Statement of Work for Naval Architectural and Marine Engineering Services

Naval Architectural and Marine Engineering Services are needed to support NOAA fleet design requirements for Marine Operations Center, Pacific, Pacific Islands, and Atlantic, located in Newport, Oregon, Honolulu, Hawaii, and Norfolk, Virginia respectively. Work may include all phases of marine design and naval architecture including specifications and drawings, analysis, feasibility studies, life cycle management, and operational engineering for the NOAA oceanographic and fisheries research ships; and small vessels.

I.INTRODUCTION

The National Oceanic and Atmospheric Administration (NOAA) of the U.S. Department of Commerce currently operate a fleet of fifteen (15) ships and various small craft, with four (4) vessels in construction.

The current ships in operation within the NOAA fleet are identified in the NOAA Marine Operations web site https://www.omao.noaa.gov/ and Section V of this Statement of Work. These ships include oceanographic, fisheries, and living marine resource research vessels as well as hydrographic survey vessels of various sizes (815 – 3,250 long tons of displacement).

The small craft consist of small boats and launches operated in support of oceanographic, hydrographic, or fisheries research projects. Also included are rigid hull inflatable boats (RHIB) or aluminum hull boats that may be carried on board NOAA ships or involved in near coastal research work. These small craft vary in size up to 50 feet (15.24 meters) in length. The type, make, and configuration of the vessel will vary depending upon its intended purpose.

Central life cycle management of and operational support for the NOAA fleet is the responsibility of the NOAA's Office of Marine and Aviation Operations (OMAO) Marine Operations Center (MOC) offices currently located in Newport, OR, Honolulu, HI and Norfolk, Virginia, MOC-P, MOC-PI and MOC-A respectively and support facilities in Newport, RI, Charleston, SC, Pascagoula, MS, Gulfport, MS, Ketchikan, AK, and San Diego, CA. The purpose of this requirement is to provide Naval Architectural and Marine Engineering services for the ships of the NOAA fleet and small craft operated within the agency via an indefinite delivery/indefinite quantity (IDIQ) contract. As requirements are determined, task orders will be competed among awardees in accordance with RFO 16.507-2 unless an exception to the fair opportunity process exists under subsection (b) (2). The Contractor shall function as an independent entity and not as an agent of the Government. The Contractor shall apply its managerial and technical expertise in the most cost effective and efficient manner to furnish all labor, equipment, materials, and services to accomplish the requirements of the work description.

II.DESCRIPTION OF WORK

In accordance with the task order and written technical instruction provided by the Contracting Officer and the specifications set forth in this Statement of Work, the Contractor shall provide Naval Architectural and Marine Engineering services. The Naval Architectural services shall include the provision of arrangements, hydromechanics, ship design, small craft design, stability analyses, and structural engineering. The Marine Engineering services shall include mechanical, electrical, and structural services. The services rendered shall include the accomplishment of the following:

a. Conduct requirements, feasibility, conceptual, and preliminary design studies to develop engineering specifications and drawings for the design, construction, repair, maintenance, and alteration of ships, small crafts, and related support systems.

b. Conduct design studies to develop procurement specifications and associated drawings, cost estimates, and Government Furnished Equipment (GFE) procurement specifications for the construction, repair, and alteration of ships, small crafts, and related support systems.

c. Conduct detail design studies on all types of ship systems to develop engineering specifications, drawings, cost estimates, schedules, labor estimates, and material estimates for the construction, repair, and alteration of ships, small crafts, and related support systems.

d. Conduct ship system analyses such as stability tests, prototype installations, predictive and preventative maintenance analyses, engineering inspections and tests, weight and moment analyses, trim and stability analyses, and prepare weight reports and ship trim and stability booklets.

e. Conduct fleet support studies, economic analyses, and operation research analyses for fleet maintenance, operation, modernization, alteration, and logistic support.

f. Provide deliverable materials such as computer-aided design (CAD), drafting and engineering products, drawings, calculations, reports, and graphics. The Contractor shall have all of the required applications software required by the tasks and the related information system hardware as required to support Naval Architectural and Marine Engineering design requirements. All CAD deliverables shall be submitted as AutoCAD (Autodesk AutoCad Version 2019 or later, .DWG format) documents. All CAD deliverables shall be submitted as attachments to E-mail messages or via secure file sharing platform and full or half-sized hard copies as required by the tasks. All trim and stability related work should employ the use of Cargo Max software (by Herbert-ABS). Large format drawing scanning and printing capability shall be readily available to support the contract requirements.

