NOT FOR PUBLICATION UNTIL
RELEASED BY THE SENATE ARMED
SERVICES COMMITTEE

STATEMENT OF

VICE ADMIRAL THOMAS J. MOORE
COMMANDER, NAVAL SEA SYSTEMS COMMAND

AND

VICE ADMIRAL G. DEAN PETERS
COMMANDER, NAVAL AIR SYSTEMS COMMAND

BEFORE THE

SUBCOMMITTEE ON READINESS

OF THE

HOUSE ARMED SERVICES COMMITTEE

ON

ORGANIC INDUSTRIAL BASE ISSUES

NOVEMBER 21, 2019

NOT FOR PUBLICATION UNTIL
RELEASED BY THE SENATE ARMED
SERVICES COMMITTEE

Mr. Chairman, Ranking Member Lamborn, and distinguished members of the Subcommittee, thank you for the opportunity to testify on the Department of the Navy's Organic Industrial Base. The Navy's organic industrial base is critical to completing required maintenance and modernization on the ships, submarines, and aircraft the combatant commanders require to execute their missions. The Department approaches maintenance with a sense of urgency knowing our forward deployed warfighting assets are critical to dissuading aggression and responding to hostile actions and natural disasters.

The Navy benefited greatly from having its full budget on-time in Fiscal Year (FY) 2019. Beginning FY 2020 with a continuing resolution, which expires today, returns us to a state of uncertainty. As with any industry, stable and predictable budgets are crucial to the Navy's ability to execute contracts and maintenance actions required to keep our Navy in the fight. In most hearings we are asked what Congress can do to support our efforts – our answer is simple, support and pass the President's Budget on time.

Naval Shipyards

The Navy faces high-tempo operations, budget pressures, and a fragile industrial base that has generated a maintenance backlog and reduced readiness of Navy ships over the past decade. In the 1980s, the Navy had nearly 600 ships in the Fleet and kept roughly 100 – or 17 percent – deployed at any one time. Today, our Battle Force stands at 292 ships, of which 77 – or 26 percent of the Fleet – are at sea, compounding readiness challenges. Though our warships are more capable and more mechanically reliable than those of previous generations, maintenance and sustainment remains critical to our ability to deploy a ready Fleet.

Stable budgets, improved forecasting, and a better maintenance plan have put us on an improving trend. Over the past year, the Navy has reduced delayed maintenance by half, going from 1,734 total days delayed in FY18 to 894 total days in FY19. Three aircraft carriers and one submarine delivered on time or early, continuing a trend which has seen us deliver nine of the last 10 aircraft carriers on time. Currently, 13 submarines and two aircraft carriers are undergoing CNO level maintenance at the four public shipyards. Of those, eight submarines and both aircraft carriers are on track to deliver on time.

To improve the on-time delivery of ships from naval shipyard availabilities, the Navy is focused on five main objectives: matching the size of the workforce to the planned workload; improving the way we train the workforce; developing innovative technologies to improve cost and schedule performance; fully modernizing our shipyards by recapitalizing equipment, modernizing our drydocks, and improving the layout and workflow; and improving the productivity of our workforce.

The Navy's four public shipyards have seen a 25 percent increase in their planned workload since 2010. To match the growth, the Navy has increased the size of our public shipyard workforce by more than 9,000 people, going from 27,368 employees in 2010 (measured in End-Strength) to 36,696 employees in 2018. The Navy reached its desired end strength about one year ahead of schedule, which has allowed us to both stop the growth in the backlog of work and reduce backlog earlier than planned. However, the rapid growth of the workforce has resulted in a less experienced workforce with 50 percent of workers having less than five years of experience. To get new hires trained more efficiently, the shipyards have transformed how they train their new employees through learning centers that use both virtual learning tools and hands-on work. The Navy has carried that innovative concept to the waterfront by developing "safe-to-fail" areas where artisans can experiment with new and innovative techniques to improve throughput or save time during an availability. Over the past four years, these learning centers have reduced reduce the time required to train employees by more than 50 percent and allow them to work more quickly on Navy assets.

To improve productivity, NAVSEA is utilizing innovative processes to reduce the time and cost of maintenance availabilities. Naval Undersea Warfare Center Division Keyport and Puget Sound Naval Shipyard (PSNS) are collaborating on three technologies that have the potential to produce significant results. One of the most mature concepts is cold spray. Cold spray is a technology in which metal powders are accelerated at high speeds and sprayed through a nozzle that then mechanically bonds to a surface. This produces high performance coatings that can extend the life of legacy weapon and hull mechanical systems. The Navy has demonstrated that it can save significant time and cost utilizing cold spray, in some cases restoring valves in three days when previously we required ten months due to having to ship the component to vendor sites for refurbishment. Cold spray is currently in use at PSNY, Pearl Harbor Naval Shipyard (PHNSY), and Norfolk Naval Shipyard (NNSY) and Portsmouth Naval Shipyard (PNSY) will have its cold spray capability delivered in FY 2020.

