admiral Kilby had a couple remarks?

Vice Admiral KILBY. I would just add one thing, ma'am, is, as Secretary Stefany talked about, an unrealistic expectation. So, planning to complete the avail [maintenance availability], have the availability duration plan to be what it is, because if you plan it optimistically and that ship doesn't come out on time, other ships are backlogged waiting to come in.

So, that realistic assessment of planning is the main thing, as well as locking down the package 120 days in advance. Once you can do that, the shipyards can procure the material they needed to conduct that availability and they are not trying to chase that. There is a two-part main efforts on that.

Of course, every avail is different, but ensuring that we load up those maintenance, projected maintenances appropriately, I think is what Secretary Stefany is alluding to.

Mr. STEFANY. We would normally award like, for the private yards, a contract about 30 days in advance and we saw that doesn't give the time for the contractor to get his plan in place, his workforce up to speed. We looked at the data and found where we award contracts at 100 or 120 days in advance of when the work starts, that gives the right amount of time. We thought it was 30 days; it actually turns out to be 120 days to get the workforce in place and all the plans in place to start working on a continuous basis once the ship pulls in.

Senator HIRONO. That is a very significant difference if you are estimating 30 days and it is actually 120 days.

Vice Admiral KILBY. Not duration, ma'am. The start to—

Senator HIRONO. I'm sorry?

Mr. STEFANY. To award the contract, because we are doing competitive contracts on the private side, to award that contract and give them, the shipyard, enough time to get up to speed before we bring the ship in to start working.

So, giving them more time up front to plan—

Senator HIRONO. That certainly makes a lot of sense that you would want to have realistic projections, as opposed to optimistic ones.

Okay. Well, 5 minutes goes by fast, because I have about 20 more questions, but we shall proceed.

Senator Cramer?

Senator CRAMER. Thank you.

Let's start with what I teed up, Admiral Kilby, in my opening statement. It was as recently as 2017 that the then-CNO, Admiral Richardson, mentioned that the Navy was looking at bringing back the capabilities to reload vertical launch systems (VLS) at sea, due to a need to increase capacity of VLS.

A couple things. First of all, to what extent would VLS requirements be met over the next 5 years if the proposed budget request is enacted, including the retirement of seven cruisers, which, obviously, is a factor, and to what extent could the seven cruisers slated for decommissioning in the budget request be maintained, in a reduced capability, as I mentioned in the opening statement, and operating status to enable getting the ships underway to leverage their 122 VLS cells in a time of war.

Vice Admiral KILBY. Senator Cramer, thanks for that question.

It is complex, as you would expect. The VLS cells that we looked at are only going to be meaningful if that ship can get underway and it has a meaningful combat system and a meaningful radar to employ those missiles. So, it was our view, a tough decision, to recommend early decommissioning of those ships because of the challenges that we are having keeping them at sea.

Today, the USS *Vella Gulf* failed to sail for her deployment and she failed to sail for her last deployment. So, she was a month delayed last deployment. She's 2½ months delayed this deployment. She's one of those cruisers that is going to decommission in 2022.

A way to keep them around, I think, in a cost-effective manner, would be to try not to man them, but to keep them in a condition where we could bring them back. In view of our competitors, I don't think that timeline will allow us to bring them back immediately, though you could, and we have in the past, brought back ships that are in this reserve status.

Depending on the time requirement placed on us to bring it back will drive how much it costs to keep them in that status. So, if I need to keep a crew attached to that ship, that is going to drive O&S [operation and sustainment] costs.

Senator CRAMER. Sir, along the same lines, what is the status of developing a system to help surface combatants reload at sea?

Vice Admiral KILBY. That system is underway. It is being developed by the N4 shop, our logistics shop. The challenge is various

sea states, so we are marching up from sea state zero to a higher sea state, but we think now we are still at the lower sea states.

Conducting it at sea, because of the weight and the length of those missiles is going to be challenging, compared to some of our older missiles when we had a strike-down crane attached to those systems. So, we do want to vigorously pursue that. I don't know that it will be underway; it will probably be in some lighterage stage or moored alongside another ship where we could transfer those munitions. But that is definitely something we are interested in, especially in the Pacific.

Senator CRAMER. Section 227 of the current fiscal year's National Defense Authorization Act (NDAA) requires the Secretary of the Navy to complete an analysis of alternatives, an AOA [Analysis of Alternatives], regarding the most appropriate surface vessels, and manned or unmanned, to meet applicable offensive military requirements.

Can you provide an update on how that AOA is going?

Vice Admiral KILBY. Yes, sir. It is underway. I think we are looking at a wide variety of things. On one end, we are trying to validate in this AOA, the Navy's idea that we could have an unmanned magazine augmentor to manned ships, and the idea, we would rotate those ships in conflict, allowing the manned ships to stay on station.

But we are also looking at other ships. That AOA is not complete; it should be complete this fall. I am interested in those results, too, but I think the hybrid force that we are pursuing is a more cost-effective way to produce a greater Navy, especially against a peer competitor. So, I am looking to those results, too. I think it is on pace and I think we will see those results in the fall, sir.

Senator CRAMER. All right. Rather than asking my next question with the time remaining, I will just wait until——

Senator HIRONO. Why don't you go ahead?

Senator CRAMER. We have the time?

Okay. I guess I didn't notice Senator Peters had left.

Mr. Stefany, getting back again to my opening statement regarding the aggressive shipbuilding 30-year plan, what, well, and I specifically mentioned the procurement of three *Virginia*-class and one *Columbia*-class. What is your assessment of the submarine industrial base's current performance and what would it take for them to meet that aggressive plan?

Mr. STEFANY. Yes, sir. I will answer the two parts: the assessment of the industrial base and then what it would take to get there.

Right now, I would say the submarine industrial base is in a place to do two *Virginias*, plus a *Columbia*. Ramping up, we would ramp that up from, in 2018, 2019, then COVID hit, right, so we kind of took a step back in that.

In 2020, we weren't really producing at the two-per-year, plus-one rate, but in the last 6 months, I have seen that coming back and the industrial base is getting back to that cadence where I believe they soon will be in a two plus one, two *Virginias*, plus one *Columbia* capability.

In this budget, we have actually asked for \$50 million for some infrastructure capabilities. We call them APCO fixtures, that we found are a bottleneck and would be helpful to get to that “two *Virginias*, plus one *Columbia*” rate, and so, you will see that in the budget, that we have done that. I think that is the last infrastructure piece to get to the two-plus-one.

Now, in the future, to get to three *Virginias*, plus one, I don’t believe the industrial base right now can handle that, but we did a study, which we will be glad to share with your staff, that we are looking at \$1½ to \$2 billion of further investment by ourselves, plus industry, and an increase in the workforce that would be necessary over a period of time to get to that state. We have some details that we would be happy to share with you, but right now, I think the industrial base is set, both the suppliers and the shipyards to get to that two-plus-one. Three-plus-one is going to be a major investment of effort, capital, and workforce.

Senator CRAMER. So, when can we expect the next 30-year plan and realizing it was to be provided by law?

Mr. STEFANY. Yes, sir. Absolutely. It was absolutely our goal to have it to you, you know, within a few days of the budget. It is in the final, final, final chop cycle within the Department.

Any day now, sir. I, again, I apologize for all of us that we were not able to provide it before this hearing.

Senator CRAMER. Thank you.

Senator HIRONO. Thank you.

Since you were asked about the industrial base capability to build our submarines, are we going to be paying special attention, knowing how important our submarine fleet is to our national defense, especially with regard to near-peer competitors?

Anybody? Mr. Secretary?

Mr. STEFANY. [Inaudible.]

Senator HIRONO. Because there are workforce issues. There are all kinds of issues relating to the capability of building more submarines, isn’t there?

Vice Admiral KILBY. I will let Secretary Stefany cover the industrial components of that, but from a confidence and an imperative, I completely agree with you. Our submarine force is the best in the world.

Senator HIRONO. Uh-huh.

Vice Admiral KILBY. It is unparalleled, and that contains other elements, not just submarines, but our maritime patrol aircraft, our underwater arrays, our SURTASS [Surveillance Towed Array Sensor System] ships, all that ecosystem creates our capability in that domain, so we must preserve it. I think increasing the number of submarines is definitely a part of that and we have to get after that, as Secretary Stefany alluded to.

Senator HIRONO. Yes. So, that means that we need to pay attention to the workforce needs, and all of the other attendant areas to our submarine capability.

On Webex, I would like to call on Senator Wicker. Senator Wicker, where are you?

I think you are muted.

Senator WICKER. No, I am supposed to be on mute.

Can you hear me okay?

Senator HIRONO. Yes, please proceed.

Senator WICKER. Okay. Good. Thank you, Madam Chair.

This budget, Mr. Stefany, is not only disappointing, it is dangerously inadequate and in my judgment, it is going to have to be reversed. I know you have had to take your queues from the budget office, which has different priorities that are more significant, apparently, that are stressing domestic needs as more significant than military needs, but this is a dangerously inadequate cut in national defense.

The Navy's budget, based on this submission by the President, is an increase of 1.8 percent from the fiscal year 2021 enacted budget. Given that an expected 2.2 percent inflation rate, predicted for 2021, this represents a decline in funding in real dollars.

With regard to shipbuilding, which is essential to keeping us competitive in the Pacific with a very aggressive Communist China, the shipbuilding cuts, there is virtually no funding for amphibious ships, a reduction from two DDGs to one. Last year's Congress authorized a multi-ship procurement bundle for three LPDs and one LHA, but today contracts for LPD-32 and 33 have not been awarded.

If this stays in place, and I don't think on a bipartisan basis we can afford to keep it in place, purchasing one destroyer, as opposed to two, will incur a thirty-three-million-dollar penalty the Navy would have to pay for breaking its obligation under the multiyear contract. Not to mention what this would do up and down and across the United States to our industrial base.

Mr. Stefany, can you explain why advanced procurement funding contracts for LPDs 32 and 33 have been delayed.

