Performance Work Statement (PWS) for Engineering and Fabrication Services for Propulsor Support Hardware, Naval Surface Warfare Center, Carderock Division (NSWCCD).

1. **BACKGROUND:** The Advanced Propulsor Management Office (APMO) (Code 808) in the Naval Architecture and Engineering Department (Code 80) of the Naval Surface Warfare Center, Carderock Division (NSWCCD) is responsible for managing the manufacture and delivery of United States Navy submarine propulsors. The APMO requires the fabrication of hardware to support propulsor component construction, shipment, and installation.

2. **SCOPE:** The objective of this requirement is to provide propulsor support hardware and propulsor support services to include but not limited to castings, forgings, machining, welding, metrology, material testing, fasteners, and miscellaneous hardware. The contractor shall possess capabilities to provide hardware and services to perform a wide variety of tasks in accordance with the appliable references of each BPA call. A list of common APMO references can be found in PWS section 3.

   The following are applicable Product Service Codes (PSC) for this requirement: The PSC will be defined at the order level.

PSC CODE	PSC NAME
2010	Ship and Boat Propulsion Components
AC34	R&D- Defense System Ships (Engineering Development)
AC35	R&D- Defense System Ships (Operational Systems Development)
AD22	R&D- Defense Other: Services (Applied Research/Exploratory Development)
AD24	R&D- Defense Other: Services (Engineering Development)
H320	Inspect Services /Ship & Marine Equipment
J020	Maintenance/Repair/Rebuild of Equipment – Ship and Marine Equipment

3. **REFERENCE LISTING:**

   3.1 245-8627737G - Navy Propulsor Casting NAB Specification
   3.2 ASME B1.1 - Unified Inch Screw Threads, UN, UNR, UNJ Thread Forms
   3.3 ASME B1.5 - ACME Screw Threads
   3.4 ASME B18.2.1 - Square, Hex, Heavy Hex, and Askew Head Bolts and Hex, Heavy Hex, Hex Flange, Lobed Head, and Lag Screws (Inch Series)
   3.5 ASME B18.2.2 - Machine Screw Nuts; and Hex, Square, Hex Flange, and Coupling Nuts
   3.6 ASME B18.3 - Socket Cap, Shoulder, Set Screws, and Hex Keys
   3.7 ASME B30.20 - Below the Hook Lifting Devices
   3.8 ASME Y14.5 - Dimensioning and Tolerancing
   3.9 ASTM B148 - Aluminum-Bronze Sand Castings
   3.10 ASTM B150 - Aluminum Bronze Rod Bar and Shapes
   3.11 ASTM B171 - Copper-Alloy Plate and Sheet for Pressure Vessels Condensers and Heat Exchangers
   3.12 ASTM B271 - Copper-Base Alloy Centrifugal Castings
   3.13 ASTM B564 - Nickel Alloy Forgings
   3.14 ASTM B777 - Specification for Tungsten Base, High-Density Metal
   3.15 AWS D1.1 - Steel Structural Welding Code
   3.16 AWS D14.1 - Welding of Industrial and Mill Cranes and Other Material Handling Equipment
   3.17 DOD 5220.22-M - National Industrial Security Program (NISPOM)

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3.18 DOD-STD-2185 - Requirements for Repair and Straightening of Bronze Naval Ship Propellers
3.19 ISO 9001 - Quality Management Systems, Requirements
3.20 MIL-STD-1689A - Fabrication, Welding, and Inspection of Ships Structure
3.21 MIL-STD-2035A - DoD NonDestructive Testing Acceptance Criteria
3.22 NAVSEA S9074-AQ-GIB-010-248 - Welding and Brazing Procedure and Performance Qualification
3.23 NAVSEA S9074-AR-GIB-010-278 - Fabrication Welding and Inspection, and Casting Inspection and Repair for Machinery, Piping, and Pressure Vessels
3.24 NAVSEA T9074-AS-GIB-010-271 - Nondestructive Methods
3.25 (FOUO-DISTR D)_P24500000_Rev A-CLB Class Propulsor Preservation Instruction Core Manual
3.26 SSPC-QP 1: Field Industrial Contractor Qualification
3.27 SSPC-QP 3/AISC 420: Qualification of Paint Shops

