

NOT FOR PUBLICATION UNTIL RELEASED BY
THE HOUSE ARMED SERVICES COMMITTEE
SUBCOMMITTEE ON SEAPOWER AND PROJECTION FORCES

STATEMENT OF

THE HONORABLE JAMES F. GEURTS
ASSISTANT SECRETARY OF THE NAVY FOR
RESEARCH, DEVELOPMENT AND ACQUISITION ASN(RD&A)

AND

VICE ADMIRAL WILLIAM R. MERZ
DEPUTY CHIEF OF NAVAL OPERATIONS
FOR WARFARE SYSTEMS (OPNAV N9)

AND

LIEUTENANT GENERAL DAVID H. BERGER
DEPUTY COMMANDANT
COMBAT DEVELOPMENT AND INTEGRATION &
COMMANDING GENERAL, MARINE CORPS COMBAT DEVELOPMENT COMMAND

BEFORE THE

SUBCOMMITTEE ON SEAPOWER AND PROJECTION FORCES OF THE

HOUSE ARMED SERVICES COMMITTEE

ON

THE DEPARTMENT OF THE NAVY FISCAL YEAR 2020 BUDGET REQUEST FOR
SEAPOWER AND PROJECTION FORCES

MARCH 26, 2019

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Chairman Courtney, Ranking Member Wittman and distinguished members of the Subcommittee, thank you for the opportunity to appear before you today to address the Department of Navy's (DON) seapower programs. A lot has happened since the Navy last appeared before this Subcommittee, and we are excited to talk about the accomplishments of the workforce, the systems, and the processes that form our Navy and Marine Corps team.

First, thank you for the timely approval of the Fiscal Year (FY) 2019 Department of Defense budget. On-time receipt of FY 2019 authorities and funding enabled the DON to expedite delivery of lethality, readiness, and cost savings through our ability to negotiate and award contracts earlier than planned. Such continued support by this committee and the Congress will ensure that the DON can execute our strategies with confidence, while providing the predictability to our industry partners that is critical to our joint success. Based on the stability afforded by a timely budget, our naval forces are on the right vector and, looking forward, remain focused on accelerating to scale in support of the National Defense Strategy.

The Navy and Marine Corps continue to face a dynamic strategic environment that is becoming ever more sophisticated, quickly evolving, and pushing the envelope of conventional technology. As detailed in the 2017 National Security Strategy and 2018 National Defense Strategy, in order to retain and expand our competitive advantage, it is imperative that the Navy proactively works to meet these challenges – and does so with a sense of urgency. The Navy and Marine Corps must remain ready at any time to answer the call and compete on a global scale. It is together as partners that the DON, industry, and this Congress can meet our mission to provide the right balance of readiness, capability, and capacity coupled with budget stability and predictability. The Department is prepared to use all authorities and tools at our disposal to ensure the Navy can sustain and improve our Service as required by the National Defense Strategy.

The Fiscal Year 2020 President's Budget Request

As part of the Joint Force, the maritime dimension of the National Defense Strategy is to increase American naval power by building the *Navy the Nation Needs* and enabling our Marines to be lethal and resilient across all domains. The FY 2020 President's Budget is effective in funding the increasing force needed to get to the 355 battle force ship requirement identified in the 2016 Force Structure Assessment. This year's plan includes procurement of

55 battle force ships within the Future Year Defense Program (FYDP) and rebalances service life extensions to produce a steady ramp to the aggregate goal approximately 20 years sooner than last year's plan. This steadier profile provides a predictable forecast for supporting acquisition programs and reform efforts in shipbuilding, maintenance, and personnel management. The Navy program provides flexibility given the dynamic threat environments captured in the 2017 National Security Strategy, 2018 National Defense Strategy, and further exemplified in the Chief of Naval Operation's Design for Maintaining Maritime Superiority 2.0. and concepts such as the Marine Expeditionary Advance Base Operations Concept. The Navy is responding to this dynamic competitive environment by iterating our warfare analysis and will complete an updated Force Structure Assessment by the end of 2019. This year's budget request is designed to provide adaptability, while maintaining alignment in acquiring the correct mix of ships and capabilities across all phases of warfare. This approach is wholly reliant on stable and adequate funding; any condition for which the Navy must execute its plan under the Budget Control Act or a continuing resolution, poses risk in erasing the momentum the Department has gained and would certainly be detrimental to this balanced approach.

Today, the Navy has 289 ships in its battle force inventory compared to the 282 that were sailing last year at this time, and by the end of the fiscal year end the Navy will have 296 in the inventory of the battle force. The 30-Year Shipbuilding Plan remains focused on utilizing the three principles of shipbuilding: (1) steady, sustainable growth; (2) aggressive growth based on opportunity; and (3) Service Life Extensions. The plan puts the Navy on a path to 314 ships by FY 2024 and 355 ships by FY 2034. The FY 2020 President's Budget adds 12 more battle force ships with a total of 55 over the FYDP. The FY 2020 request represents the largest shipbuilding budget request in over 20 years and includes: three ARLEIGH BURKE destroyers; one guided-missile Frigate; three VIRGINIA Class SSNs; two T-AO refueling ships; and two T-ATS combined towing, salvage, and rescue ships. The FY 2020 request also accounts for the CVN 81 recently contracted with CVN 80 as part of a two-carrier buy. The plan promotes a stable and efficient industrial base that encourages industry investment in capital improvements, capital expansion, and a properly sized world-class workforce. By setting conditions for an enduring industrial base as a top priority, working together with Congress, the Navy is postured to aggressively respond to more investment in any year.