Mr. STEFANY. Yes, sir, Senator.

So, to update you on that authority that your committee provided last year, the section 124 authority, we have finished negotiating with Huntington Ingalls Industrie's (HII), to document a contract structure that could be put in place to implement the force-ship procurement that you are referring to. We just finished that up about a week ago.

So, we have a handshake agreement on what that would look like if we were to actually enact it into a contract. We packaged that up and we are sending it to the Department leadership for a decision, and to get that in place before the authority expires at the end of this year that you provided us.

I will just let you know that the initial indications that we are hearing from the Department is that they would like to defer this decision so that they can make an overall, as they do their overall 2023 budget review this summer and fall of the overall force structure, I will work with Admiral Kilby and General Smith on the right mix of ships of the future. The commitment of four ships at once, they would like to defer that commitment until they are able to make that force-structure assessment.

So, right now, the indicators are that we are not going to be able to execute that, but it is not a done deal; it is going through the process within the Department for a final decision, sir.

Senator WICKER. You know, our uniformed military is constrained by our Constitution and the great principle that we have in this country that the military is under the authority of the civil-

ian government, and I would imagine that they feel constrained by what the elected leadership of our Executive Branch has given them to work with.

I dare say they, if they told the truth, they would say that this is just a disaster for our national defense.

General Smith, does the Marine Corps still need large amphibious warships like the LPD and the LHAs?

Lieutenant General SMITH. We do, sir, very much.

Senator WICKER. How are they helpful in the Pacific?

You know, we had a hearing of the full committee this morning talking about our competition, with regard to a very aggressive China, under the leadership of the Communist Party of China.

How do the large amphibious warships, like the LPDs and the LHAs, help us avoid conflict in areas like the Pacific?

Lieutenant General SMITH. Sir, both the big-deck amphibies, the LHAs, LHDs which carry F-35 aircraft and helicopters, combined with those LPDs that carry the ground forces and the long-range fires forces, are, in fact, a credible, conventional deterrent. Those forces that are forward-deployed on a daily basis in competition with our peer adversaries are an actual force that is there; meaning, the saying is virtual presence is actual absence. You have to be forward-deployed with allies and partners. You have to be forward with a credible, lethal, combat capability that can deter, because our goal is to deter that conflict.

When those ships are not available, we are not there, and when we are not there, adversaries will step in and fill that void.

Senator WICKER. Admiral Kilby, we have had discussions among the bipartisan members of the Armed Services Committee about the new budget numbers on, basically, 8 ships versus 12 ships. The ship for Austal has been cut. One of two destroyers has been cut. Only one oiler out at NASSCO, and this 1.8 increase overall, which amounts to a decline in real purchasing.

If this Congress, if this Legislative Branch, the House and Senate, exercising its power of the purse, could reverse this and give you those ships back, which we had planned to do for years now, would you be in a better position in the Pacific to meet the challenge?

Vice Admiral KILBY. The simple answer is yes, sir. The ships we have, we have to have a mix of ships for our force.

All the ships we are procuring in today's budget are needed. The Flight III destroyer provides an added capability as an air-and-missile-defense command ship. In the amphibious ships, the LPDs are much more capable than our traditional LSDs. So, all of those ships have a role, as General Smith laid out.

I think the budget request you see before you is what we tried to create, where we tried to create the best mix of capabilities and platforms and follow the prioritization that was laid out in our opening statement. *Columbia* was number one and the increases in funding, necessitated hard choices for us.

Senator WICKER. Why do you think the Chinese are investing so aggressively in their naval—

Senator HIRONO. Senator Wicker?

Senator WICKER. Yes?

Senator HIRONO. As much as we would love to continue, I am going to move on to Senator Blumenthal.

Senator WICKER. That is about fine.

Senator HIRONO. Thank you for your understanding.

Senator WICKER. I thank you very much, Madam Chair. Thank you.

Senator HIRONO. You're welcome.

Senator Blumenthal?

Senator BLUMENTHAL. Thanks, Madam Chair.

Vice Admiral Kilby, there is no question in your mind that we need the *Virginia*-class submarine to maintain our undersea dominance?

Vice Admiral KILBY. No question in my mind, sir.

Senator BLUMENTHAL. Is there any question in your mind that we need to build two *Virginia*-class submarines this year, as part of the budget request?

Vice Admiral KILBY. No question in my mind, sir.

Senator BLUMENTHAL. I agree wholeheartedly, and if you haven't been, I suspect you have, to Groton, seen the kind of production machine that they have there; it is truly, extraordinarily impressive. I think it is due to the decision-making in the Pentagon, as well as to their managerial expertise. So, I thank you for all of your and others' service in that regard. Thank you.

I want to commend, as well, the budget proposal, alongside the Navy's decision earlier this year to exercise the option to build a tenth *Virginia*-class submarine, which is a testament to the importance of this technology to maintaining our undersea dominance. Thank you.

Lieutenant General Smith, I am concerned about the Assault Amphibious Vehicle (AAV) program and wonder if you could explain to me the practical uses for this weapons platform in the combat world that you foresee that is likely to be encountered by the Marine Corps.

Lieutenant General SMITH. I can, Senator.

The first thing when we are talking about this vehicle, the Amphibious Assault Vehicle, is that we, the leadership in the Marine Corps, starting with me, are responsible for the deaths of eight marines and a sailor that shouldn't have happened, and nothing I can say today will amend that. Inexcusable in every regard.

That Amphibious Assault Vehicle will be replaced by the Amphibious Combat Vehicle, which is our new vehicle, but those vehicles, as soon as we can build all of the Amphibious Combat Vehicles, the new one, to replace the old one, those vehicles provide our mobility from ship to shore under any conditions. They also provide our ability to operate ashore, once ashore.

The vehicle is optimized for shore. It is a ship-to-shore connector, in and of itself, and it allows us to have operational maneuverability throughout the first island chain and, really, globally, when we are unable to bring the larger connectors, such as the Landing Craft Air Cushion and Landing Craft Utility from large amphibious ships to shore. So, that ability to immediately come ashore and project combat power is vital against a peer threat.

Senator BLUMENTHAL. Wouldn't the program be limited by the kind of access that is provided on the shore; in other words, we

may or may not be operating in a world where there are beaches or accessible areas and most of our airlift these days is by air. Most of our delivery of stuff is by air, correct?

Lieutenant General SMITH. Sir, we try to mix it and we do mix it with delivery via our air means, such as the CH-53s, soon-to-be the kilo model and our KC-130s, but also our MV-22s. But we do need that ability, sir, to go from ship to shore in any condition, and what we do is we depend on our amphibious Navy ship captains to place us in a position where the beach grading, et cetera, allows us access.

It is fairly significant, sir, when you do the island studies, where we actually can come aboard a land platform, using that Amphibious Combat Vehicle, which is wheeled.

Senator BLUMENTHAL. Just, finally, are there areas of kinetic warfare right now, where you think the AAV would be useful?

Lieutenant General SMITH. So, the AAV is suboptimized for a peer adversary because of the limited weapons systems that it carries. So, again, to the sooner we get the Amphibious Combat Vehicle, which is the newer version, which will have the ability to control drones, the ability to control longer-range weapon systems, when partnered with it, those are highly useful against a peer competitor.

But the AAV, as it exists now, sir, is a vehicle by which we move troops and provide them some protection landward.

Senator BLUMENTHAL. Thank you.

Thank you, Madam Chair.

Senator HIRONO. Senator Scott, please proceed.

Senator SCOTT. Thank you, Madam Chair.

I thank each of you for testifying today.

General Smith, can you tell me how the re-envisioning of the Marine Corps is going and, in particular, how you expect this is going to help Marine Corps readiness to confront Communist China.

Lieutenant General SMITH. I can, Senator.

General Berger's vision of what the threat would look like in 2030 required us to reshape the Marine Corps to be a force that was able to, what we say is, sense and make sense of what is happening, and, specifically, in the Indo-Pacific; meaning, that today there are about 27,000 marines in the Pacific, about 20,000 are West of the International Date Line on any given day. Those forces are the inside force.

We exist inside the weapons-engagement zone of our adversaries and we are in close contact with our adversaries on a daily basis; that is competition. When you can observe, gain custody of targets, hold those targets at risk with things like our Ground-Based Anti-Ship Missile, and when we can pass that data to our allies, pass the data to our Navy partners, Air Force partners, Army partners, that is a challenge for an adversary who is out there who seeks to control terrain.

The re-envisioning of the Marine Corps requires us to be at the size of force that we can maintain as ready. We can't afford to keep excess. So, the Commandant made some incredibly difficult internal decisions to divest of certain units in order to make the units that we retain much more capable. We have tried to pay for this out of our own total obligation authority that you provide us.

Those actions have taken place and we are now in the building phase of procuring things like our G/ATOR [Ground/Air Task-Oriented Radar], our Naval Strike Missile (NSM) on a robotic vehicle, our Amphibious Combat Vehicle that takes us into the next generation of warfare against a peer competitor.

Senator SCOTT. So, if you got more funding, you wouldn't be doing this, is that what you are saying, you would not be downsizing the number of forces.

Lieutenant General SMITH. What I would say, sir, is funding is always, what I would say, sir, is with additional funding, we would accelerate those other things that we are doing, such as procuring the Naval Strike Missile (NSM) and the ROGUE vehicle, which is a robotic Joint Light Tactical Vehicle we would be accelerating the funding of the Ground/Air Task Oriented Radar.

The force-sizing construct or the size of a unit or the number of units is less important than their capability, and I would, any additional money that we were to receive, I would place it into those programs that are already successful and accelerate that. The standard military term is you reinforce success. When you get an opportunity, you run with that with that additional funding.

Senator SCOTT. What threats in the Indo-Pacific are you trying to address? What do you think are the threats that you are going to have to address?