4. ENCLOSURES:

4.1 (FOUO-DISTR D)_T24551101 Rev A_CLB Class - Propulsor AOS Assembly Transportation OTR Fixture_SEA05P3TWHSigned
4.2 (FOUO-DISTR D)_T24532101 Rev A_CLB CLASS FWD ASSY Transp Crane-on Tie Down HDW_SEA05P3TWHSigned
4.3 (UNCLASS DISTR C)_T24541101 REV C_Propulsor Rotor Transportation Lift Plate
4.4 (FOUO-DISTR D)_T24531105 Rev A_CLB CLASS FWD ASSY Transp Padeye_SIGNED SEA05P3
4.5 (UNCLASS-DISTR C)_324532039 Rev A_CLB CLASS BSS Hanger 9
4.6 (UNCLASS-DISTR C)_C24531113 Rev A_CLB Class Fastener, FWD Alignment Ring_SIGNED SEA05P3
4.7 (UNCLASS_DISTR_C)-L24544200-2_NAB_Load_Test_Ring
4.8 (UNCLASS-DISTR C)_C24543001 Rev B_DP2.3.X Nut Cap_SIGNED SEA05P3

5. CAPABILITY REQUIREMENTS:

This section defines general and technical capability requirements. The contractor shall meet all general requirements to be eligible for award. The contractor is eligible for award if they meet one or more of the technical capability requirements.

5.1 General Requirements. Specific requirements may vary per individual BPA call and shall be communicated to the vendor by the PWS or applicable engineering drawings.

5.1.1 Quality System: The contractor's quality system shall meet ISO 9001:2015 or later. The contractor may submit an alternative quality system subject to approval.

5.1.2 Engineering Models and Drawings: The contractor shall have capabilities to generate or modify three dimensional Computer Aided Design (CAD) models. The contractor shall have familiarity with tolerancing and dimensioning practices in accordance with reference 3.8 and shall have capabilities to generate or modify engineering drawings as needed.

5.1.3 Metrology: The contractor shall perform metrology as needed per the requirements of an individual BPA call. Inspection methods include hard gauging, non-contact laser scanning, coordinate measuring machine (CMM), and other traditional inspection methods. Measurement uncertainty associated with any dimensional inspection device shall be within +/- 20% of the feature tolerance being measured. The contractor's

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measurement equipment shall have proof of calibration and be traceable to a nationally recognized standard with substantiating documentation (CDRL A002).

5.1.4 Certification Documentation: The contractor shall generate, compile, and deliver all component certification documents per the requirements of the individual BPA call. Typical certification package requirements include certificates of conformance, material certifications, NDT inspections, and metrology reports (CDRL A002 & A003).

5.1.5 Packaging, Handling, Storage, and Transportation: The contractor shall complete all required delivery documentation, prepare materials/assembly for delivery, and deliver equipment to CONUS destinations as required per the individual BPA call. The contractor shall store materials, components and equipment per the requirements of the individual BPA call. The contractor shall prepare, maintain, and provide records of DD Form 1149 shipping documentation for all Contractor Acquired Material (CAM) or Contractor Acquired Property (CAP) transferred to the Government, and Government Furnished Material (GFM) and Government Furnished Equipment (GFE) transferred to the Contractor by the Government. The contractor shall ensure that signed DD Form 1149s are obtained from the receiving activity and kept for record. All DD Form 1149s shall include the contract number and CLIN/SLIN and be made available for inspection by the Government upon demand.

5.2 Technical Capability Requirements. Specific requirements may vary per individual BPA call and shall be communicated to the vendor by the PWS or applicable engineering drawings.

5.2.1 Machining: The contractor shall have Computer Numeric Control (CNC) machining capabilities for both milling and turning. Machining efforts vary in material, size, weight, and complexity. Machining requirements shall be communicated to the contractor by the PWS or applicable engineering drawings specific to the individual BPA call. Examples of typical machining requirements can be found in enclosures 4.1 through 4.8.

5.2.2 Weldments: The contractor shall fabricate weldments that serve as lifting, handling, and shipping fixtures for submarine propulsor components. Weldments are typically steel and vary in complexity, size, and weight. Examples of APMO weldments can be found in enclosures 4.1 through 4.4. Welding qualification requirements will be specific to individual BPA call but often require procedures in accordance with references 3.15, 3.16, and 3.22.

5.2.3 Preservation: The contractor shall have capabilities to blast and paint large fixtures, fasteners, miscellaneous metallic, and non-metallic components per the requirements of the individual BPA call. Typical facility certification requirements include references 3.26 and 3.27. Typical personnel certification requirements, environmental requirements, surface preparation and paint system specifications are provided in reference 3.25.

