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THE HOUSE ARMED SERVICES COMMITTEE
SUBCOMMITTEE ON READINESS

STATEMENT OF

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AND

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BEFORE THE

SUBCOMMITTEE ON READINESS

HOUSE ARMED SERVICES COMMITTEE

ON

SHIP AND SUBMARINE MAINTENANCE

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Mr. Chairman, Ranking Member Lamborn, and distinguished members of the Subcommittee, thank you for the opportunity to testify on ship and submarine depot maintenance. The Department of the Navy (DON) recognizes the need to deliver lethal ships and submarines to the combatant commanders on time. The Department approaches ship and submarine maintenance with a sense of urgency knowing our forward deployed warships are critical to dissuading aggression and responding to hostile actions and natural disasters.

The Navy faces high-tempo operations, budget pressures, and a fragile industrial base that has resulted in a maintenance backlog and reduced readiness of Navy ships. 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 290 ships, of which 81 – 28 percent of the Fleet – are at sea, increasing readiness challenges. Though our warships are more capable and more mechanically reliable than those of previous generations, maintenance and sustainment are critical to ensure that those Fleet assets remain ready to deploy.

To address these challenges, the Navy has undertaken a multipronged approach in both public and private shipyards. In our public yards, we are 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 can support our growing needs. In the private shipyards, we have focused on improving planning (completeness, accuracy, and timeliness), working with the Fleet to adjust maintenance schedules to level load the ports, revising acquisition strategies to improve stability and predictability, and streamlining Navy inspection points to improve efficiencies.

While recent on-time performance trends in both the public and private sectors are improving, challenges remain. Maintenance delays are generally driven by a mismatch between the maintenance workload and the available resources (personnel) to execute the work. This mismatch is exacerbated when contracts are awarded too close to the start of an availability, which could delay the delivery of required materials to the shipyard. Further, workload models and acquisition strategies are undermined by fiscal uncertainty and unexpected growth work, limiting predictability and proper advanced planning, and our public and private shipyards are challenged to hire and retain a skilled workforce or make capital investments to support increased productivity. The Navy is attacking these maintenance delay drivers through a number of initiatives.

The Navy is preparing the second Long-Range Plan for Maintenance and Modernization of Naval Vessels to forecast maintenance workloads for all in-service ship classes over the next 30 years. This plan complements the Navy's Annual Long-Range Plan for Construction of Naval Vessels and establishes the framework to effectively sustain our investments in today's fleet. The intent is to build a culture of continuous evaluation of the industrial base capacity and capability and provide the industrial base with stable and predictable workloads; enabling the Department to support the shipbuilding plan, and adapt to any surge demand if the situation arose.

Finally, the Department has established a Deputy Assistant Secretary of the Navy (DASN) for Sustainment to improve our ability to plan, program, budget and execute the Navy's sustainment mission. DASN Sustainment will have oversight of sustainment funding across the DON and will oversee and manage Navy and Marine Corps sustainment and life-cycle management policies. This will allow the Department to improve and align the complex drivers of maintenance and modernization completion – that in turn will increase our output to the Fleet.

PUBLIC SHIPYARDS

In the four public shipyards, the Navy is focused on several key lines of effort. These include growing the capacity of the shipyards to match the workload demand, improving the training of the workforce, improving the productivity of the workforce through innovation and improvements to our business processes in both planning and execution, and making needed investments in our shipyards to ensure a 21st century shipyard to match our 21st century 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. This growth was achieved about one year ahead of schedule and is allowing us stop the growth in the backlog of work and begin to work off that backlog earlier than planned. However, the rapid growth of the workforce has resulted in a less experienced workforce where 50 percent have less than five years of experience. To get new hires trained, 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. The net result of these learning centers is that the shipyards have cut the time to create a productive worker from the time they are hired by more than 50 percent over the past four years.

To improve productivity, the Navy is testing innovative processes for improving maintenance like cold spray and hull crawling robots. Cold spray is a technology in which metal powders are accelerated at high speeds and sprayed through a nozzle, impacting and mechanically bonding to a surface. This produces high performance coatings that can extend the life of legacy weapon and hull mechanical systems. Hull crawling robots are able to carry a variety of test equipment to conduct hull inspections, non-destructive testing and biofouling removal. This obviates the need for scaffolding or lifting equipment and is estimated to reduce dry docking periods by up to two weeks while improving worker safety.

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 a NSS – Shipyards. Similar to NSS-Aviation, the NSS-Shipyards has brought in outside business process experts to improve productivity and identify areas for long term improvement at Norfolk

Naval Shipyard and Puget Sound Naval Shipyard. The Navy will expand that effort to all four public shipyards in Fiscal Year 2020.