Lieutenant General SMITH. Sir, the biggest threat is the inside sense and make sense force is the Marine Corps is, in fact, the forward-deployed force with our Navy partners; we are there every day, sir. Before this command, I came from the III Marine Expeditionary Force. I was the commander of Marine forces in Japan, so, my backyard was the South China Sea.

Every day that we are out there, sir, we are, in fact, gaining access, maintaining access, building allies and partners, and it does matter, sir. Whether it be through the Philippines, Thailand, Malaysia, Indonesia, Singapore, obviously, Australia, Japan, Korea, that is what we do on a daily basis, sir, and if you are not there, adversaries will step in and fill that role.

The pressure on our allies and partners, when you are not shoulder to shoulder with them is significant. I wouldn't speak for Admiral Aquilino, but we are a force that is of use to the Nation every single day, as long as we are forward-deployed. That is what your young marines sign up to do, my son being one of them, they want to be out and about. They want to be forward.

Vice Admiral KILBY. General, I would also add, this new concept presents an opportunity where marines are going to hazard ships. It has not been their traditional role. So, there is an opportunity with this new force mix and this construct to employ marines differently.

Lieutenant General SMITH. That is very key, Senator. What we do is Distributed Maritime Operations, we support that. So, when we, from shore, using very highly mobile and lethal units, can place an adversary ship at risk and cause them to maneuver differently, that frees up the fleet commander. Admirals like Admiral Kilby can maneuver much more freely when I can hazard you from shore.

Thanks for pointing that out, Jim.

Senator SCOTT. Admiral Kilby, can you talk about how you assess the size of the Navy right now and if we have the right equipment and the right size force to combat our anticipated threats.

Vice Admiral KILBY. Yes, sir, just being mindful of time, we have done many studies over the last 5 years that say we need a larger Navy. The Navy we can afford now is roughly 300 and 305 ships, as pointed out in the opening statements by Senator Hirono and Senator Cramer.

So, if we are going to pace the adversary, we need to have a bigger Navy. Our job is to create the best Navy we can for the budget we are allowed and we try to do that.

Senator SCOTT. All right. Thank you.

Thank you, Madam Chair.

Senator HIRONO. Okay. We are in the middle of—come back—I keep forgetting to turn on my mike.

We are in the midst of voting. If you need to go and vote and would like to come back, please do so.

Senator King?

Senator KING. Thank you, Madam Chair.

Admiral, I have the enviable position of being able to advocate parochially, but also in the national interest. As you know, one of the principal concerns I have with this budget is the striking of a DDG from the multi-year procurement.

Number one, it strikes me as a terrible precedent and signal to the American industrial base to breach a multi-year, which has already been assumed, contracted for, and moving forward. That would actually cost the Government something like \$30 million just to do that.

You were just testifying about the need for a larger Navy and the shift toward China. The Pacific is a very big ocean and naval power is our most-important way of projecting power. So, talk to me about the decision to cut that DDG, breach the multi-year, and I will talk with you in a moment about the industrial base, but please, share your thoughts.

Vice Admiral KILBY. Yes, sir. We have spoken before about this specific ship and what it brings. There are three principal things that come with this new ship: a new combat system, a new radar, and the ability to perform the roles of the air and missile defense commander at a higher, more meaningful level because of the capabilities of all of those things.

Senator KING. This is the Flight III?

Vice Admiral KILBY. The Flight III, yes, sir.

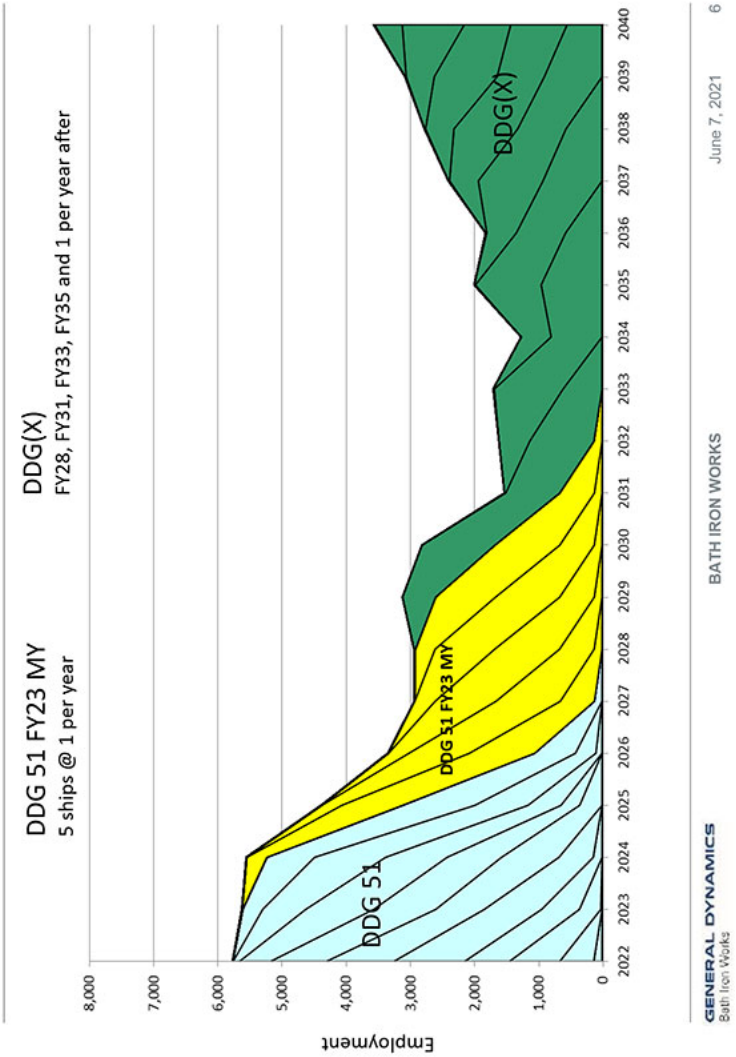
It is important. It was largely an affordability decision and a regret from the Navy that we could not afford that second ship.

Senator KING. I take it, I think I understood that this is the highest priority on your unfunded priorities list; is that correct?

Vice Admiral KILBY. That is correct, sir.

Senator KING. One of the problems we have, and I point this out with regard to Bath Iron Works, but I suspect this chart would work for Ingalls and other people. What you see here is literally, this is a photograph of the industrial base and these are the employees, and what happens is at the end of the current multi-year, the industrial base disappears.

BIW Workload with 30 Year Shipbuilding Plan



Now, this is DDG(x). The problem we have is this trough, which is getting the industrial base from full construction of DDG Flight IIIs to DDG(x), which isn't even designed yet. The problem is, and I live 8 miles from this yard, you cannot turn it on and off, this capability. When welders leave and go somewhere else, they are gone, and so I urge the Navy to be thinking about this and, in fact, I believe we should restore that ship, but also talk about advanced procurement for three ships in 2023 and beginning the process of a new multi-year, because, otherwise, the industrial base wastes away and then, as I say, you can't turn it off and on.

Share with me your thoughts about the importance of maintaining the industrial base.

Vice Admiral KILBY. Yes, sir. I will defer to Secretary Stefany, but from my position, it is vitally important.

We have done a lot of work over the last 4 years that I have been in the Pentagon, looking at the number of shipyards over time and the number has generally gone down, with the exception of Austal, which has been a plus-up in the right direction. I think you are spot-on here.

I do want to talk about a different—

Senator KING. Let the record show the witness just said I was spot-on. I want that to be—

[Laughter.]

Vice Admiral KILBY. I do want to talk about a different mix of ships and go back to something Senator Hirono, I believe, brought up, in that this force composition is important. So, Distributed Maritime Operations means I distribute my force widely, more widely than I can now in a concentrated strike group-centric manner.

So, the idea that we are going to have less large surface combatants is bolstered by the idea that I have more frigates, which are roughly equivalent in combat capability from a sensor perspective, and a combat-systems perspective, to a Flight II DDG today. So, that composition of that force is what is going to be required to have distributed maritime operations complement it.

Senator KING. But even as the frigates come online, you still see a role for the DDGs, don't you?

Vice Admiral KILBY. Yes, sir, absolutely.

Senator KING. I mean, that is the workhorse right now.

Vice Admiral KILBY. Well, I just want to double-down. The DDG Flight III will have an unparalleled combat system and sensor capability. The rationale behind DDG(x) is to create a platform that can be modernized in the future, where we can add things like directed energy and other things, because I am going to be really challenged to do that on a Flight III DDG, because I have really used all of that power to drive the radar and the sensors attendant to it now.

It is really a view to the future that I am creating a platform that can be modernized.

Senator KING. Mr. Secretary, your thoughts on this issue?

Mr. STEFANY. Yes, so, Senator King, two things. One in the near term, both Bath and Ingalls, as you point out, have come out of COVID and they really are performing well, and I worry about

breaking the momentum, right. There is a momentum thing as the workforces get their act together, Bath can now actually—

Senator KING. Bath has hired a thousand people in the last year.

Mr. STEFANY. Right, and they have come out of that strike and they are actually, you know, both, you know, our cost and schedule performance are much improved over the last couple of years, so I don't want to break that momentum.

Going forward, yes, we, the Navy, absolutely want to do another multi-year procurement, very similar to the one we just did for 2023 to 2027, but then beyond that, we are working to feather in DDG-51 and DDG(x), so we don't get the stark, you know, go from the light green to the dark green on your chart; there is a feathering that has to happen as a transition there.

We will definitely show you our thoughts there and work with your staff on laying out that feathering approach, if that makes sense to you, sir.

Senator KING. It does. But part of it is continuing the momentum on the Flight IIIs.

Mr. STEFANY. Absolutely, sir. Absolutely.

Senator KING. Thank you, Madam Chair.

I yield back.

Senator HIRONO. Senator Hawley?

Senator HAWLEY. Thank you, Madam Chair.