5.2.4 Miscellaneous Hardware: The contractor shall provide custom and commercial-off-the-shelf (COTS) hardware to support component handling, shipping and storage per the requirements of the individual BPA call. Hardware may include, but is not limited to: crates, containers, tooling, tie-downs, tarps, and miscellaneous hardware.

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5.2.5 Non-Destructive Testing (NDT): The contractor shall perform NDT inspections of castings, forgings, weldments, fasteners, and other hardware per the requirements of the individual delivery order. NDT methods may include visual inspection, fluorescent dye penetrant testing, magnetic particle testing, and ultrasonic testing. NDT certification requirements will be specific to the individual BPA call but often require procedures in accordance with reference 3.24 (CDRL A003).

5.2.6 Material and Material Testing: The contractor shall submit material certifications for all material provided as specified in the BPA call. All certifications shall show use of U.S domestic materials or materials that meet DFARS 252.225-7008 Specialty Metal requirements. The contractor shall conduct testing to examine metallurgical properties of materials as required by an individual BPA call. Testing methods may include hardness testing, mechanical property analysis, microstructure inspection, hydrogen embrittlement testing, Jominy end-quench testing, and Charpy V-notch impact testing (CDRL A002).

5.2.7 Fastener Manufacturing: The contractor shall fabricate custom fasteners per the specific requirements of an individual BPA call. Fabrication requirements shall be communicated to the contractor by the PWS or applicable engineering drawings specific to the individual BPA call. Hardware may include, but is not limited to, bolts, nuts, plugs, and pins of various materials and sizes. Fastener diameters typically exceed one inch and vary in materials that may include K-Monel (Ni-Cu-Al), Inconel 718 Titanium, Nickel Aluminum Bronze, Monel 400, and non-metallics (i.e. PVC, ULTEM, Peek, GRP, and G-10). An example of an APMO fastener and its respective requirements can be found in enclosure 4.6.

5.2.8 Castings and Forgings: The contractor shall have capabilities to sand cast, centrifugally cast, and forge various alloys to industry material specifications. Material requirements shall be communicated to the contractor by the PWS or applicable engineering drawings specific to the individual BPA call. Examples of APMO commonly required material specifications can be found in references 3.1, and 3.9 to 3.14.

6. CONTRACTOR MANAGEMENT:

6.1 Project Management: The contractor shall provide the project management necessary for the efficient and effective administration and control of work performed under individual BPA call. The contractor shall manage deliveries to meet cost, schedule, and performance of each BPA call. These BPA calls will include standard, urgent, or complex situations in fulfillment of the Government's needs. The contractor shall provide scheduling, tracking, reviewing, and estimates of projects assigned. The contractor shall resource material, facilities, personnel, and services for assigned projects. The contractor shall schedule, prioritize and track all projects, and report any discrepancies or conflicts to the designated Government representative for resolution (CDRL A001).

6.3 Meetings: The contractor shall host meetings, if requested by the Government, at manufacturing facilities.

6.4 Government Furnished Information (GFI): The Government will provide GFI required by the Contractor for performance of this contract as defined in individual BPA call. At the completion of the contract all GFI and any data derived from GFI shall be returned to the Government within 60 days.

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6.5 Government Furnished Property (GFP): The Government will provide GFP required by the Contractor for performance of this contract as defined in individual BPA call. The Contractor shall provide a quarterly inventory of GFP (CDRL A004). All GFP shall be returned to the Government as specified in the individual BPA call.

6.6 Disposition of Materials: Upon completion of the order, all material associated with the contract that is purchased by the contractor, billed to the Government, and not depleted during the performance of the contract shall become the property of the Federal Government. The contractor shall transfer all materials not depleted to the COR, as specified within the individual BPA call, by way of a Material Inspection and Receiving Report (DD Form 250) and a DD Form 1149. Disposition shall follow instructions outlined in Section I, FAR 52.245-1 Alt I, GFP clause, unless otherwise directed by the order or at the written direction of the PCO.

Attachment J – Exhibit A

1 The contractor shall provide the following deliverables:

CDRL	Title	Data Item Description
A001	Monthly Status Report	DI-MGMT-80368A
A002	Technical Report	DI-MISC-80508B
A003	Acceptance Test Report	DI-QCIC-81891
A004	GFP Report	DI-MGMT-80269

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