In conjunction with the shipbuilding plan, the DON has developed a new Long-Range

Plan for the Maintenance and Modernization of Naval Vessels. This plan complements the 30-year Shipbuilding Plan and Shipyard Optimization Plan and establishes the framework to effectively sustain our investments in today's fleet. It highlights the requisite development initiatives that will facilitate a more adaptable and reliable industrial base, while providing a foundation to support the workload forecasts of our industry partners. Tools like this are critical to the success of the Navy and will help us build a culture of continuous evaluation of the industrial base capacity and capability; enabling us to meet the requirements of well-laid plans and adapt to any surge demand if the situation arose.

As part of our enduring commitment to accelerating delivery of advanced capabilities to the warfighter in the most affordable manner, the Department continues its pursuits of acquisition and business process reforms. The DON is utilizing accelerated acquisition authorities previously provided by Congress to rapidly prototype and field innovative systems such as directed energy, missiles, and unmanned vessels.

The Department remains committed to the pursuit of strategically key capabilities and is continuously maturing our policies and processes to enable this progress. Streamlining contracting activities to optimize savings are seen in examples like the two-carrier buy resulting in \$4 billion in savings, the DDG Multiyear Procurement (MYP) saving \$700 million, and pricing options for the FY 2019 LCS that took advantage of the recently awarded FY 2018 LCS for over \$60 million savings. Additionally, the Navy is currently negotiating two other multiyear contracts – for VIRGINIA Class submarines and Standard Missile-6 (SM-6) – that will save multiple millions more. The Navy will continue to use these, and other acquisition tools, to speed delivery of lethal capability to the fleet and at a reduced cost to the taxpayer.

As the DON accounts for a large percentage of the total domestic shipbuilding market, the timing of ship procurements is critical to the health and sustainment of the U.S. shipbuilding industry and has economic impact industry-wide. The growing logistics requirement in the context of Distributed Maritime Operations illuminates the challenges to recapitalize the auxiliary fleet, a key enabler for sustaining protracted medical, logistics, repair, command and control, and support missions. Because of industry dynamics over time resulting in an atrophied U.S. commercial industrial base, close partnering with industry and Congress is needed to recover the U.S. commercial market in order to competitively and affordably address the Navy's auxiliary shipbuilding requirement. Coincident is the review of the level of effort

needed to distribute logistics into a contested maritime environment following safe transfer by the logistics fleet – smaller, faster, multi-mission transports likely resident within the future battle force. The DON is committed to maintaining a healthy and robust industrial base in order to meet the Nation's future needs. The 30-Year Shipbuilding Plan encourages industrial efficiencies and recognizes the criticality of protecting workforce skills in the U.S. shipbuilding industrial base so that in the long-term it can remain cost effective and meet the demands of the 355-ship *Navy the Nation Needs*.

After 40 years of a progressively smaller Navy, as we reverse the trend and rapidly grow, the Department faces additional challenges due to the increasing sustainment and logistics costs associated with owning and operating a larger fleet. Consistent annual funding in the shipbuilding account is foundational to sustaining predictable workload and capacity. Equally important will be properly phasing the additional funding necessary to operate and sustain the new ships as they are delivered – the much larger fiscal burden over time. The Navy is partnering with industry to define and establish workable requirements and working with Congress to sustain predictable profiles. These supportive relationships will continue to promote efficiency through capital improvement and expansion, research and development, and sustainment of a world-class workforce.

Summary

It is imperative that the DON retain and expand our competitive advantage, as described in the 2017 National Security Strategy and National Defense Strategy. This budget recognizes the central role the US Navy plays in our National Defense Strategy, and includes the largest shipbuilding dollar request in over 20 years. Continued congressional support of the Department's plans and budgets will help sustain a viable industrial base of naval construction and repair, efficiently execute the National Defense Strategy, and ultimately ensure our military's capability, capacity, and readiness can continue to deliver superior naval power around the world, both today and tomorrow.

Thank you for your continued support of the Navy and Marine Corps and request your support of the FY 2020 President's Budget.

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

U.S. NAVY AND MARINE CORPS SEAPOWER CAPABILITIES

Ships

Submarines

Ballistic Missile Submarines, coupled with the TRIDENT II D-5 Strategic Weapons System represent the most survivable leg of the Nation's strategic arsenal and provide the Nation's most assured nuclear response capability. Our nuclear deterrent must be modernized to remain credible – delay is not an option. As such, the COLUMBIA Class program remains the Navy's number one acquisition priority program and is on track to start construction in October 2020 and deliver to pace the retirement of our current ballistic missile submarines, deploying for its first patrol in FY 2031. To better align focus and resources and ensure successful delivery of this program to the Fleet, DON has established Program Executive Office COLUMBIA. Additional resources above the Navy's topline will be required for the Navy to fund serial production of the COLUMBIA Class SSBN and maintain its planned shipbuilding profile.

The FY 2020 President's Budget supports the funding required to continue lead ship design and advance construction activities with a plan to achieve a target of 83 percent design completion at construction start, as compared to the 43 percent at start of VIRGINIA Class. In September 2018 DON awarded the COLUMBIA Lead Ship Advance Procurement / Advance Construction and Long Lead Time Material contract to General Dynamics Electric Boat for \$481 million. General Dynamics Electric Boat and Huntington Ingalls Industries-Newport News will procure component and commodity material based upon construction start and supplier lead times in order to support lead ship construction start in October 2020. The FY 2020 President's Budget request also funds Continuous Production of Missile Tubes. This effort supports procurement of Common Missile Compartment material for U.K. Dreadnought Class submarines being executed under the Polaris Sales Agreement. The award was coordinated with the VIRGINIA Class program to maximize efficiencies across the procurement of all large diameter tubes.

