Chris Oelschlegel, ORBIS SIBRO, Inc., Naval Shipyard Institute (NSI) Program Manager
Testimony in Support of LD 2092
January 31, 2024

Good morning members of the Education & Cultural Affairs Committee. My name is Chris Oelschlegel (Class of 2005). My wife, Amanda (Class of 2003), and I reside in Kennebunk, and we are both proud graduates of Maine Maritime Academy. After my graduation I earned a Nuclear Shift Test Engineer qualification on the *Los Angeles* and *Virginia* classes of submarine reactor plants at my Portsmouth Naval Shipyard. After 17 years serving in different engineering, production, and radiological controls roles at PNS, I joined ORBIS in August 2022 as a Senior Program Manager. I am also an adjunct instructor at MMA where we are working to reinvigorate the nuclear engineering curriculum. In addition, I serve as the Chair of MMA's Industrial Advisory Committee, a group chartered to provide insight and guidance on shaping curriculum that best prepares students for graduation.

I am excited to appear with MMA at LD 2092's public hearing on January 31, but wanted to also send along information on ORBIS and our partnership with MMA. The Academy currently plays an important role in Maine's shipbuilding community and will only become a more critical part of that economic activity in the years ahead.

Background

ORBIS SIBRO, Inc. (d.b.a. ORBIS) and Maine Maritime Academy (MMA) are proud to have developed an innovative approach to accelerate trade skill training while simultaneously reducing the cost of nuclear-powered submarine sustainment. ORBIS has received funding and authorization to leverage existing capacity at MMA training facilities to perform immersive, fast-paced, heavy marine industry trade skills development in a hands-on practical and academic approach. Teaming with MMA creates a symbiotic relationship through equipment and facility upgrades, curriculum and idea sharing, and energization through shared missions. Portsmouth Naval Shipyard (PNS) in Kittery, Maine, the premier fast-attack nuclear-powered submarine overhaul, repair, and modernization Naval Shipyard (NSY), is struggling to hire, train, and deploy its production workforce rapidly enough to meet or exceed demand. With nuclear-powered warship (NPW) sustainment workload backlog accumulating, all available NSY productive capacity must be focused on direct shipboard and shop work. The **Naval Shipyard Institute (NSI)** will rapidly recruit, train, and deploy new tradespersons at a beginner skill level into PNS's apprenticeship programs with far greater momentum than today's processes.

Nuclear-Powered Submarine Construction, Sustainment, and Modernization

The United States Navy's nuclear-powered submarine fleet is the only remaining differentiator in assuring America's global maritime superiority. The Great Power Competition, embodied by the escalation of near-peer combatant ships in the Eastern hemisphere is placing a steadily increasing demand on our Navy's overextended submarine fleet. The construction and sustainment of our Navy's submarines and undersea combatant capability are of paramount importance to our national security.

Growing concern is being exacerbated by an atrophying American industrial base that has been relied upon to provide critical manufacturing and repair services supporting submarines.

Portsmouth Naval Shipyard's Commanders often describe the overhaul, repair, and modernization of a nuclear-powered fast attack submarine as "overhauling your entire engine compartment, accessing it only by way of the glove box." The sustainment mission requires a surgical approach to the upkeep of our nuclear-powered warship fleet. Tradespeople, engineers, and safety organizations must design the approach to sustainment within countless constraints (dimensional, human, radiological, etc.) and few degrees of freedom. Nuclear-powered submarine sustainment is a complex and cumbersome, non-repetitive process presenting challenges requiring new, innovative, and unorthodox solutions as PNS breathes life into rapidly aging ships.

At PNS, trade skills must be applied to solve challenges that may not have been seen by the mechanic or the organization. As new challenges present themselves, our NSY's often *design and manufacture tooling that does not exist elsewhere*. Rising to that challenge, mechanics must have a strong foundation of trade principles, both theoretical and practical. This skill set is above and beyond what is traditionally required for a repeatable manufacturing process. To maintain resiliency and dexterity when facing sustainment challenges, engineers and tradespeople play vital roles in concert with one another to affect repairs to a set of exacting standards for quality and safety. Maine Maritime Academy's hands-on engineering approach and bespoke training facilities lend themselves naturally to teaming engineers and tradespeople.