The Navy is now in its second year of the planned 20-year, $21 billion Shipyard Infrastructure Optimization Program (SIOP) that will fully 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 begun the delivery of new capital equipment across the four shipyards:

For Pearl Harbor Naval Shipyard & Intermediate Maintenance Facility (PHNSY&IMF), the Navy has delivered 150-ton heavy lift transporters to support Virginia Class 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 of our shipyard personnel. PHNSY&IMF 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 & Intermediate Maintenance Facility (PSNS&IMF) 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 availability. Work started on this effort on October 14, 2019 and final delivery is expected in fall 2020. PSNS&IMF received the first 55-ton mobile crane this year which will allow the shipyard to more effectively execute maintenance work.

Portsmouth Naval Shipyard (PNSY) 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 on Dry Dock #1 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. The Navy anticipates starting PNSY's digital twin study in early 2020.

Norfolk Naval Shipyard (NNSY) has seen a number of military construction efforts begin or deliver in the past year. On July 1, 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 for work to be executed near to the ships, reducing travel time and increasing efficiency. On the same day, the Navy broke ground on a new Production Training Facility

which will host most of the training classes and shops for the entire shipyard. Further, the Navy awarded a contract in September 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 Navy Foundry and Propeller Center in Philadelphia, PA, to support Columbia Class (SSBN) and Virginia Class (SSN) propulsor manufacturing. NNSY took possession of a Bridge Mill which replaces two obsolete and less effective machines to support aircraft carrier and submarine shaft, rudder, and fairwater plane work. The Navy plans to begin NNSY's digital twin effort in early 2020.

The net result of all these integrated efforts is that the Navy is seeing positive results across the naval shipyard enterprise. This includes, completing eight of the last nine 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 Puget Sound Naval Shipyard. Additionally, the Navy has reduced the days of maintenance delay at our naval shipyards by more than 40 percent since 2016.

PRIVATE SHIPYARDS

Similarly, the Navy is focusing on several lines of effort in private sector maintenance. This includes improvements in planning, improvements in forecasting availability durations, working with the fleet to adjust maintenance schedules to level load the ports, and acquisition strategies that are designed to improve the long term stability and predictability of private sector surface ship maintenance planning and execution – a key ask of our private sector industry partners.

Successful execution of complex ship maintenance and modernization availabilities requires solid planning. Accurate assessment of the ship's maintenance needs, early identification of the scope of modernization, and timely procurement of Long Lead Time Material are all key tenants of solid planning. The Navy is accelerating its planning milestones to drive earlier identification of availability scope, ordering material earlier and soliciting contracts earlier that ultimately leads to earlier contract awards – a key enable for the private sector. The migration to earlier milestones is enabled by improvements in the Navy's ability to use maintenance data coupled with engineering analysis to determine lifecycle maintenance requirements and accurately estimate the scope of future repairs. The earlier award of the contract (from 60 days prior to 120 days prior to start) gives industry double the time they previously had to develop their planning products and buy required material. This initiative was informed by industry's feedback.

The Navy understands the importance of workload stability to a healthy and efficient industrial base. The method of contracting that workload is evolving from a complete one ship availability at a time strategy that did not provide long term workload predictability to a strategy that groups ship availabilities both horizontally and vertically to provide longer term predictability to incentive industry to grow the needed capacity. Vertical groupings for ships with similar start dates will include multiple overlapping availabilities within a single solicitation. The Navy awarded the first three-ship vertical grouping contract in February 2019

for USS Arleigh Burke (DDG 51), USS Bulkeley (DDG 84) and USS Gunston Hall (LSD 44). Horizontal groupings for ship availabilities occurring in a series will include multiple sequential availabilities within a single solicitation. The first horizontal grouping contract was awarded on September 25, 2019 for USS Chosin (CG 65) and USS Cape St. George (CG 71). Based on industry feedback on ways to improve, the Navy also recently awarded a double docking availability for the USS Stethem (DDG 63) and USS Decatur (DDG 73). By awarding multiple availabilities, industry gets a backlog of work that creates confidence in hiring and retaining a skilled workforce and investment in infrastructure.

Informed by strong dialog with the ship repair industrial base, the Navy has implemented multiple initiatives that are improving performance in available execution. Initiatives include utilizing pre-priced changes to eliminate previously-required approvals for small dollar changes, which typically account for 70 percent of growth work schedule delays and reducing the quality assurance checkpoints by 50 percent. The Navy has worked to improve forecasting of ship availability durations and port industrial capacity. With better estimates of projected availability durations and capacity to accomplish the work, the Navy has been able to reduce workload peaks and valleys at each port to create a more balanced and executable schedule for the industrial base.

CONCLUSION

The Navy fully understands that the on-time delivery of ships and submarines out of maintenance availabilities is a national security imperative. The Department is taking a holistic approach to ensure both our public and private yards have the information, people, and equipment needed to maintain the world's greatest Navy. The Navy will continue to work with Congress and our industry partners to address our challenges and to efficiently maintain and modernize the Navy's growing fleet by growing the capacity and capability of the industrial base.