The Navy, the shipbuilders and related suppliers recognize that vigilance in the execution and oversight of the VIRGINIA and COLUMBIA programs is critical. In FY 2020 the Navy will continue to utilize the \$225 million provided in FY 2019 for industrial base support to align shipbuilder-procured material procurements with COLUMBIA Class funding with funds budgeted for VIRGINIA Class and CVN for common components and vendors.

Additionally, the Navy is implementing Continuous Production 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 are set to start in 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.

The Tactical Submarine Evolution Plan is the Navy's long-term procurement strategy for submarines and payloads that paces evolutionary submarine design plans and processes to maintain undersea dominance. The Navy will be building on past success by awarding a Block V MYP contract for 10 ships in FY 2019, with options for additional ships. Starting with the second ship in FY 2019, these submarines will introduce the VIRGINIA Payload Module and all Block V ships will have Acoustic Superiority. The FY 2020 President's Budget supports the required funding to maintain a cadence of two-per-year VIRGINIA construction established in FY 2011 with Block III. Additionally, the FY 2020 President's Budget includes a third VIRGINIA, which will be an option ship on the multiyear contract.

Aircraft Carriers

The aircraft carrier is the centerpiece of the Navy's Carrier Strike Groups and central to Navy core missions of sea control and maritime security. NIMITZ and FORD Class carriers will be the premier forward-deployed asset of choice for crisis response and early decisive striking power in major combat operations for the next half-century. FORD Class CVNs are the first major design investment in aircraft carriers since the 1960s, providing a 33 percent increase in sortie generation rate, 2.5 times electrical generating capacity and a reduction in manning of approximately 600 manpower billets over NIMITZ Class with a \$4 billion reduction in total ownership cost per ship compared to NIMITZ Class.

The Navy continues to see progress in the testing of new systems aboard USS *Gerald R Ford* (CVN 78). As of this January, CVN 78 has completed eight underway events and conducted over 700 catapult launches and arrestments with Navy jets, including over a hundred launches and recoveries in one day on two separate occasions. These fixed wing operations were successfully supported by a number of aviation systems, while others will require continued refinement as they continue to support ongoing shipboard testing. CVN 78 Post Shakedown Availability/Selected Restricted Availability is ongoing, and work continues on Advanced Weapon Elevator (AWE) construction and testing along with Advanced Arresting

Gear reliability upgrades. The second of eleven AWEs was turned over to the ship's crew on February 14, 2019, and the joint industry and Navy team remain dedicated to achieving operational readiness of all elevators in the quickest manner. The *John F Kennedy* (CVN 79) is over 53 percent complete with launch planned in late 2019 and delivery in the fall of 2024. When compared to CVN 78, CVN 79 is performing at an 18 percent man-hour stepdown. In January 2019 the Navy awarded the Detail Design and Construction contract for *Enterprise* (CVN 80) and CVN 81 as a two-ship buy realizing savings in excess of \$4 billion when compared to the Navy's single ship cost estimates.

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. USS *George Washington* (CVN 73) will be halfway through her mid-life recapitalization in this summer with re-delivery to the Fleet planned for summer 2021. The RCOH is refueling the ship's reactors, modernizing its capabilities, and repairing ship systems and infrastructure. The USS *John C Stennis* (CVN 74) RCOH advance planning began in August 2018 with execution contract award planned for early 2021. The FY 2020 budget eliminates the planned refueling of USS *Harry S Truman* (CVN 75) which was scheduled to begin in March 2024. This decision saves \$3.4 billion in the FYDP, and saves more than \$1 billion per year from operations, maintenance, manpower, and aircraft. These savings provide an opportunity for the Navy to invest in advanced and distributed systems that will shape future naval warfare to expand our competitive advantage.

Large Surface Combatants

The ARLEIGH BURKE Class (DDG 51) program remains one of the Navy's most successful shipbuilding programs with 67 ships delivered to the Fleet. The FY 2018-2022 MYP maximizes affordability and stabilizes the industrial base. 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 and on schedule for delivery with the first Flight III ships. The President's Budget funds the procurement for two ships as part of the MYP contract, plus a third Flight III DDG 51 that will be awarded as an option ship.

Complementing the DDG 51, the DDG 1000 ZUMWALT Class guided missile destroyers are optimally crewed, multi-mission surface combatants designed to provide long-range, offensive surface strike capabilities. The DDG 1000 ship continues to complete activation and test of its combat systems in its homeport of San Diego. DDG 1001 was commissioned on January 26, 2019, and is starting the process of combat system activation and test. Construction on DDG 1002 is over 83 percent complete at General Dynamics Bath Iron Works.

In the FY 2020 budget request, the Navy has budgeted \$71 million of Research and Development funding for the Large Surface Combatant (LSC). These funds will be used to conduct additional conceptual refinement and preliminary design that will lead to a system requirements review in FY 2020. The LSC will be a new acquisition program that will leverage the DDG 51 Flight III combat system while identifying and evaluating the integration of non-developmental mechanical and electrical systems into a new or modified hull design, incorporating platform flexibility and growth opportunities to meet future Fleet requirements. The Navy intends to evaluate capability areas for integration into the initial LSC baseline that will result in increased flexibility and adaptability features allowing for more rapid and affordable upgrades over the ships' service life.