Calculations, detailed specifications, and reports shall be submitted in electronic versions as email attachments or via secure file sharing platform in Microsoft Word (2019 version or later).

Unless otherwise stated in the individual task order the minimum distribution of submittals shall be as follows:

Distribution of Submittals	
Distribution Preliminaries and Finals	Copies
COR	Electronic copy
Technical Point of Contact (TPOC)	Electronic copy

To provide for the prompt dissemination of and increase the accessibility to the engineering drawings and reference documentation in the NOAA Marine Engineering plan files, NOAA has implemented AO Docs, which is an Internet document storage system. The Contactor(s) that are awarded this contract will be expected to access and make optimum use of this system to acquire references needed to perform tasks. The Internet address for this system is https://aodocs.altirnao.com. Access and instructions for the use of this system will be provided separately upon request.

Tasks assigned under this contract will primarily require performance at the Marine Operations Center offices and aboard NOAA ships and small crafts in U.S. ports. However, performance may be required aboard ships and small crafts, and at sites throughout the world.

The Government shall authorize tasks under this contract via issuance of a Task Order Assignment Record and the associated Abstract of Task Order as shown in Attachment 1 and Attachment 2, respectively.

The Contractor shall be responsible for the following reporting requirements:

a. Task Order Estimate: Estimates shall be itemized and submitted in a format equivalent to the Government Task Order Estimate as shown in Attachment 3, and in accordance with the time frames below.

b. Task Order Proposals: The contractor shall submit the task order proposal in response to any task order RFP within 7 business days, or as stated in task order RFP. **Those task RFPs identified by the government as "emergent", shall be responded to within 24 hours.**

c. Monthly Progress Reports: These reports shall be prepared for each assigned task order and shall be submitted within ten (10) calendar days after the issuance of the task order, and on a monthly basis thereafter in accordance with Attachment 4.

d. Final Technical Report: At the conclusion of each task order the Contractor shall prepare and submit a completion report. For tasks that require feasibility study or an analysis, the report shall be submitted in accordance with Attachment 5.

e. Task Order Completion Certificate: The Contractor shall certify task order completion and final charges (including total labor hours expended) in each category (labor, material, and total task order value) at the time that work authorized by the task is completed or otherwise terminated. The Completion Certificate shall be indicated in the appropriate blocks on the Task Order Assignment Record (see Attachment 1). Once task completion has been agreed upon by the contractor and the COR, then the Contractor shall submit a Release of Claims with final invoice for final task order close-out and payment.

III. DESCRIPTION OF LABOR CATEGORIES

All direct labor categories required to perform task orders to be issued under this contract are described below. The Contractor shall designate a Supervisory Engineer/Project Manager as the primary contact point for the Government's Contracting Officer, Contracting Officer's Representative, and the contractor's employees designated as key personnel under the individual task orders.

The following labor categories are required under this contract. Each person designated for a labor category is required to have the minimum experience and education as required below.

a. **Supervisory Engineer/Project Manager**

General Experience: At least ten years of experience in multiple facets of ship design related work.

Specialized Experience: At least four years of experience in a role of responsibility in a technical specialty or as a project engineer.

Education: Bachelor of Science (BS) degree in engineering from an ABET accredited college or university; a Professional Engineer (PE) license is preferred. An advanced degree is desirable but not required.

Major Duties: Is responsible for his/her own technical work. Supervises the efforts of a major subdivision or manages total projects. The individual in this position functions as the technical manager and exercises final responsibility for the quality of the Contractor's performance under this contract. This person is the key liaison for the Contractor in all relations with the Government.

b. **Principal Engineer**

General Experience: At least ten years of progressively responsible experience since receipt of degree; PE license is preferred. Experience shall combine engineering work as a degreed engineer in one or more of the following ship systems in industrial work environments is preferred:

1. Operation, maintenance, and repair of ship systems (Shipboard)
2. Design of ship systems (Shipyard or Factory)

3. Repair of ship systems (Shipyard or Factory)
4. Manufacture of ship systems (Shipyard or Factory)
5. Instrumented testing of ship systems (Shipyard or Factory)

Experience shall include performance of ship and ship systems engineering work as a degreed engineer in one or more of the following areas is preferred:

1. Development of technical specifications or directly related documents for ship system design, construction, operation, maintenance, or repair.
2. Development of procurement documentation for acquisitions relating to any of the industrial work described above.
3. Construction, operation, maintenance, or repair of operating commercial or research ship fleets.
4. Execution of ship and ship system life cycle engineering projects.