Thanks to the witnesses for being here. Mr. Stefany, Vice Admiral Kilby, let's start with the F/A-18s, if we could. I see that the Navy has cut funding for 12 of the Block III F/A-18s in the 2022 budget. My understanding of the justification of this is saying that the F/A-18 Service Life Modification (SLM) program will give additional service life back to the platforms that are in service.

My question is, I understand the Navy is planning for its first Block III SLM squadrons to become operational in 2024 and 2027, respectively, is that correct, and if so, is this still on schedule?

Vice Admiral KILBY. We are experiencing challenges with SLM, in that the aircraft we inducted, indicated a certain level of work, which we are finding is really less than what is required to bring those aircraft through the program. So, I think we will definitely continue with SLM in the future because of the capabilities it brings, but we need a mix of aircraft to pace the threat. Nothing beats a Flight III Super Hornet today, but our predictions is, into the future, those things will degrade in their ability to command the battle space.

So, we need to deliver on those 78 remaining aircraft in Block III configuration. We need to continue with the SLM program. We need to deliver F-35s, and then we need to work on Next-Generation Air Dominance so we can stay ahead of the adversary at a very macro level.

Senator HAWLEY. Mr. Stefany, do you want to add anything to that?

Mr. STEFANY. The only other part would be the F/A-18s we have, getting the mission capability rate. Eighty percent was our goal. Those actually were above 80 percent, and so we have more of our current aircraft capable. That is also one more factor in the F/A-18 equation overall.

Senator HAWLEY. I got it.

You did say, though, Admiral, the SLM program is currently behind schedule; is that right?

Vice Admiral KILBY. I said the aircraft that are being inducted as we—I was in Boeing about 2 months ago and when I walked the line and looked at aircraft, the two aircraft that we modeled the program after actually indicated were better material condition than we are finding of the aircraft that we are bringing in now, which requires the artisans at Boeing to do more work and in Texas.

We want to make sure we get that additional service life. We don't want to suboptimize that program, so we need to bring them back up to specification.

Senator HAWLEY. Got it. Very good.

Mr. Stefany, let me ask you about the aircraft carriers. Has the Navy done an analysis to show how aircraft carriers can be used and their air wings can be used to help defeat a potential Chinese offensive against Taiwan in the initial days or weeks of any such contingency there.

Mr. STEFANY. Yes, we have actually done a number of analysis on that, and actually, Admiral Kilby was in the middle of those analysis teams, so it is probably more effective for him to provide the update on that.

Vice Admiral KILBY. I would just say this composition, another aircraft that is super important to us, which we just had a great example of its capability on Friday, which is the hookup of MQ-25 T1 and passing of gas, a dry hookup and passing of gas, so thank you for that. That will increase the capability of the air wing, increase the range of the air wing, allow fighters to do fighter business, and return tanking to this new aircraft, that will be significant in importance.

But the problem isn't static. We have to continue to watch the adversary and adjust our program to be capable against it. So, the advances they make, we have to acknowledge and create an air wing that is very capable. Fortunately, the aircraft carrier isn't the weapon system; the air wing is.

So, we have a long history of updating air wings to produce the kind of combat power we need, and we need to focus on that.

As you have read in some of the Navy's recent documents, it is a shift from power projection, to power projection and sea control. Sea control allows you to control sea space, to employ strike groups, to have the effects to do what you intimated sir.

Senator HAWLEY. Very good.

Would you be willing to share that analysis, some of this analysis that you have done with my office in the appropriate setting with the appropriate controls?

Vice Admiral KILBY. Yes, sir.

Senator HAWLEY. Yes, thank you. I look forward to that.

General Smith, let me come to you. The Naval Strike Missiles and Tactical Tomahawks I see at the top of the Marine Corps 2022 unfunded priorities list. Give me a sense of how funding those, at the levels listed on the unfunded priorities list would help the Corps stay on or ahead of schedule, when it comes to fielding a credible sea denial capability.

Lieutenant General SMITH. Thank you for that, Senator.

The unfunded priorities list, the reality is what we are trying to do is additionally fund from our 2022 budget. We want to accelerate that success.

We had a successful test of the Naval Strike Missile on a remotely-operated Joint Light Tactical Vehicle last November. The folks down at Raytheon in Tucson fought through COVID, they are working hard to produce that missile. That is the exact same missile that the Navy fires, so we fire the same missile.

There is about an 18-month lead time on that missile, which is why we need to procure them now, because when we finish the ROGUE vehicle testing, if we waited to procure until then, we have to wait 2 more years, and time is the ultimate gift to the adversary.

What those missiles do for us are both, Tomahawk, at long-range, and the Naval Strike Missile—in this setting—at a hundred miles-plus, is as far as we can go if the classification levels, here, those enable, as Admiral Kilby said earlier, enable our forces to deploy in small, very mobile units ashore, and hold adversary targets at risk; meaning, deny sea to them, which is what we do. We're the sea-denial force in support of our fleet commanders.

When you are an adversary commander, a ship commander, and you think you can sail within 200 or let's just say hundreds of miles of a shore and then you, we would say get your bell rung by multiple inbound missile, and you have to rethink how you maneuver, that provides flexibility to the fleet commander and it is vital. It is the thing that you have to respect, because no one wants to lose a capital ship.

Senator HAWLEY. Yes, very good.

Thank you very much, General.

Thank you, Madam Chair, or Mister Chairman, now.

Senator CRAMER. [Presiding.] Thank you, Senator Hawley.

Chairwoman Hirono has gone to vote. I have voted.

It is time to start a second round of questions. I have no idea how many people are in the queue, other than me and Senator Hirono, but Senator Hawley, if you had more questions, this would be your best opportunity if you are willing to.

Senator HAWLEY. Well, since you mentioned it.

[Laughter.]

Senator CRAMER. I will yield to Senator Hawley.

Senator HAWLEY. I will be brief, because I have to go vote, but let me just ask another question or two. Let me ask about this year's budget decommissioning seven cruisers. This goes back to you, Admiral, and to you, Mr. Stefany.

The seven cruisers decommissioned, each of which I understand has 122 VLS cells. I understand the Navy is also planning to decommission four of the *Ohio*-class, guided middle submarines over the next several years, each of which has over 150 VLS cells.

My question, is how does the Navy plan to account for this decrease in vertical launch capacity across the force and to what degree can things like containerized munitions on non-surface combatants help to offset the loss of capacity?

Vice Admiral KILBY. Yes, sir. I will start.

This hybrid force, and we have produced an unmanned campaign plan which lays out the case for unmanned vessels in the air, on

the sea, and the undersea, which is what we think will help change the force posture, the ability for us to bring power to bear.

So, let's just take the surface domain. In the case of the Large Unmanned Surface vessel, the idea that it would be an adjunct magazine, that I could stimulate that magazine from a ship and set up kind of a chainsaw, where I can replace that magazine with a lesser capability of that unmanned magazine, and that will sustain the ability of that ship, rather than take that ship and that combat system and that sensor offline to reload, as Senator Cramer talked about. So, that is the idea here, to augment the force, to do manned and unmanned teaming.

To, in the case of the air domain, allow air platforms to go beyond the endurance of a single human being. That is the place where you have to go, fully recognizing the challenges of testing those capabilities out and having confidence in them to supplement the force in the manner that I described. That is the theory of the case behind the unmanned campaign plan.

So, challenging what those cruisers, I am a cruiser guy. On my ships, I have only been on two destroyers, and the rest have been cruisers, so I love them. I do acknowledge the challenges to keep a ship that was designed for 30 years, extended to 35 years, at sea.

As a commander of a strike group, I want to have confidence in my ship that it is going to be there when I need it, and on my deployment in 2017, my cruiser was offline for one-third of the deployment because it needed tank-top repairs. That is the reality of it.

It is different than the past when we decommissioned ships because their combat system wasn't capable. Now we are finding that we can upgrade the combat system better, faster, but we have a challenge with water under the keel, HM&E [Hull, Mechanical and Engineering] modernization, tank tops, and all the things that are plaguing us. So, we are at that point in these ships who have served us well and ably for their entire life.

Mr. STEFANY. I was just going to add on the submarine side, those guided-missile submarines, they are at the end of their life. They can not be extended. The *Virginia* payload module or the Block V *Virginias*—two of them are under construction, a third one is about to start construction—are the replacement for that under-sea missile capability.

There is a few years of risk in gap in there, but that is why it is vitally important we talked before about the submarine, two *Virginias* per year, getting up to three, eventually, to get that under-sea missile capability in our hands, as well.

Vice Admiral KILBY. Just one factoid, the *Virginia* goes from a regular *Virginia*, which is 12 missiles to 40. So, that is a huge increase with the *Virginia* payload module for capability, and that submarine can do a lot of things for the combatant commander.

Senator CRAMER. Okay. Thank you Senator Hawley.

So, starting with this second round of questions, I am going to come back to you, General Smith, with what I was talking about in my opening statement, which we weren't able to get to in the first round, regarding the Corps seemingly aggressive pursuit of ground-based air-defense, and missile systems to support its desire to operate as stand-in force in the Indo-Pacific.

In addition to providing protection for forward-postured marine forces, these systems can also help the combatant commander deny, maneuver space to an adversary, where transitory sea- and air-based systems may not reach.

Can you update us on these programs and then I will also ask what is your estimate of the ability of these systems to defeat missile salvos the enemy may launch against stand-in forces, both in terms of capability and capacity.

Lieutenant General SMITH. I can, Senator.

So, very quickly, just this fall coming up, Admiral Kilby and I, along with the other forces, will go under the leadership of the Army to a thing called Project Convergence 21, and in that experiment that will happen down at the Yuma Proving Grounds and the China Lake Area, we will use one of our G/ATOR radars, Ground/Air Task Oriented Radar, to pass data to, I will be careful in the classification setting, to a larger Navy system that has the ability to bring down things at very long ranges.

So, our primary role is to sense, make sense, and pass data, gain, maintain custody of targets.

Those forces that are distributed to launch anti-ship missiles, to sense what is going on, to pass data, have to be protected from air threats. We haven't had a real air threat since World War II.