The Navy will continue to partner with industry to develop and refine requirements for the LSC over the next year. This joint effort will result in a stable requirements baseline and a ship that will have been designed for producibility as well as the flexibility noted above.

Small Surface Combatants

The 2016 Force Structure Assessment revalidated the warfighting requirement for a total of 52 rotationally-crewed small surface combatants, including the Littoral Combat Ships (LCS) and the future, more capable Guided Missile Frigate (FFG(X)). Since last year the DON has worked with industry to ensure full understanding of the requirements for FFG(X), mature design proposals, and seek areas to reduce overall cost and risk. Our requirements for the class are mature, and were approved by Joint Requirement Oversight Council on February 11, 2019. The Navy released a draft Request for Proposal (RFP) on March 1, 2019 - ahead of schedule - and will release the FFG(X) RFP for Detail Design and Construction in the fourth quarter of FY 2019. Having multiple offerors compete will ensure competitive pricing and enable the Navy to select the best value design.

The LCS program is funded for 35 ships, 17 of which have delivered. Of these, four are dedicated test ships, eight are Surface Warfare (SUW) ships, eight are Anti-Submarine Warfare (ASW) ships, and 15 are Mine Countermeasure (MCM) ships. The Navy is beginning to retrofit an Over the Horizon Weapon System (OTH WS) on all LCS for increased lethality. The award in May 2018 of the Naval Strike Missile contract for OTH WS brings a technologically mature weapons system and extends the offensive capability of the ship.

The Navy achieved Initial Operating Capability (IOC) of the final component of the SUW Mission Package (MP), the Surface to Surface Missile module. The Navy worked with the Director, Operational Test and Evaluation to improve the test design, employ best practices, and make data driven decisions. The team jointly delivered a fully compliant test outcome, while simultaneously reducing the number of developmental test and operational test raid events. As a result, the Department reduced costs while completing operational tests of the SUW MP two months early. The ASW Mission Package Pre-Production Test Article was delivered in November 2018 and ASW MP conducted end-to-end testing at the Navy's Atlantic Undersea Test and Evaluation Center in January 2019. All of the MCM Mission Package aviation systems have reached IOC and are being delivered to the Fleet. The modular nature of the Mission Packages enables the Navy to deliver these capabilities now, while continuing to mature the remainder of the systems. Additionally, the Navy continues to evaluate employment of the MCM Mission Package off of Vessels of Opportunity.

Amphibious Ships

LHA 6 AMERICA Class ships are flexible, multi-mission platforms and will replace the aging LHA 1 TARAWA Class ships and LHD 1 WASP Class ships. USS *America* (LHA 6) deployed as the centerpiece of AMERICA Amphibious Readiness Group/Marine Expeditionary Unit, while USS *Tripoli* (LHA 7) is expected to get underway for sea trials within the next few months with delivery planned for later this year. Fabrication has begun on 71 of 216 units that will combine to shape LHA 8 in support of FY 2024 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. All LHAs will be F-35B capable.

The 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. The future *Fort Lauderdale* (LPD 28) is 44 percent complete and planned for delivery in September 2021, while the future *Richard M McCool Jr* (LPD 29) started fabrication in July 2018. 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 the second flight of high-level capabilities. The Navy intends to place the first Flight II ship, LPD 30, on contract by summer of 2019.

The future amphibious force structure and composition will be evaluated as part of the larger ongoing Force Structure Assessment.

Auxiliary Ships, Expeditionary, and Other Vessels

Support vessels such as the Expeditionary Sea Base (ESB), and the Expeditionary Fast Transport (EPF) provide additional flexibility to the Combatant Commanders. ESBs are flexible platforms capable of hosting multiple mission sets with airborne and surface assets. The USNS *Hershel “Woody” Williams* (ESB 4) delivered in February 2018 and ESB 5 is scheduled for delivery in November 2019. ESB 6 and ESB 7 are scheduled for contract award in FY 2019, with delivery in FY 2022 and FY 2023, respectively. The Navy accepted delivery of the 10th EPF this past November. EPF 11 and EPF 12 are under construction with deliveries planned in FY 2019 and FY 2020, respectively. The final two EPF’s have an agreement in place, and will award this spring with delivery planned in FY 2022.

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 of time 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. Construction of the first T-AO 205 started in September 2018 and construction of the second ship will begin in July 2019. The FY 2020 budget request includes two T-AO 205 ships.

The Department will begin construction this summer of a combined towing, salvage, and rescue (T-ATS) ship to replace the four T-ATF 166 Class fleet ocean tugs, which reach the end of their expected service lives in 2022, and the four T-ARS 50 Class salvage ships, which reach the end of their expected service lives in 2025. Two T-ATS are included in the

FY 2020 budget request.

While by law icebreaking is a Coast Guard mission, the Navy and Coast Guard established an Integrated Program Office in 2016 to rebuild the Nation's heavy icebreaking capability. The Navy is supporting the Coast Guard's efforts to recapitalize the heavy polar icebreaker fleet on an accelerated schedule. The Navy/Coast Guard team plans to award the detail design and construction contract this Spring to support delivery of the first Polar Security Cutter as early as 2023.