Maine Maritime Academy Practical Engineering Skills Training

Maine Maritime Academy trains future merchant marine engineering officers in a wide range of trade skills at an introductory and fundamental level. Maine Maritime Academy engineering graduates must be ready to perform maintenance and repair of several system types across a myriad of components. Many of these components have been made obsolete by newer technology and few replacement parts are available. Simply stated, graduates must apply a set of trade skills to fix nearly anything in an operational environment.

Like nuclear powered warship sustainment, Maine Maritime Academy graduates are trained to "meet the problem where it is." This means Maine Maritime Academy graduates often need to work in suboptimal conditions and awkward body positions while utilizing reach rods, tool extensions, and mirrors to affect a repair. This truth is in clear contrast to traditional manufacturing or construction where often a mechanic can enjoy ideal atmospheric and ergonomic working conditions. Through use of Maine Maritime Academy facilities, including training ships, the NSI will offer a training environment that is true to nuclear-powered warship sustainment. This realism in training does not exist elsewhere (i.e., community colleges). There is a clear opportunity to leverage existing capacity and training traditions at Maine Maritime Academy to produce beginner-level tradespersons who can "meet a sustainment challenge where it is."

NSI Program Differentiation

PNS and other Defense Industrial Base (DIB) and Submarine Industrial Base (SIB) manufacturers and suppliers in Northern New England have established relationships with academic institutions in the immediate area. Two good examples are Great Bay Community College (GBCC) in Portsmouth, New Hampshire, and White Mountains Community College (WMCC) in Berlin, New Hampshire:

(1) GBCC offers one-year certificate programs in Computer Numerical Code (CNC) Machining, Non-Destructive Testing (NDT), and Welding Technologies[1]. These certificate programs satisfy technical credit requirements for an associate degree in related Technology Studies. Industry certification for these programs is subsequently provided through a graduate's employer.

(2) WMCC's one-year Advanced Welding Certificate program boasts a 97% employment rate after graduation, with over thirty industry partners (e.g., PNS, Bath Iron Works, Pratt & Whitney, et al.) hiring graduates[2]. With the high-quality training received at WMCC, graduates are well-positioned to pass practical welding examinations through demonstration of proper set up, technique, and weld quality, subject to non-destructive testing. In addition, the certificate program earns graduate credits that can be applied in the pursuit of an associate degree for continuing professional development.

These are robust models reinforced through a strong customer-provider relationship where the customers are helping shape curriculum to ensure it remains contemporary and relevant. These programs dovetail well with PNS's Apprenticeship and Worker Skills Progression Programs. According to PNS Structural Shop leadership, an average of three to five WMCC Advanced Welding Certificate bearers join the PNS Apprenticeship program annually. Most resign their employment at PNS within the first year in exchange for significantly higher hourly pay rates in the private sector.

The NSI is not a replacement for any existing trade skills training programs providing skilled workers to Naval and Private Shipyard talent pipelines. The NSI will establish a regional training system (RTS) purpose-built for the heavy marine industry (i.e., construction and sustainment of United States Navy nuclear-powered warships). The NSI is the holistic solution that ship builders and ship sustainers need to continue to execute their missions into the future. This deliberate action will increase the pool of candidates available for hiring into the Naval and Private Shipyards who are indoctrinated into the heavy marine industry at the fundamental level.