What our challenge is, Senator, and I will be extremely candid with you, sir, is that we have to be highly mobile. If we are not internally, organically transportable, via our C-130s, our CH-53s, our Ospreys, and our L-class Navy ships, and the future, Light Amphibious Warship, then we lose value to the combatant commander.

So, the balance for us, sir, is, range, it is physics, the range of a missile system that is an anti-air weapon and the size. When you start getting into a missile system that is, let's just say beyond 13 feet, that is a challenge, and so, we are currently spending money on our MADIS, Marine Air Defense Integrated System, and on what we would call GBAD, Ground Based Air Defense, trying to find the sweet spot sir between range and lethality, and mobility. That is a wicked problem for us to solve and we have not yet solved it.

Senator CRAMER. Is there anything you would want to add to ensuring the integration of the Marine Air Defense System into the theater. I mean, you touched on it, but I am wondering if you wanted to elaborate at all.

Lieutenant General SMITH. Sir, MADIS remains the only system that has brought something down against a hostile threat. You know, our shipboard MADIS system is now, we acknowledged that it had good effect against Iranian drones. That system is highly capable, but we need longer ranges in the expanse of the Pacific and there comes a point when the system's size limits what you can carry, and obviously, the size of the missile system that you can carry limits the range.

I just met with, I won't use the name here, but I just met with a couple of industry partners on how to extend that range or put a different missile system onto that vehicle and it is a challenge, sir, it is. At some point, that is kind of our F-150 pickup truck and it is rated for so much weight, and when you start buying a 350 dually pickup truck, that doesn't fit in the garage. So, we are strug-

gling through that conundrum right now, sir, with our Navy partners and with our industry partners.

But we are committed to protecting those forces and then being able to do something in a more offensive manner for that combatant commander to break up air formations, but that is certainly a secondary mission for us, sir.

Senator CRAMER. Excellent, and I might let you know that I have left this room twice since this started and the first time I bumped into the CNO and the second time into the Commandant. I told them, you are both doing great.

But anyway, Admiral Kilby, this budget request includes divestment of all 12 of the Mark VI, as I have mentioned, patrol craft. As I understand it, they are less than a decade old, and I know you have talked some about this, but they are obviously highly capable compared to others of the small craft, and they are the last remaining small combatant craft in the Navy's inventory.

Related, in January 2016, two U.S. Navy river patrol boats accidentally strayed into Iranian waters near Farsi Island in the Arabian Gulf. Obviously, we all remember that well.

Iranian militia forces captured both command boats and the 10 American sailors onboard. After a day of intensive diplomacy, Iran released the boats and their crews. Navy officials said these Mark VI boats were part of the solution and would provide a needed upgrade to our littoral forces. Can you explain the decision to divest?

Vice Admiral KILBY. Yes, sir. I don't dispute anything you said; it is all accurate. The decision to divest of the Mark VIs was a fiscal decision to align the force to great power competition. So, we wanted to keep the thing, that doesn't mean that the Mark VIs aren't valuable. We viewed them as less valuable than the capabilities and things we needed to invest in. So, it is really a fiscal decision, right.

We want to field the most capable force we can against the pacing adversary, which is China. So, in order to do that, we, every year, through our cycle, look at our inventory and say, are we positioned, are carrying these assets going to provide that force, that aggregate force we need? In the decision of the Mark VIs, we decided to divest of them so we could pursue other things against China.

Senator CRAMER. There is a lot of that going on throughout the forces.

Mr. Secretary, anything you would want to add to that? I suspect you probably have lived with this quite a bit.

Mr. STEFANY. No, it is exactly that. That prioritization that we do every year ourselves, with the Marine Corps, and the Navy, and how valuable is this to the fight with China; that is the ground rule that everything else falls under.

Senator CRAMER. I have nothing further. Thank you.

Senator HIRONO. [Presiding.] Thank you.

Senator King, would you like to start your second round?

Senator KING. Thank you, Madam Chair.

Mr. Secretary, with regard to the DDG(x), which we were talking about, the DDG(x), I hope that you will work in consultation with the major yards to try to get as far into the design process as possible. Where we have gotten in trouble, as this committee has ob-

served with the Ford, for example, is doing R&D [research and development] while we are building, and to the extent the requirements and design can be finalized, then the yards can do a lot better job in terms of on-time construction and on-budget construction.

It seems to me that that would start with consultations on what the Navy is thinking about for capabilities and what the yards can produce, and I am not talking about negotiations; I am really talking about discussions on those issues.

Vice Admiral KILBY. Yes, sir. The CNO identified the top-level, what we will call the top-level requirements, the very high level requirements in December of this past year, and after that we said, okay, now we need to bring industry in and have those discussions before we get into the actual design of the ship, and so, over the last couple of months, we have brought both, Bath, and Ingalls shipyards in, as well as the electrical control system kind of companies in to start having those conversations this year before we start in 2022 to actually start the preliminary design of the ships. So, while we may have been a little slower than industry might have wanted us, we wanted to get those, at least the top-level ideas in place, now bring the industry in and start having those discussions before we start to design the ships, sir.

Senator KING. Getting the design close to final and the requirements close to final before the contracting process allows the bidders to give you a better bid because they don't have to have so much uncertainty built into their bid.

Mr. STEFANY. As we are going through the design process over the next few years, we want them to be together as teammates, right. Both shipyards will know all of the details before we put out the request for proposal to actually build the ship, right. So, they are teammates, and then, of course, they will compete to actually build the ship, but our idea is, we are altogether as one team for the next few years as we design this new ship.

Senator KING. Admiral?

Vice Admiral KILBY. Secretary, if I could add, sir, I participated in a meeting also with HII and Ingalls about a month ago where we brought them in a classified setting and laid out the case: here is the adversary; here is where they are going; here is the pace that they are going at it; here is the things that Flight III bring us; here is the things we want to transfer from Flight III to that new hull; here is the logic behind the case I laid out to you on why we need to transition to a ship that has more service-life allowance for the future. It was a great interchange of discussion.

So, I think we are on the path to do that, but I think we must continue that and we have seen great success with things like the frigate program, where we had this ability to go back and forth with industry at a much more rapid rate than we have in the past, to inform that design.

I think DDG(x) will be a little bit different than the frigate, because it will require a new hull form, and I think a new power-generation system, an integrated power system to provide that reserve in the future. That is where we will really have to be lockstep as we work together.

Senator KING. Well, if you are looking for an advanced ship with an enormous power capability, I would commend to you the *Zumwalt*. That has——

Mr. STEFANY. That is a lot of ship, sir, yes.

Senator KING. There is a huge potential there.

Okay. General and Admiral, in the past years, we have had a problem with losing aviators and a shortage of fighter pilots, particularly.

I just wanted to inquire, I will start with you, General, how you are doing with retention of pilots, recruitment, did COVID hurt, help, where do you stand with regard to pilots?

Lieutenant General SMITH. Sir, candidly, not where we should be.

Lieutenant General Mark Wise——

Senator KING. Is your mike on?

Lieutenant General SMITH. It is, sir. Let me get a little closer. Sorry, sir.

Lieutenant General Mark Wise, he is our deputy commandant for aviation, he and I speak about this often with the Commandant. We are short on TAC AIR pilots, on jet pilots.

I wouldn't say COVID had a significant impact, sir, but what has had an impact is, it takes a while to get through flight school, obviously. We call it the pool. You go when weather conditions or any kind of a fuel issue or if you have a training aircraft that is down, there is an OBOGS, On-Board Oxygen Generation System, if that is down, we work through that. That can delay, and that will cause a pool or a backup in the production of pilots.

We also, obviously, are competing with, as always, with the airlines, who have a relatively inexhaustible, we would argue an inexhaustible budget to pay bonuses. That is a challenge for us, sir, and in all candor, we get a little bit of feast or famine, sir.

You know, young marines sign up because they want to get out and they want to fly. They want to get hours, and they either don't get enough or if they are deployed, they are quite——

Senator KING. It is interesting you should say that, because several years ago, Senator Cotton and I had a sort of informal focus group with a group of military pilots about this issue. We were trying to inquire, what are the problems, and we expected money and bonuses and lifestyle.

The most significant thing they told us is, we want to fly. We want hours in the air. That is why we went into this field. We don't want to be behind a desk.

It was interesting, some of them said, look, I don't want to be a general; I want to be a pilot, so don't put me in this track where I have to have so many hours at the Pentagon or wherever. I thought that was a very interesting observation.

Lieutenant General SMITH. Sir, about being a general, I wholly concur.

[Laughter.]

Lieutenant General SMITH. You really don't.

But the point, what you will see, sir, is a shift over time. The young pilots, they will head out and they just want to rack up hours. They just want to fly.

I just hosted at the barracks for a parade. Lieutenant Colonel Nicole Mann is one of our astronauts and she's got a couple hundred carrier landings. She's now one of our astronauts.

But that will change over time, and that if they really want to do that at some point, but when you get a little older, you have a family, to Senator Hirono's point, and you may not wish to deploy quite as much, you will get the reverse; hence, the feast or famine. Maybe I don't want to be deployed this much because my kids are in school.

So, we are trying to deal with all of them simultaneously, and I will defer to Jim. I know we are over. It is a challenge.

Vice Admiral KILBY. We have the same challenges General Smith laid out. I just wanted to bring up one other aspect to this.

The way the threat is advancing, we have got to increase our investment in live, virtual, constructive environments, and that allows us to replicate the threat at the numbers that we would be challenged to fly adversary aircraft at. So, that will, again, stimulate and train our pilots and our air crews better to be more proficient. It doesn't replace time in the cockpit in the air, but it supplements it in a way that they are better prepared. We train and we generate those forces in a realistic manner, so they are prepared to go to the fight.

Senator KING. I am way over time, but just a final point. I hope whatever platforms you are working on, Marines, Navy, cyber is a major consideration. There is no question in my mind that if there is a conflict, and we certainly hope there isn't one, it will start with a massive cyberattack and trying to blind us and disable our, particularly, command and control.