Ready Reserve Forces (RRF)

The Navy has begun the first steps in executing its sealift recapitalization plan called *Sealift that the Nation Needs* that was coordinated with the Office of the Secretary of Defense, U.S. Transportation Command (USTRANSCOM), and the Department of Transportation's Maritime Administration. This three-phased approach includes the Service Life Extensions of select Surge Sealift vessels, acquiring used vessels, and a new construction, common-hulled shipbuilding program. The Navy's long-term strategy recommends assigning new construction common hull vessels to the Maritime Prepositioning Force (MPF) as delivered, ensuring the Fleet has the latest capabilities to support employment across the full range of military operations. Existing MPF ships would rotate to surge, preserving capability and maintaining the requisite square footage to meet USTRANSCOM sealift capacity requirements.

Sustainment, Modernization and Service Life Extensions

The FY 2020 Long-Range Plan for the Maintenance and Modernization of Naval Vessels forecasts all in-service maintenance ship-class workloads required to sustain the fleet over the next 30 years as it grows to 355 battle force ships. The intent is to provide stability and identify shortfalls within the public and private new construction and ship repair industrial base. The four key enablers the Navy is addressing to efficiently maintain and modernize the Navy's growing fleet are: the industrial base capacity and capability, shipyard level loading, workforce training, and facilities investments.

The fiscal realities facing the Navy make it imperative to maintain our in-service ships to achieve their expected service lives and also extend the service lives through modernization efforts. The FY 2020 President's Budget includes funding for the modernization of four destroyers to sustain combat effectiveness, ensure mission relevancy,

and achieve the full expected service lives of the AEGIS Fleet. The Navy and industry are collaborating on innovative approaches to conducting modernization of cruisers and dock landing ships.

Service life extensions can be targeted, physical changes to specific hulls to gain a few more years, or a class-wide extension based on engineering analysis. The Navy has evaluated the most effective balance between costs and capability to be the class-wide extension of the DDG 51 class to 45 years and targeted refueling of LOS ANGELES Class attack submarines.

The Navy is implementing changes recommended from the Comprehensive Review that followed the incidents on USS *McCain* and USS *Fitzgerald*, including implementing common bridge designs and installing common equipment across the fleet. At the same time, the Navy is procuring and installing the Next Generation Surface Search Radar in as fast and efficient a manner possible. New ship classes, like the FFG(X), will be built from the ground up with this common capability.

Unmanned Vehicles

Unmanned systems continue to advance in capability and are anticipated to be key enablers through all phases of warfare and in all warfare domains. The Navy is using a Family-of-Systems strategy to develop and employ unmanned surface and undersea capabilities that augment and relieve stress on the manned force and increase the cost imposed on our competitors. In FY 2019 the Navy will commence low rate production of a modular Mine Countermeasures Unmanned Surface Vehicle (MCM USV) and issue an RFP for a medium unmanned surface vehicle (MUSV) to provide distributed sensing capacity to the surface force. The FY 2020 budget initiates the Large USV (LUSV) program to provide distributed lethality as a part of the Future Surface Combatant Force. In the undersea domain, the Navy has commenced fabrication of Orca Extra Large Unmanned Undersea Vehicle (XLUUV) and will soon complete the design of the Snakehead Large Displacement UUV (LDUUV). In FY 2020 the Navy will issue competitive RFPs for initial production of Snakehead LDUUV and Razorback environmental sensing UUVs, and production of Knifefish mine countermeasures UUV. In support of these new capabilities, the Navy is also investing in enabling technologies, such as artificial intelligence, machine learning, 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 has undertaken an aggressive approach through competitive prototyping in collaboration with industry to accelerate these new technologies utilizing the all the new authorities granted over the past few years such as middle tier acquisitions and acquisition agility legislation. This is affording 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 date 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. The AEGIS Combat System Baseline 9 has been fielded on cruisers and destroyers and continues to deliver unprecedented 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) AMDR 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 Navy is leveraging the investment in AMDR to produce the EASR that will become the primary Air Search Radar for carriers, amphibious ships and the guided missile frigate. The use of a common design and support strategy will enable significant life cycle efficiencies in maintenance support, training, and overall cost for the Navy's primary surface ship radars.

The Department continues to aggressively pursue affordable systems that are employable from multiple platforms. Under the Surface Electronic Warfare Improvement Program (SEWIP), the Navy is replacing aging analog electronic warfare systems first fielded in the early 1970's with new, digital systems. SEWIP Block 1 and 2 systems are in Full Rate Production and continue to be installed across the fleet. The SEWIP Block 3 program completed its Milestone C in December 2018 and has begun Low-Rate Initial production of this new capability. The Navy continues to deliver enhanced surface Undersea Warfare capability through the AN/SQQ-89A(V)15 aboard cruisers, destroyers, and LCS Mission

Packages, and the Ship Self-Defense System provides ships with greater capability to defend against anti-ship cruise missile attack and supports a myriad of mission areas on carrier and amphibious ships.

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 (A-RCI) program mitigates COTS obsolescence while providing more capability improvement at lower costs.

Weapons

Missile Programs

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. SM-6 Block I declared Full Operational Capability in December 2017 and the Navy plans to award a five-year MYP contract for up to 625 SM-6 missiles this summer. The FY 2020 President's budget also includes funding for the upgraded SM-2 Block IIIC and the SM-6 Block IB missiles, both are rapid prototyping pathway middle tier acquisition projects. The SM-6 Block IB seeks to provide an extended range capability in response to Joint, Fleet and Navy Urgent Operational Needs.

The Evolved Sea Sparrow Missile (ESSM) provides another layer to the Navy's defended battle-space. ESSM Block 2 is on track to achieve IOC for AEGIS platforms in FY 2020 and Ship Self-Defense System platforms in the 2022-2023 timeframe.