Trade skill training programs need to be *added* to what currently exists to meet the rapidly growing demand. The Naval Sea Systems Command (NAVSEA) Program Executive Officer (PEO) for Strategic Submarines (SSBN) estimates that over the next ten years, 130,000 – 140,000 additional personnel are required to meet the nuclear-powered submarine construction and sustainment forecast[3]. The NSI will, in addition to trade-specific skills training, indoctrinate the trade skill trainees in the heavy marine industry leveraging their existing methodology for training prospective Merchant Marine Engineer Officers, including, but not limited to:

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[1] Great Bay Community College (2023). *Our Programs.* Retrieved December 11, 2023, from https://www.greatbay.edu/program/computer-numeric-control-cnc-certificate/, https://www.greatbay.edu/program/nondestructive-testing-certificate/, and https://www.greatbay.edu/program/welding-technologies/

[2] White Mountains Community College (2023). *Advanced Welding Technology Certificate*. Retrieved December 7, 2023, from https://www.wmcc.edu/program/advanced-welding-technology/

[3] Remarks given by Mr. Matt Sermon, PEO SSBN Executive Director, at the Naval Submarine League Annual Symposium and Industry Update on November 9, 2023.

- Basic shipboard orientation: ship's lines, system tracing, component identification (e.g., pump motor, motor controller, pump casing, valve types, etc.) blueprint reading, emergency egress, mustering, and accountability,
- Practical training in basic firefighting skills deploying small extinguishers and donning full turnout gear and fighting structural fires in hose teams in a controlled training setting,
- Practical trade skill training on working waterfronts, leveraging SMA training vessels, barges, and other maritime training platforms, and
- Operation of steam plant simulators and like system training platforms to provide a deep understanding of the systems upon which the trainees will use their learned trade skills to sustain and modernize.

The Accelerated Training for Defense Manufacturing (ATDM) facility in Danville, Virginia is providing relevant trade skill training leveraging leading-edge technology in a modern, purpose-built facility. ATDM is scaling to deliver "800 – 1000 graduates per year, beginning in Fiscal Year 2026.[4]" ATDM is already producing graduates with fundamental skills necessary for basic welding, Computer Numerical Code (CNC) machining, metrology, and other skills. ATDM, a DIB and SIB workforce development center of excellence, appeals heavily to manufacturing and construction but *does not have design intent to support nuclear-powered warship sustainment*.

NSI will provide an in-context realism in training to adequately prepare the graduates for nuclear-powered warship sustainment. NSI graduates will not be trained to a repeatable process; trade skill trainee graduates will join the workforce at PNS and other DIB and SIB-aligned suppliers with the ability to apply the principles of their trade to a myriad of warship sustainment and modernization challenges.

An Educational Partnership Agreement (EPA) is established between PNS and Maine Maritime Academy, providing a legitimate conduit through which information and knowledge can be shared. With PNS's recognition as a Federal Laboratory and MMA's history of operating on the leading edge of maritime industry innovation and research, the cradle for future trade skill innovation is established. ORBIS will continue to foster this budding relationship and take initiative to build future trade skill theory and practices into NSI curriculum at MMA and throughout the maritime RTS.

Meeting the Trade Skill Demand at Portsmouth Naval Shipyard

There are twenty-seven trade skills at work on PNS today. Of those twenty-seven trade skills, eighteen are critical to meeting nuclear-powered warship sustainment demand. PNS is projecting an annual average hiring demand of 540 people across the eighteen critical trade skills over the next four to five fiscal years.

The inaugural NSI cohort at Maine Maritime Academy, scheduled for July through August 2024, will offset the aforementioned demand by producing sixteen structural welders, sixteen inside machinists, sixteen outside machinists, and sixteen marine electricians to begin their apprenticeship programs in September 2024. In 2025, ORBIS and Maine Maritime Academy will train two additional cohorts of sixty-four trade skill trainees each, while simultaneously exploring opportunities to expand trade skill training programs beyond the four options delineated above. In the out years, ORBIS and Maine

[4] Remarks given by RADM Scott Pappano, PEO SSBN, at the Naval Submarine League Annual Symposium and Industry Update on November 8, 2023.

Maritime Academy will continue to grow the range and depth of training programs with the terminal objective of matching PNS hiring demand in all trade skills, plus meeting needs in engineers and logisticians.

Thank you for your time and attention to this information. I urge your support of Maine Maritime Academy receiving a funding increase via LD 2092. Thank you.