Another promising technology is a hull-crawling robot that can carry a variety of equipment to conduct hull inspections, non-destructive testing and biofouling removal. This obviates the need for scaffolding or lifting equipment, reduces dry docking periods by up to two weeks, and improves worker safety. PNSY tested the robot on a recently dry-docked submarine to demonstrate its ability to remain affixed to a hull that had biological fouling.

A third innovation, laser ablation for paint removal, completed a successful operational demonstration in October aboard USS Carl Vinson (CVN 70). This technology reduces the work hours needed to execute preservation activities through set-up, operation, and clean-up, as well as increasing safety of sailors and workforce through ergonomics, industrial hygiene, reducing exposure to hazardous

chemicals, and more easily managing hazards. Laser ablation also creates a cleaner environmental footprint by reducing the debris, fumes, and noise currently generated by conventional paint-removal methods.

The Navy is also leveraging the recent successes of the Naval Sustainment System (NSS) – Aviation that has increased the mission capability rates of its F/A-18 E/F fleet by creating NSS – Shipyards. Similar to NSS-Aviation, NSS-Shipyards brought in outside business process experts to improve productivity and identify areas for long-term improvement at Norfolk Naval Shipyard and PSNS. A similar effort is being planned for PNSY and PHNSY.

Now in its second year, the Shipyard Infrastructure Optimization Program (SIOP), a planned 20-year, $21 billion effort, will transform shipyards originally designed and laid out to support building ships of sail and coal into 21st century shipyards dedicated to executing complex maintenance availabilities on the Navy's nuclear-powered aircraft carriers and submarines. 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 significant changes to their physical layout, and recapitalize obsolete capital equipment with modern machines that will dramatically increase productivity and safety.

In two years, the Navy has delivered or started a series of projects and commenced the delivery of new capital equipment across the four shipyards:

For PHNSY, the Navy has delivered 150-ton heavy lift transporters to support Virginia-class submarine availabilities. More importantly, the Navy and its industry partner tracked every aspect of the recent USS Asheville (SSN 758) maintenance availability to build a "digital twin" of the shipyard. This dynamic virtual shipyard will enable the Navy to manipulate data and measure the impact of moving certain shops and workspaces to different areas within the existing footprint. Once the full capability is delivered in February 2020, the Navy will use this data to reimagine the shipyard to improve productivity, safety, and the quality of life for our shipyard personnel. Pearl Harbor Naval Shipyard will also be the first shipyard to receive a Dry Dock Production Facility (DDPF), which, as currently envisioned, will enclose multiple dry docks and move much of the production work to the waterfront.

Puget Sound Naval Shipyard will be the second naval shipyard to have a digital twin built. To ensure the Navy properly understands the complex workflow, it will track both aircraft carrier and submarine availabilities. Work started on this effort on October 15, 2019 and final delivery is expected in fall 2020. Puget Sound Naval Shipyard received the first 55-ton mobile crane this year, which will allow the shipyard to more effectively execute maintenance work. Laser ablation was successfully

demonstrated in production on the USS Carl Vinson (CVN 70), following a baseline metal purity testing on the CVN hull. Testing is still ongoing to exploit the technology on other platforms.

Portsmouth Naval Shipyard replaced an obsolete and maintenance-intensive lathe with a computer operated Horizontal Turning Center. The center will improve productivity at PNSY and reduces the maintenance burden on our workforce. Work has also begun in the Dry Dock #1 area in preparation for refueling selected Los Angeles Class submarines. Efforts include building a super flood basin and P1074, which will be dedicated to the Los Angeles Class Service Life Extension. Portsmouth has also begun its 3D imaging scan by conducting the first ever scan of a submarine, USS Cheyenne (SSN 773). Work on PNSY's digital twin is scheduled to begin 2020.

Norfolk Naval Shipyard has seen a number of military construction efforts begin or deliver in the past year. On June 14, 2019, the renovated Waterfront Operations Support Facility (Building 1735) located near Pier 3 re-opened. This two-story structure houses 15 shop spaces and allows the work to be executed near the ships, reducing travel time and increasing efficiency. On July 1, 2019, the Navy broke ground on a new Production Training Facility that will host most of the training classes and shops for the entire shipyard. NNSY also completed installation of a Bridge Mill which replaces two obsolete and less effective machines to support aircraft carrier and submarine shaft, rudder, and fairwater plane work and a new computer numerical control hydraulic ram designed to punch precise holes in steel. Further, the Navy is in negotiations to award a contract to build a new defueling and inactivation complex that will replace a 25-year old facility. The new M-140 Complex will alleviate frequently required repair work and support the increase in submarine inactivations planned for the 2020s. The Navy also awarded a contract for a horizontal boring mill for NNSY's Naval Foundry and Propeller Center in Philadelphia, PA, to support Columbia Class (SSBN) and Virginia Class (SSN) propulsor manufacturing. The Navy plans to begin NNSY's digital twin effort in early 2020.

The result of these integrated efforts is producing positive change across the naval shipyard enterprise. This includes completing nine of the last 10 CVN availabilities on time or early, including the recent early delivery of USS Nimitz (CVN 68), the Navy's oldest combat ship, from a docking availability at PSNS. Additionally, the Navy has reduced the days of maintenance delay at our naval shipyards by more than 40 percent since 2016.