I assume, Mr. Secretary, that is a high priority in terms of the requirements and the design requirements for anything that we are buying.

Mr. STEFANY. Yes, Senator King. Cyber and space are two, frankly, warfare areas or domains where everything has to work in as well as the normal, undersea, sea, and air.

Senator KING. May I just have—one other point.

I hope when you are acquiring these new platforms, whether it is an airplane or a ship, you are buying the intellectual property, as well as the hardware so that in the future, we can make our own parts. I foresee the day where every Navy ship has a 3-D printer onboard so that it is, you know, for want of a shoe, the horse was lost. For want of a horse ... And if you can print your own parts instead of waiting for a manufacturer to [Inaudible.]

Mr. STEFANY. Yes, sir. My legal team, that is the number one thing that they are working on right now, and we will be happy to work with your staff on it if any language or something like that might help us out there, sir.

Senator HIRONO. I know that Senator King has raised the issue of ships being able to make their own parts, 3-D printers, et cetera, and it makes a lot of sense from the standpoint of, things can't come to a halt because the ship is in the middle of an ocean and they need a part.

At the same time, one of the concerns I would have, and that point is, what that would do to the supply chain and their ability to stay afloat.

I understand all the complexities that you gentlemen have been raising. One of the things that I and others of this committee very much support is the need for modernizing the public shipyards, and we are very glad that the Navy does have a shipyard modernization plan, it is just that it is not adequately funded, as in so many other aspects.

Mr. Secretary, does the Navy's fiscal year 2022 budget fully fund this shipyard modernization plan?

Mr. STEFANY. Yes, ma'am. In order to modernize the four naval shipyards, we have a four-step approach, right. First, we do a 3-D modeling of the shipyard. We actually build a 3-D computer model like if it were a ship or an airplane, and that first thing we do, lay it out, and then the engineers get in and look at how to optimize that shipyard for the flow of material and work through the shipyard through a 3-D modeling process.

That first step is finished for Pearl Harbor and is in process for the other three shipyards.

The second step, once we get the model done, is to do what we call an area development plan that lays out all the work that needs to happen at that shipyard to do what the model said is needed.

Senator HIRONO. Uh-huh.

Mr. STEFANY. The third step would then, would be to create individual military construction projects for each of the things in that plan.

Then the fourth step would actually be to do those military construction projects.

So, for fiscal year 2022, yes, I would say we are fully funded to do all of that: the 3-D modeling of the three remaining shipyards, and then for Pearl Harbor, to do the area development plan and get that completed and get into, what is called the DD-1391 documents and get those finished by the end of 2022. So, for the 2022 budget, yes.

For the longer term, I think we sent a report to Congress a couple of years ago that said it was going to be roughly a billion dollars a year for the next 20 years to make it all happen. That is one of the many topics that we are discussing in the 2023 review that is going on right now.

But I am committed. I know Acting Secretary Harker is committed to fully fund that as we go forward. This is a top priority for us.

Vice Admiral KILBY. If I could add, Secretary Stefany.

Ma'am, we increased the funding for SIOP in the 2022 budget. I realize you are only seeing one year of the budget, but the commitment to get after the dry docks, which are the first order of business at all of those shipyards, we are still coming through this. It has been, you know, if you are talking about *Columbia*, as a once in a generation recapitalization program, this SIOP is a once in a century capitalization plan on top of it. So, we have got to do it and we have to do it right. We understand that the class maintenance plans for, particularly, our *Virginia*-class submarines, are the drivers for that, which is the impetus to create the P209, which is the dry dock in Hawaii.

Senator HIRONO. In Hawaii, uh-huh.

Vice Admiral KILBY. I expect as we get through these projects, we are going to see the dry docks are going to maybe cost more than we anticipated in the original plan. We still need to do it. It doesn't obviate the need to go do that.

I am hopeful that when we go through the modeling that Secretary Stefany alluded to, there may be some efficiencies gained there and if we can sustain that funding and roll it over for the 20 years, we can complete the plan, but we have to maintain discipline and focus on it.

But we did increase the funding in 2022 as an acknowledgment of this and the importance of it.

Senator HIRONO. So, I appreciate the process of doing the modeling so you know what the big-ticket items, with regard to modernizing our public shipyards, but this aspect of infrastructure has been ignored for so long that I would think that you already have a whole list of smaller projects that should be funded and can move along.

I appreciate the commitment to the dry dock that we need to have; otherwise, Hawaii, Pearl Harbor will not have the capability to deal with *Virginia*-class submarines. I believe Senator King has a dry dock situation in his state. So, we need to have those proceeding, and as we had our discussion with regard to Pearl Harbor, the production facility should pretty much be in alignment with the building of the dry docks so the efficiencies can be increased.

A number of us have already made comments about the fact that the Aegis destroyer multi-year contract is being, is not being followed. So, basically, we all know what the advantages of a multi-year contract is and we know that we are now going to have to pay a penalty, which, of course, is far less than the 1.7 billion that we would have to find to replace or to put this ship back into the budget.

But I do think that whatever you all have to do to comply with the multi-year contract needs to happen because Mr. Secretary, you did acknowledge that when we violate the terms of a multi-year contract, it will make the job harder for those of us who actually support these kinds of contracts when you come before us the next time for a multi-year contract.

Mr. STEFANY. Yes, ma'am. I view that a multi-year contract is a commitment between the Navy, Congress, and our industry partner, whatever company is involved, and we did not, at all, take lightly the breaking of the contract that we are going to have to do here. It was, as we talked about before, it was the, you know, the last choice, the hardest choice that we had to make in this budget, but the top line pushed us to a place we just could not afford that second destroyer.

Senator HIRONO. The only other time this happened was, again, the Navy, and Congress came to the rescue by basically replacing V-22 aircraft.

Mr. STEFANY. Yes, ma'am.

Senator HIRONO. But that is a far cry from \$1.7 billion to replace the destroyer.

So, if everyone is through?

Senator KING. Madam Chair, I think you and I should acknowledge that our states are largely surrounded by water—

Senator HIRONO. Yes.

Senator KING.—but the senator from North Dakota is here out of pure virtue.

[Laughter.]

Senator HIRONO. We had a little chat about that and the—

Senator CRAMER. I can actually see all four—

[Laughter.]

Senator HIRONO. Yes, our agreement is that he will just do whatever I ask him to do. So, that is that. So, that is now on the record.

[Laughter.]

Thank you very much, Gentlemen, for your testimony, and for working with us.

This hearing is adjourned.

[Whereupon, at 3:58 p.m., the Subcommittee adjourned.]

[Questions for the record with answers supplied follow:]

QUESTIONS SUBMITTED BY SENATOR MAZIE K. HIRONO

PUBLIC SHIPYARD MODERNIZATION

1. Senator HIRONO, Mr. Stefany, I applaud the Navy for establishing a plan for modernizing the public shipyards. I consider this to be a major improvement after years of neglect of this important infrastructure. Certainly, there have been military construction projects and various upgrades over the years, but the Navy has pursued these without a comprehensive plan. Does the Navy's fiscal year 2022 budget fully fund this shipyard modernization plan?

Mr. STEFANY. Navy shipyard modernization is a generational, phased investment over many years which will include dry dock recapitalization, facility layout and optimization, and capital equipment modernization. The Navy is requesting \$830 million for the Shipyard Infrastructure Optimization Program in the fiscal year 2022 budget submission. The funding, which focuses on critical dry dock improvement projects at Norfolk Naval Shipyard and Portsmouth Naval Shipyard, also includes \$65 million for planning and design efforts at Pearl Harbor Naval Shipyard and Intermediate Maintenance Facility. As part of the unfunded priority list (UPL), the Navy requested an additional \$225 million to de-risk the schedule for the Portsmouth Naval Shipyard Multi Mission Dry Dock. This budget request, together with the UPL request, fully supports the fiscal year 2022 requirements for the recapitalization of critical dry docks necessary to support the class maintenance plan for the Navy's nuclear-powered aircraft carriers and submarines.

2. Senator HIRONO, Mr. Stefany, are you considering any changes to the plan to accelerate specific capability expansion or specific productivity enhancements in view of the ship maintenance problems you are facing?

Mr. STEFANY. The Navy is undertaking multiple efforts to expand public shipyard capacity to sustain the Navy's current and future fleet. These efforts include growing the size of the workforce, instituting innovative training methods to accelerate proficiency development, upgrading IT hardware and software systems, and accelerating innovation investments. Additionally, the Navy is implementing Naval Sustainment Systems—Shipyards (NSS-SY), a tool that utilizes industry best practices to identify productivity inefficiencies at the public shipyards to further accelerate capacity improvements at the shipyards. The results will help determine the changes the shipyards need to implement in order to better tackle readiness recovery.

The Navy is also into its third year of the Shipyard Infrastructure Optimization Program (SIOP). Fully executed, SIOP will deliver required dry dock repairs and upgrades to support both current and future classes of ships, optimize workflow within the shipyards through changes to their physical layout and workflow, and recapitalize obsolete capital equipment with modern machines that will increase productivity and safety.

VIRGINIA-CLASS SUBMARINES

3. 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 5

multiyear contract. That is a contract to build two boats per year. However, even before much work had begun on the Block 5 program, serious problems were emerging with achieving on-time deliveries of the boats from the previous contract, the Block 4 program. The shipyards are running 12 to 18 months behind contract delivery dates on the Block 4 boats. It would appear that this has led to increasing the cost estimates for Block 4 boats yet to be delivered, cost and schedule increases for all of the Block 5 boats, and cost increases for the boats in the *Columbia* strategic missile program. It would appear that, among other problems, the yards are struggling to find sufficient skilled workers. What is the Navy going to do to get cost and schedule back under control for these programs?