The inner layer of the Fleet's layered defense is the Rolling Airframe Missile (RAM) designed to pace the evolving anti-ship cruise missile threat and improve performance against complex engagement scenarios. The RAM Block 2 successfully achieved a Full Rate Production decision in November 2018.

Offensive Missile Strategy

The Department previously developed and submitted a 'Cruise Missile Strategy' to Congress. This strategy delineated the Department's plans for supporting all cruise missile weapon systems such as Tomahawk, the Long-Range Anti-Ship Missile (LRASM), Harpoon, etc. and the development of future next generation weapons. Navy offensive strike systems,

however, consist of a broader family of current and future weapons. These weapons capitalize on key system attributes (e.g. speed, range, lethality, survivability, commonality) with a strong focus on delivering ‘multi-domain’ capabilities. Under this construct, ‘Cruise Missiles’ are a subset within the offensive strike weapons family. As a result, the DON has broadened the scope of the ‘Cruise Missile Strategy’ to include all non-nuclear offensive strike missiles with ranges greater than 50 nautical miles (i.e. the ‘Offensive Missile Strategy’ (OMS)).

The OMS construct supports a wider, more systematic approach towards delivering a capabilities balance to increase overall force effectiveness to address emerging threats. The DON will evaluate the OMS via an iterative process. The Navy will review existing and developing capabilities, leverage analytical processes/study updates, and assess threat/intelligence report updates to inform annual RDT&E and procurement funding priorities to achieve an optimal mix of offensive strike missile system capabilities.

Our current OMS construct has three pillars. First, the Department will sustain relevant weapon systems. Our objective is to preserve the readiness and capacity of our key strike weapons inventories. Secondly, the Department will pursue strike weapon capability enhancements. Under this initiative, the Navy will develop near-term capability upgrades to enhance existing weapons that provide critical improvements to our current long-range strike weapons capabilities (e.g. Maritime Strike Tomahawk (MST), new Tomahawk warhead (Joint Multiple Effects Warhead System (JMEWS)), LRASM V1.1, SM-6/Block 1B, and the Naval Strike Missile. Thirdly, DON will develop next generation strike missile capabilities to address emerging threats.

To fully inform Congress of next generation weapons development, the Navy has provided classified briefings to the congressional defense committees in order to communicate this approach in the proper forum.

Manned Naval Aviation

With the support of Congress, the Navy and Marine Corps continue to implement our “Vision for Naval Aviation 2025”. This framework informs our Naval Aviation investment priorities across the triad of warfighting capability, capacity, and strategic wholeness; placing the right capability in the hands of the warfighter in the most affordable manner possible.

Airborne Early Warning Aircraft

The E-2D Advanced Hawkeye (AHE) is the Navy's premier carrier-based Airborne Early Warning and Battle Management Command and Control aircraft. The E-2D AHE provides Theater Air and Missile Defense capabilities and is a cornerstone of the Naval Integrated Fire Control system of systems enhancements.

The FY 2020 President's Budget requests \$232.8 million in RDT&E to continue the Navy's modernization priorities, that include, Naval Integrated Fire Control development and test, Aerial Refueling, Theater Combat ID and National Technical Means integration, ALQ-217 Electronic Support Measures and Survivability updates, Cyber Protection, Counter Electronic Attack, Secret Internet Protocol Router chat, Crypto Modernization/Frequency Remapping, Multifunctional Information Distribution System/Joint Tactical Radio System Tactical Targeting Network Technology, Sensor Netting, and Data Fusion.

In the second year of what will be a 24 aircraft MYP contract covering FYs 2019-2023, the FY 2020 budget also requests \$934.7 million in APN for four Full Rate Production Lot 8 aircraft and Advance Procurement for FY 2021 Full Rate Production Lot 9 aircraft.

Maritime Patrol Aircraft

The P-8A Poseidon combines the proven reliability of commercial 737 airframes with modern avionics, robust military communications, and advanced sensors and weapons to provide a range of advanced warfighting capabilities. P-8A warfighting capabilities include full-spectrum, wide area, cue-to-kill ASW; armed Anti-Surface Warfare and networked Intelligence, Surveillance, and Reconnaissance (ISR). Continued congressional support of the P-8A program also enables the planned recapitalization of the aging P-3C Orion aircraft fleet.

In FY 2020 the President's Budget request includes \$1.2 billion for six new aircraft. It also includes \$198.7 million in RDT&E for aircraft updates to include the addition of Networked Enabled Weapons capabilities, satellite communication updates, track management enhancements, and sensor fusion capabilities.

KC-130J

The KC-130J remains an exponential force multiplier for deployed Marine Air-Ground Task Force (MAGTF) success, bringing increased capability, performance, and survivability with lower operating and sustainment costs for the MAGTF. Today, the KC-130J is in high

demand as it provides tactical air-to-air refueling, assault support, close air support and Multi-sensor Imagery Reconnaissance capabilities in support of Special Purpose MAGTFs and deployed Marine Expeditionary Units with the lowest deploy-to-dwell in Marine Corps aviation at 1:1.5. Targeted improvements include aircraft survivability through advanced electronic countermeasure modernization and obsolescence upgrades to the Harvest HAWK ISR/Weapon Mission Kit. The obsolescence upgrade includes compatibility with additional Hellfire variants and an improved full motion video data-link. The FY 2020 President's Budget requests \$28.3 million to upgrade the Harvest HAWK ISR/Weapon Mission Kit with the required modifications.