Naval Aviation Fleet Readiness Centers

Commander, Fleet Readiness Centers (COMFRC) oversees three depots, ten intermediate level maintenance centers and 25 detachments providing Maintenance, Repair and Overhaul (MRO) of Navy and Marine Corps aircraft, engines, components and support equipment, as well as logistics and

engineering support to Navy and Marine Corps squadrons throughout the world. Our highly skilled workforce spans six countries and territories: Japan; Guam; Korea; Malaysia; Bahrain; and Djibouti, and 13 states: Washington; California; Florida; North Carolina; Virginia; Maryland; Texas; Hawaii; Nevada; New Jersey; South Carolina; Arizona; Louisiana; and the District of Columbia. COMFRC comprises approximately 12,000 civilians, 6,000 Sailors and Marines, and 3,000 contractors. The government civilians include: 7,900 artisans; 2,200 engineers; 900 logisticians; and 1,000 support personnel (program managers, budget and financial managers, contracting officers, legal support, etc.)

Recent modest improvements in the readiness of our Naval Aviation platforms began with transformation of Fleet Readiness Center (FRC) component production lines and F/A-18E/F heavy depot repair lines. By incorporating MRO commercial best practices, the inefficiencies in production line support were systematically identified and mitigated. The repair process, including supply chain and engineering support was made transparent, resulting in improved performance on targeted production lines. Significantly reduced turn-around-times for F/A-18E/F heavy depot repairs resulted in more "up" aircraft on fleet flight lines and was a contributing factor in meeting and exceeding 80 percent Mission Capable rates in Fiscal Year 2019, as mandated by then Secretary of Defense Mattis. Initial implementation of the reforms were focused at FRC West for aircraft heavy depot maintenance and at FRC Southwest for component repair. Lessons learned from these sites transferred east to FRC Mid-Atlantic for aircraft heavy depot maintenance and to FRC East for component repair.

To sustain these gains in readiness, MRO commercial best practices are being incorporated across all depot lines and expanded to include intermediate maintenance operations. In addition, the allocation of depot artisans assigned to depot repair lines and in-service repairs at fleet locations is being centrally managed to ensure an optimum balance of resources.

The safety of our FRC workforce continues to be of utmost importance and COMFRC's Safety Management System (SMS) is based upon a safety-first culture. We promote continual improvement and emphasize hazard prevention, program evaluation, employee involvement, training and industry standard certifications as necessary elements of our MRO operations. Evidence of effectiveness is our FY19 Total Case Incident Rate (TCIR) rate of 2.24 and Days Away, Restricted or Transferred (DART) Rate of 1.38; the lowest rates in COMFRC safety history. As a reference, the Bureau of Labor Statistics reflects 3.4 TCIR/2.2 DART rates as standards for the aircraft manufacturing industry. All of our FRCs have achieved SMS Gold Status, which is a measure of sustained safety program compliance. Our Depot-level FRCs have obtained registration in the Occupational Health and Safety Assessment Series (OHSAS) 18001 and ISO 140001, have been awarded the CNO Aviation and Ashore Awards six years in a row and one of our Depots recently became the first Naval Aviation Command to achieve the

Occupational Safety and Health Administration's Voluntary Protection Program Star status in its application areas.

Recruitment and retention of the skilled workforce continues to improve. During FY2018 and throughout FY2019, we launched an aggressive hiring campaign to increase engineering, logistics and artisan end strength in order to meet increased Fleet readiness goals. We met our hiring goals, increasing workforce size across our depots from 10,304 at the beginning of FY2018 to 11,581 at the end of FY2019. Direct Hiring Authority was instrumental in our ability to meet this challenge. During FY2019, we launched a National Apprenticeship Program, inducting 148 selectees into a highly structured four-year program. Candidates have committed to a Continued Service Agreement of two years after graduating from the program. In FY2020, we are targeting selection of 168 new apprentices. Regarding hiring performance, we continue to face challenges in competition for talent in the San Diego area. During FY2019, we developed a Special Rate Request for Wage employees that is under review within the Department of Defense. In order to achieve readiness goals, we supplemented our government workforce with contractors in key, hard to fill skill areas.

Looking forward, we continue to refine our organizational construct to align more effectively with our mission. As part of the Naval Air Systems Command Mission Aligned Organization, we have strengthened our Production Engineering and Production Logistics components and enhanced digital integration. We also stood up a national procurement capability for both services and products.

In addition to workforce skills improvement, we continue to modernize and upgrade facilities and equipment. On April 11, 2019, our Phase 1 Infrastructure Optimization Plan (IOP) interim report was submitted to Congress. Phase 1 provided an initial baseline assessment of our most critical production and manufacturing facilities and equipment. IOP Phase 2, which provides a comprehensive assessment of our industrial base, is underway. We will submit a Report to Congress detailing the workload assessment and infrastructure lifecycle analysis in the third quarter of FY2020. Infrastructure – particularly Military Construction – continues to be a significant challenge.

We look forward to continuing to work with Congress to provide the Fleet Readiness Centers with the resources necessary to recover Naval Aviation readiness.