Mr. STEFANY. Submarine industrial base performance remains challenged in achieving steady state delivery of two boats per year. Improving this performance is essential for *Virginia*-class (VCS) Block IV schedule recovery, VCS Block V foundational success, and concurrent *Columbia*-class (CLB) construction.

In May 2021, the Navy completed a detailed assessment of the integrated VCS and CLB schedules to ensure an achievable plan supporting *Columbia* as the #1 Navy acquisition priority. The review found that shipbuilder experience levels, inefficiencies, manning shortfalls, absenteeism and the temporary shutdown of hiring and training pipelines as a result of COVID-19 have resulted in these additional delays to Block IV.

To address production cadence and span challenges and cost performance, the Navy has taken steps to improve the governance structure and align the Enterprise Business Strategy on key issues and assumptions. Interim gating criteria, enhanced cost and schedule reviews, and monthly executive leadership reviews will better align the programs and enable the Navy to quickly address challenges to production schedules.

The Navy is also working with the private shipyards to improve on-time and quality material delivery. By shifting work between shipyards to better manage labor and footprint constraints, and increasing the quantity of strategically outsourced components and hours to the supplier base to allow the shipbuilders to focus more on their core work, the Navy is taking positive steps to address production cadence and cost performance. The Department is also updating and enhancing detailed VCS production schedules with an Enterprise perspective to ensure integration yard-wide with construction and maintenance activities, facility usage, and strategic outsourcing to avoid resource conflicts. The Navy will also continue to explore investments that further support achievement and sustainment of the two VCS per year production rate in accordance with Congressional authorizations and appropriations.

U.S. MARINE CORPS GROUND MODERNIZATION

4. Senator HIRONO, Lieutenant General Smith, 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 (WEZ), 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 SMITH. The Marine Corps is balancing offensive and defensive capabilities in the unique design of the Marine Littoral Regiment (MLR). The MLR is structured to maneuver and persist inside a contested maritime environment where its primary mission will be to conduct sea denial operations as part of a larger Naval Expeditionary Force. As anti-ship systems are used to establish sea control and hold adversary assets at risk as part of a maritime force, the MLR will defend itself with an extended sensor network, anti-air assets, signature management, and rapid maneuver to reduce the adversary's ability to locate and target Marine assets. All systems, including offensive anti-ship systems and air defense systems, are transportable by organic Marine Corps assets to keep the MLR truly expeditionary and effective.

The MLR will have three subordinate elements: a Littoral Combat Team, a Littoral Anti-Air Battalion, and a Littoral Logistics Battalion.

- The Littoral Combat Team (LCT) is task organized around an infantry battalion along with a long-range anti-ship missile battery. The LCT is designed to provide the basis for employing multiple platoon-reinforced-sized expeditionary advance bases (EAB) that can host and enable a variety of missions such as long-range anti-ship fires, forward arming and refueling of aircraft, intelligence, surveillance, and reconnaissance of key maritime terrain, and air-defense and early warning. These EABs contribute to the security of the MLR by being small and highly mobile, complicating adversary targeting solutions.

- The Littoral Anti-Air Battalion is designed to train and employ air defense, air surveillance and early warning, air control, and forward rearming and refueling capabilities.
- The Littoral Logistics Battalion provides tactical logistics support to the MLR by resupplying expeditionary advance base sites, managing cache sites, and connecting to higher-level logistics providers. It provides expanded purchasing authorities, limited Role II medical forces, distribution of ammunition and fuel, and field level maintenance. These MLR's organic expeditionary logistics capabilities will allow for sustained high-tempo operations as part of overall unit function.

Additionally, Littoral Regiments will be provided with increased survivability via the expeditious and agile employment of various means of organic lift. This includes aviation lift from aircraft such as MV-22 and KC-130J and surface lift by a new class of Light Amphibious Warships which will enable tactical and theater-wide mobility.

5. Senator HIRONO, Lieutenant General Smith, in the Commandant's Force Design 2030 annual update, General Berger states: "We do not need to 'own' all of these capabilities ourselves, but rather, we must prioritize what we will be responsible for and then seek best possible support from the Naval and Joint Commanders for the remainder." 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 SMITH. The Marine Corps will provide many advanced capabilities to the Joint Force, especially in long-range precision fires and sensing capabilities. Conversely, two of the most significant areas where the Marine Corps will rely on Naval and Joint Forces are surface mobility and Joint All Domain Command and Control (JADC2).

First and foremost, the Navy will continue to provide key warfighting capabilities to the Marine Corps especially through the employment of amphibious ships. Traditional L-class ships will remain vital to the forward presence of Marine units, and a new class of amphibious warships, the Light Amphibious Warship, will provide critical tactical and theater-wide mobility.

The Marine Corps will continue to participate in the development of JADC2 to enable the passing of data across the joint force. As the "Stand-in Force" that senses and makes sense of adversary actions within the adversary's weapons engagement zone, JADC2 enable small teams of marines, distributed across vital areas of the Indo-Pacific, to be the eyes and ears of the Joint Force in both steady state and kinetic operations.

As part of JADC2, the Marine Corps is an active participant in the development of the Army's Project Convergence and the Navy's Project Overmatch that will enable critical networking across the joint force.

CHANGE FOR LOGISTICS FLEET

6. Senator HIRONO, Lieutenant General Smith, the Navy has indicated that operations in a contested environment meant that the Navy's logistics fleet will need to include smaller, faster, multi-mission transports. Last year, 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." How will this contested environment affect the Marine Corps' ability to conduct amphibious assault operations?

Lieutenant General SMITH. In a contested environment, the adversary will not grant us the time and freedom of maneuver to create conditions necessary to "set the theater," in the traditional sense. Because of this, our new formations, the Marine Littoral Regiments, will be postured forward in the Pacific. We will maneuver and deploy using Navy and Marine Corps organic lift. The ability to rapidly deploy, without the need of strategic lift or national assets, is key to the agility of the MLR, and allows the MLR to serve in both contact and blunt layers without needing to reorganize. These forward deployed naval expeditionary forces will create positional and temporal advantage for the fleet and the joint force.

Amphibious operations in a contested environment require a new mix of amphibious ships that includes traditional L-Class ships and a new class of Light Amphibious Warships (LAW), which enables MLR mobility and sustainability. The overall number of amphibious warships grows to support the more distributed expeditionary force design, with LAWs complementing traditional amphibious warships.

In November 2020, the Department of the Navy concluded that a range of approximately 31 amphibious warfare ships and 35 LAWs offer the right balance,

range of sufficiency, operational capabilities, and embarkation capacity to enable competition, crisis and contingency response. Traditional amphibious ships remain versatile, multi-mission platforms for competition and crisis response, and the Navy and Marine Corps continue to work together in meeting combatant commander requirements.

The LAW is a program that will be critical to future Marine Littoral Regiments and the Navy's overall Distributed Maritime Operations strategy. It will be capable of delivering expeditionary forces to austere locations, and addresses a need for low-signature maneuverability, sustainment capacity, and beachable ships.

The LAW is a Navy program, and this year's fiscal year 2022 budget request includes funding for important research and development efforts, with the first ship requested in fiscal year 2023 with first ship delivery in fiscal year 2026. Due to the LAW's affordable cost, the Department will be able to budget for a higher quantity of these lighter, more agile ships. The goal for the Navy and the Marine Corp is to realize the best balance between capability and cost.

QUESTIONS SUBMITTED BY SENATOR GARY C. PETERS

CLIMATE CHANGE

7. Senator PETERS. Mr. Stefany and Vice Admiral Kilby, in May 2009, the Chief of Naval Operations formed the Navy's Task Force Climate Change to take a hard look at what climate change means for naval operations. The task force was shut down in early 2019 without a public announcement at around the same time the GAO reported that DOD needed to do more—not less—in planning for climate change. Was the task force's work continued by another entity within the Department of the Navy?

Mr. STEFANY and Vice Admiral KILBY. The U.S. Navy Task Force Climate Change was established in 2009 to develop a comprehensive approach to address the challenges of the Arctic and climate change. Over the course of a decade, the Task Force enabled the Navy to have informed, focused, and deliberate discussions to influence future Navy policy across the Department, and led to the release of a number of strategic documents related to Arctic capabilities and climate change considerations. In 2019, the Chief of Naval Operations determined that the Navy had successfully integrated climate change issues into institutional business processes, allowing for the realignment of Task Force functions into existing responsibility areas.

The Navy views climate change as a critical readiness and national security issue, both afloat and ashore, and continues to include climate change and environmental resilience considerations in its strategic approach to support national security priorities in the maritime domain.

8. Senator PETERS. Mr. Stefany, did the task force release a final report?

Mr. STEFANY. While there was no final report to document the stand down of the Task Force Climate Change, over the course of a decade the Task Force oversaw the release of a number of important policy documents, including the Navy's Climate Change Roadmap in 2010, the Arctic Roadmap in 2009 and 2014. The Task Force informed Department of Defense Directive 4715.21, Climate Change Adaptation and Resilience, in 2016, and published a Navy Strategic Outlook for the Arctic in 2019. The release of these strategic documents highlighted the successful integration of climate change issues into the Department's institutional business processes.

9. Senator PETERS. Lieutenant General Smith, the Marine Corps component of this effort—the Expeditionary Energy Office—was part of Combat Development & Integration. Is it still in operation?

Lieutenant General SMITH. Yes, the Expeditionary Energy Office is still in operation as part of the Capabilities Development Directorate, Combat Development and Integration.

Through this office, we are investing in advanced power sources and new power generation to meet the energy needs of the force. Specific areas of research and development include renewable solar energy, electric power for mobility, new advanced battery chemistries, and alternative energy sources, including hydrogen fuel cells or an aluminum-based fuel. We are also seeking ways to reduce the form factor of future power generation equipment. New sources must be Marine portable while providing an operationally relevant level of power.