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

Marine Corps MV-22 Ospreys currently have a permanent presence in INDOPACOM, CENTCOM, and EUCOM supporting crisis response missions for AFRICOM. At any point, there are no less than five MV-22 squadrons deployed. Marine Corps is planning to procure an additional 16 aircraft through a five-year multi-year procurement package (FY 2018-2022). The MV-22 readiness program, comprised of Common Configuration-Readiness and Modernization (CC-RAM) and nacelle improvements, is the MV-22 community's optimized plan to increase mission capable rates by 15 percent. The FY 2020 budget requests \$115.6 million in RDT&E for continued MV-22B development and product improvements, \$8.5 million to support advance procurement requirements and \$315.3 million for modifications, of which \$140.2 million is reserved for CC-RAM.

The Navy is continuing development of Carrier On-board Delivery (COD) mission aircraft. The COD replacement program is leveraging prior Department MV-22 investment to recapitalize the legacy C-2 Greyhound fleet with CMV-22B tilt-rotor aircraft. Navy's CMV-22B aircraft require modifications to the baseline MV-22 design to better suit this platform for carrier operations. Those modifications include, greater fuel capacity in the fuselage and wings to allow the aircraft to carry up to 6,000 pounds for a distance of at least 1,150 nautical miles, beyond line-of-sight high frequency radio, public address system, improved fuel jettison system, improved cargo lighting system and integration of Operations and Safety Improvement Program (OSIP) capabilities. The FY 2020 President's Budget requests \$69.5 million in RDT&E for continued CMV-22B development, testing and product improvements; \$985.3 million in APN

for procurement of 10 Lot 24 CMV-22Bs and long-lead materials for FY 2021 (Lot 25) aircraft; and \$10.1 million for readiness and interoperability OSIPs.

The FY 2020 President's budget for the DoN V-22 program (MV-22 and CMV-22) requests \$185.1 million in RDT&E, \$993.8 million in APN for procurement of aircraft, and \$325.4 million in APN for modification of aircraft.

CH-53K Heavy Lift Replacement Program

The FY 2020 President's Budget requests \$516.7 million in RDT&E to continue the CH-53K Engineering Manufacturing Development phase and \$1.0 billion in APN for procurement of six Lot 4 LRIP aircraft, including Advance Procurement and initial spares.

The need for a heavy lift replacement aircraft remains vital to supporting the Marine Corps in present and future warfighting concepts. In spite of the recent setbacks associated with the program's development – rate of closure in technical deficiencies – all of the technical deficiencies are solvable issues. To date, the CH-53K has flown more than 1,370 flight hours towards the completion of the program. It has also demonstrated the lifting of 36,000lbs and operational gear like the Joint Light Tactical Vehicle. During FY 2020, the program will continue to execute developmental test flights including propulsion qualification, initial shipboard qualification, aerial refueling, hot/high altitude testing, structural loads demonstration, window/ramp guns testing and fire extinguishing system development.

Unmanned Naval Aviation

The Department has placed a priority on the development and fielding of unmanned systems leading to a fully integrated manned and unmanned fleet. Unmanned technology will not replace our Sailors and Marines; instead it will unlock their full potential as the Navy integrates this technology within our total force structure.

MQ-4C Triton

The MQ-4C is a critical capability and capacity enabler in the Navy's Maritime ISR&T transition plan. Under this initiative, Triton fills a vital role for the Joint Forces Maritime Component Commander by delivering persistent and netted maritime ISR and furthers our plan to retire legacy EP-3E aircraft as MQ-4Cs are delivered to the Fleet. FY 2020 investments are aligned to deliver air vehicles and control station capacity to achieve an

IOC in FY 2021, continue our efforts to deliver five full Triton orbits to meet increasing warfighter ISR demands, and enhance MQ-4C capabilities.

The FY 2020 President's Budget requests \$11.8 million in RDT&E to continue Triton baseline development activities; \$202.3 million in RDT&E for Multi-INT modernization; and \$493.3 million in APN for procurement of Lot 5 LRIP aircraft/spares, retrofit of the LRIP Lot 1 & Lot 2 aircraft to the Multi-INT configuration, and procurement of long-lead materials for Lot 6 LRIP aircraft.

MQ-25 Carrier Based Unmanned Aerial System (UAS)

The Navy is fully committed to unmanned carrier aviation. Reflecting this commitment, MQ-25 has been designated a Maritime Accelerated Acquisition Program with a requirement to deliver the Navy's first carrier-based UAS no later than 2024. MQ-25's primary mission is a carrier-based tanker to extend the range, reach, and lethality of the Carrier Air Wing (CVW). Its secondary mission is as an ISR platform. MQ-25 tanker aircraft will reduce the use of F/A-18E/Fs as mission and recovery tankers, freeing these tactical aircraft to execute their primary strike fighter mission and increasing strike fighter capacity within the CVW. A key MQ-25 enabler for CVW operations is the Unmanned Carrier Aviation Mission Control Station (UMCS) and its associated infrastructure.

The FY 2020 President's Budget requests \$671.3 million in RDT&E to continue development of the MQ-25 air system and \$32.7 million in OPN for installation of UMCS aboard CVNs.

MAGTF Expeditionary UAS (MUX)

The MAGTF Expeditionary UAS (MUX) will provide a competitive advantage to naval expeditionary forces operating in contested maritime spaces. MUX is currently envisioned to be a weaponized, payload-flexible, shipboard capable and expeditionary system that is runway-independent for all weather conditions. The system will also provide a multi-mission, long-range (690+ NM), long-endurance (24+ hours), platform that will complement MV-22 operations and operate from the sea in an uncontested environment. MUX will facilitate sea denial operations and maritime maneuver globally in support of our fleet commanders. The FY 2020 President's Budget requests \$21.2 million for research and development requirements.