QUESTIONS SUBMITTED BY SENATOR ROGER F. WICKER

AMPHIBIOUS MULTI-SHIP PROCUREMENT COST SAVINGS

10. Senator WICKER. Mr. Stefany, on June 8, 2021, you testified that the Navy has finished negotiations with Huntington Ingalls Industries for a contract to implement the amphibious warship multi-ship procurement or “amphibious ship bundle” authorized by section 124 of the National Defense Authorization Act for Fiscal Year 2021.

If finalized, how much money does the Navy stand to save by executing the amphibious warship bundle this fiscal year?

Mr. STEFANY. On May 20, 2021, The Navy completed negotiation of an agreement on the fiscal year 2021 Multi-Ship Procurement for four amphibious warships including an America Class LHA amphibious assault ship and three *San Antonio*-class LPD Flight II vessels in accordance with section 124 of the Fiscal Year 2021 National Defense Authorization Act. The Navy’s agreement with the shipbuilder (Huntington Ingalls Industries—Ingalls Shipbuilding) demonstrates shipbuilder production efficiencies related to level loading of shipyard workforce, a reduction in overhead rates achieved through industrial base stabilization and Economic Order Quantity. Savings of \$722 million can be achieved over procuring these four ships separately if awarded in fiscal year 2021. This is in line with the Cost Estimate provided in the Amphibious Ships (LPD & LHA) Multi-Ship Acquisition Strategy report to Congress of December 9, 2020.

11. Senator WICKER. Mr. Stefany, if the amphibious ship contract is delayed until fiscal year 2022, how much money would the Navy save via the amphibious ship bundle?

Mr. STEFANY. Assuming section 124 authority is extended to fiscal year 2022, the Navy estimates it could save between \$300 million and \$500 million versus procuring the ships separately. Negotiations with the Shipbuilder will need to be conducted before a precise amount of savings can be codified and implemented.

QUESTIONS SUBMITTED BY SENATOR THOM TILLIS

FLEET READINESS CENTER—EAST (FRC—EAST)

12. Senator TILLIS. Vice Admiral Kilby and Lieutenant General Smith, the Fleet Readiness Center—East is woefully behind on military construction. The P990 contract was programmed in fiscal year 2018 with a construction contract yet to be solidified to begin building. Moreover, there are facilities that are required in fiscal year 2022 that have yet to be programmed, further delaying the ability of facilities to provide depot-level repair capabilities for the F-35 and numerous other military airframes across all services. As a result, prime defense contractors are seeking alternate facilities for this work. While I recognize this requirement sits fully under the realm of Military Construction as executed by the Department of the Navy, it directly impacts your ability to fulfill naval requirements and capabilities, and foster development and integration within the Marine Corps, respectively. Recognizing the indirect nature of this subject to your military-specific professional roles, please comment on the effects continued neglect of this facility will have on your aviation capabilities?

Vice Admiral KILBY. and Lieutenant General SMITH. Fleet Readiness Center—East (FRC East) continues to play a vital role in Marine Corps aviation readiness. The readiness of our aviation fleet is critical to Marine Corps and joint force operations. The Command’s customers include more than 200 Navy and Marine Corps activities, 31 foreign nations, 5 Air Force activities, 3 Army activities, and 2 federal agencies. Its emerging workload includes the F-35 Lightning II, the UH-1Y Venom, and the AH-1Z Viper. Especially regarding F-35 modification requirements, FRC East is a critical enabler of our 5th generation aircraft squadrons as the Marine Corps transitions all of its fixed-wing attack squadrons to the F-35.

The Marine Corps has significantly invested in FRC—East over the past several years. The specific P990 contract award was delayed because the project bids exceeded programmed funding, which required the Marine Corps to pursue a congressional reprogramming. However, the P990 contract was awarded on 28 May 2021. In the future, the Marine Corps will continue to invest in this important facility while balancing the funding required to achieve the best overall aviation capabilities.

QUESTIONS SUBMITTED BY SENATOR JOSH HAWLEY

PRECISION STRIKE MISSILES

13. Senator HAWLEY. Mr. Stefany and Vice Admiral Kilby, last year's budget request included funding for 122 Tomahawks. This year only requests funding for 60. Why has the Navy reduced the size of its Tomahawk buy?

Mr. STEFANY and Vice Admiral KILBY. Navy plans to sustain the production line for its primary long range, precision strike cruise missile. The 2021 Appropriations Conference directed the Navy to maintain the production level of effort. Minimum Sustainment Rate (MSR) for Tomahawk missiles is quantity 90 while executing production concurrently with the Tomahawk Recertification Program. Navy's procurement of 60 new production Tomahawks plus other customer production requirements sustains the production line level of effort outlined in the 2021 statute.

14. Senator HAWLEY. Mr. Stefany and Vice Admiral Kilby, how is the Navy planning to offset this reduction, so it can continue to build out its anti-ship missile capacity?

Mr. STEFANY and Vice Admiral KILBY. The reduction in new production Tomahawk will not impact Navy's anti-ship missile capacity, because new production Tomahawks are land-strike missiles. Maritime Strike Tomahawk (MST), as part of the anti-ship missile portfolio, relies on Recertification and Modernization of legacy Block IV Tomahawks. In fiscal year 2022, 39 legacy Tomahawks are planned for induction into the Recertification and Modernization line for conversion to MST.

15. Senator HAWLEY. Lieutenant General Smith, how are we doing from a concept development standpoint, when it comes to figuring out how exactly we plan to use Naval Strike Missiles, TACTOMs, and their enablers for Expeditionary Advanced Base Operations?

Lieutenant General SMITH. The Marine Corps recently completed its *Tentative Manual for Expeditionary Advanced Base Operation*, and this concept manual is in full alignment with national strategy and the Navy's Distributed Maritime Operations concept. The Marine Corps is beginning a campaign of experimentation to validate or refine various initiatives in the Commandant's Force Design 2030 plan. These experiments will continue to inform the concept development for the Navy/Marine Expeditionary Ship Interdiction System (NMESIS) that fires Naval Strike Missiles and the Long Range Fires program that fires TACTOMs.

Development of these technologies is ongoing as well, and continued funding of these top priorities is critical to ensuring their timely development and deployment. The Marine Corps successfully tested the NMESIS program against a ship target in November 2020 and the Long Range Fires program in March 2021.

With congressional authorization and funding for the President's Budget Request for Fiscal Year 2022, the Marine Corps will activate a NMESIS capability in Hawaii in fiscal year 2023. The missiles have long lead times for procurement, from 18 to 24 months, and therefore funding now is critical to deployment in theater as soon as possible.

16. Senator HAWLEY. Lieutenant General Smith, how will the capabilities provided by the TACTOM complement those provided by the Army's Precision Strike Missile, which is also expected to have an anti-ship capability?

Lieutenant General SMITH. The Marine Corps' development of ground based anti-ship and long range precision fires capabilities are complementary to the Army's development of the Precision Strike Missile (PrSM) and other long range fires systems. As the Nation's naval expeditionary force-in-readiness, the Marine Corps operates in forward and austere locations and persists within the range of adversary fires and operations.

The Navy Marine Corps Expeditionary Ship Interdiction System (NMESIS) combines a JLTV chassis with a launcher and two Naval Strike Missiles (NSM). This system is highly mobile and transportable by Navy ships and connectors. Compared to PrSM, the NSM possesses a smaller form factor, yet provides effective operational reach and lethal capacity. In conjunction with larger but less expeditionary Army formations, the joint force will be able to employ complementary ground based anti-ship fires from a variety of ranges, locations, and attack vectors. The first NMESIS equipped unit is on track to be operational during fiscal year 2023 ahead of PrSM fielding. Additionally, the NMESIS carrier is also intended to serve as the Marine Corps replacement for the M142 HIMARS launcher and will be capable of transporting and employing the MLRS Family of Munitions, to include PrSM.

Finally, as part of a portfolio of precision fires capabilities, the Marine Corps is developing a long range fires program that will employ TACTOM missiles. The challenge to the threat is multiplied when the NSM and TACTOM cruise missile attack profiles are combined with the ballistic attack profile of weapons such as PrSM. The combination of these ground based systems will markedly increase the Joint Force's ship interdiction capability and capacity and enable effective sea denial and sea control.

SIZE OF THE U.S. NAVAL FLEET

17. Senator HAWLEY. Mr. Stefany, at the beginning of February, the Acting Secretary of the Navy said that "there's a strong interest in allowing us to continue to grow the naval force to get up to 355-plus ships" and that the 355-ship objective is a "non-partisan" issue. Can you confirm that this Administration has a "strong interest" in growing the naval force to or past 355 ships?

Mr. STEFANY. The Interim National Security Strategy addresses the growing rivalry with China and Russia, as well as China's increased investments and assertiveness. It also calls for us to "promote a favorable distribution of power to deter and prevent adversaries from directly threatening the United States and our Allies." To compete and win in an era of peer military competition, the United States needs a balanced naval force capable of striking targets in all domains. The force design must emphasize distributed awareness, lethality, and survivability in high-intensity conflict. The force must be adaptable, demonstrate presence, achieve sea control, and be capable of projecting power by delivering precision effects at long ranges. The Navy, working closely with the OSD Director of Cost Assessment and Program Evaluation (CAPE), continues to develop comparative assessments of naval force structure options consistent with Interim National Security Strategic Guidance and designed to maximize the maritime contribution to the joint force. The results of these efforts and ongoing experimentation and prototyping will be reflected in the fiscal year 2023 shipbuilding plan.

18. Senator HAWLEY. Mr. Stefany, how does the shipbuilding request included in this year's budget submission bring us any closer to that force size?

Mr. STEFANY. The fiscal year 2022 shipbuilding request supports a balanced naval force capable of striking targets in all domains by procuring eight new construction battle force ships, as well as eight non-battle force connectors and craft, and continues the first phase of the Sealift recapitalization effort with the purchase of five used sealift ships. The 2022 budget also makes balanced investments in readiness and advanced capabilities for the future force, such as hypersonic weapons and unmanned systems and early design of future air, surface and undersea platforms.