United States Marine Corps Expeditionary Warfare

Expeditionary Warfare

The Navy and Marine Corps team provides the Combatant Commanders and our Nation the options needed to engage with our partners, to deter our adversaries and, when needed, to fight and win. That capability is underpinned by our disciplined, well-trained and motivated Sailors and Marines equipped with amphibious ships, aircraft and weapons in our arsenal. The Marine Corps execute their mission under the principle of Expeditionary Warfare: to operate forward, to exploit the seas as maneuver space as a base for global power projection, and to be ready to maneuver to shore when so ordered. Our ability to deploy from the sea in austere environments at a time and place of our choosing gives us significant tactical, operational and strategic advantages over potential adversaries. That ability is provided through the combination of connectors that move forces from the sea base to the objective sites and sustain the organic capability of those forces to maneuver and fight on the objective.

Tactically, the ability to project multiple elements of a landing force ashore via multiple entry points using both vertical and surface means gives us greater flexibility in maneuvering into positions of advantage over an adversary.

Connectors

Marine Corps operations require the movement of personnel, equipment and supplies, from the sea base to the objective and it is connectors that are critical enablers for any naval force by closing the last “tactical mile” with the adversary. Modern aerial connectors are the vertical component, such as the MV-22 Osprey and CH-53K King Stallion, extend operational reach and lift capacity, revolutionizing our ability to operate from the sea, austere locations, and previously damaged airfields within a contested environment. The Navy and Marine Corps also require a surface connector and is in the process of modernizing the connector fleet by replacing the aging Landing Craft Air Cushion (LCAC) and the 50-year-old fleet of Landing Craft Utility (LCU). This system of surface and aerial connectors will enable the Joint Force to establish a web of sensor, strike, decoy, and sustainment locations based on land and sea that complicates the strategic and operational decision-making of our most advanced rivals by defeating any Anti-Access/Area Denial operations. Continued funding of the modernization, maintenance, and service life extension programs of our

existing fleet of connectors is critical to enabling our success in future security environments.

The Ship to Shore Connector program will replace aging LCACs, which have undergone a Service Life Extension Program (SLEP) and a Post-SLEP Extension program. Additionally, the FY 2020 President's Budget includes the procurement of 20 LCU 1700 Class craft across the FYDP, which will recapitalize, in part, the aging LCU 1610 Class. These platforms are essential in connecting the combat power and logistics sustainment of the sea bases to the expeditionary forces operating at the tip of the spear.

Combat and Tactical Vehicles

Our Ground Combat and Tactical Vehicle (GCTV) Strategy provides a framework for portfolio management and enterprise decision support. The Marine Corps is investing approximately 29 percent of its modernization resources into GCTV systems within the FYDP. The overarching combat and tactical vehicle investment priority is the modernization of Assault Amphibian capability through the Amphibious Combat Vehicle (ACV) program as the means to incrementally replace the legacy Assault Amphibious Vehicle.

In June of 2018, the ACV program achieved Milestone C and awarded BAE Systems the production and deployment phase contract. During the fall of 2018, ACV 1.1 prototypes demonstrated satisfactory water mobility performance in high surf conditions and in doing so met the full water mobility transition requirement for ACV 1.2 capability. Therefore, the Marines Corps approved the consolidation of increments one and two into a single program to enable continuous production of ACVs to completely replace the AAV. ACV remains on schedule to achieve IOC in the fourth quarter of FY 2020.

Marine Air-Ground Task Forces

The focus of our ground modernization efforts continues to be our combat and tactical vehicle portfolio, along with the Command and Control (C2) systems needed to leverage the entire MAGTF once ashore.

Critical to the success ashore of the MAGTF is our ability to coordinate and synchronize our distributed C2 sensors and systems. Our modernization priorities in this area are the Ground/Air Task Oriented Radar (G/ATOR) and the Common Aviation Command and Control System (CAC2S). These systems will provide modern, interoperable technologies to support real-time surveillance, detection and targeting and common C2 suite to enable the

effective employment of that and other sensors and C2 suites across the MAGTF.

G/ATOR ensures the Marine Corps will be in full control of MAGTF airspace. It serves as the foundation for Commander, Joint Force Air Component delegation of airspace control to the future MAGTF, and provides MAGTF commanders the freedom of action to employ organic surface and air fires. G/ATOR detects the most challenging air threats for the MAGTF and will pace the threat for years to come.

CAC2S provides the tactical situational display, information management, sensor and data link interface, and operational facilities for planning and execution of Marine Aviation missions within the MAGTF. CAC2S will eliminate the current stove-piped, dissimilar legacy systems and will add capability for aviation combat direction and air defense functions by providing a single networked system. CAC2S will be the primary C2 system that integrates MAGTF aviation operations with Joint, combined, and coalition aviation C2 agencies.

Counter Unmanned Aircraft Systems (C-UAS)

Within the last 18 months the Marine Corps has fielded an assortment of capabilities to the operational forces to ensure that they protect our warfighters both here and abroad. Through a creative approach of taking existing technologies and adapting or modifying them to counter the proliferation of UAS. Marines have fielded nearly 50 unique systems capable of defeating and destroying the current and evolving UAS threats, keeping both our Marines, our bases and many cases our systems safer and better prepared for the fight.