The combined general industrial and management work experience shall lead to recognition as an expert in the application of engineering principles for the detection and resolution of challenging problems in schedule and cost sensitive assignments as they relate to the areas of ship system design, construction, operation, maintenance, and repair.

Specialized Experience: The Principal Engineer's specialized experience shall be applicable to specific ship systems and the Principal Engineer shall be required to have specialized experience in at least one of the categories below. The following are the categories of specialized experience required and are provided for reference and do not exclude other areas of experience, which may be presented as pertinent to this requirement:

1. Hull Systems
2. Ship Control Systems
3. Mission Support Systems
4. Deck Machinery Systems
5. Propulsion and Control Systems
6. Auxiliary Systems
7. Electrical Systems
8. Berthing, Messing, and Habitability Systems
9. Ship Support Systems

Education: Bachelor of Science (BS) degree in engineering from an ABET accredited college or university; a Professional Engineer (PE) license is preferred. Advanced degrees in technical disciplines that relate to the scope of work under this requirement may account for two years of general experience.

Major Duties: Independently and expertly analyzes ship system performance in an area of their specialized experience to develop technical definitions of problems and subsequent specifications or technical documentation for the resolution of shipboard engineering problems that relate to the design, construction, operation, maintenance, repair, testing, and other engineering service requirements.

c. **Senior Engineer**

General Experience: At least six years experience in ship design related technical work.
Specialized Experience: At least three years experience in the area of technical specialty for which they claim to possess (Note: These years may be comprised within the six years of general experience).
Education: At least one of the following:

1. Bachelor of Science (BS) degree in engineering from an accredited college or university
2. PE license (Preferred)

Major Duties: Independently performs work that requires conventional engineering but may also perform more complex engineering work with higher level technical supervision.

d. **Engineer**

General Experience: None required

Specialized Experience: None required

Education: At least one of the following:

1. Bachelor of Science (BS) degree in engineering from an ABET accredited college or university
2. Engineer in Training (EIT) registration and six years of design experience

e. **Senior Designer**

General Experience: At least ten years of experience in ship design related work. Formal education in a directly related field may be substituted for experience. Senior Designer shall be competent in the use of computer applications for technical design and data management.

f. **Designer**

General Experience: At least four years of experience in ship design related work. Formal education in a directly related field may be substituted for experience. Shall be trained and experienced in the use of computer applications for technical design and data management.

g. **Drafter**

General Experience: At least one of the following:

1. Three years of experience in ship design related technical drafting.
2. High school diploma plus one year of experience in ship design related technical drafting. 3. Technical school diploma plus one year of experience in ship design related technical drafting.

Trained and experienced in the use of CAD applications for technical design and data management (Autodesk AutoCAD Version 2019 or later).

h. **Estimator**

General Experience: At least six years of experience estimating shipyard work involved with ship construction, repair, and renovation.

i. **Technical Writer**

General Experience: At least four years' experience involved with preparation of ship construction and repair technical documents such as specifications, technical manuals, etc.

IV. QUALITY ASSURANCE PROGRAM COORDINATION

a. **Responsibility for Inspection**: The Contractor shall be responsible for performance of all inspection requirements as specified herein unless otherwise directed by the tasks. The Government reserves the right to perform any inspection deemed necessary to ensure that all deliverable items (including all engineering drawings and specifications) conform to the prescribed requirements. The Government reserves the right to reject all deliverables for which non-conformance is established.

b. **Deliverable Quality Control System**: The Contactor shall provide and maintain an adequate system for detailed examination and technical review of all deliverable items to be supplied under the

terms of this contract. The system shall ensure the conformance of deliverable items to all requirements specified herein and in the individual task orders.

The system and procedures shall be described and documented by the Contractor. The system shall be subject to review by the Government procuring activity. The Deliverable Quality Control System shall be subject to the disapproval of the Government procuring activity whenever it fails to ensure conformance to the requirements specified herein and in the individual task orders.

c. **Conformance to the Specifications and Directions**: All deliverable drawings, specifications, calculations, studies, and engineering reports provided by the Contractor shall represent a practical engineering solution based on the most advantageous combination of the following:

1. Total cost
2. Effectiveness
3. Reliability
4. Maintainability
5. Availability of materials
6. Labor skills
7. Industrial capacity
8. Regulatory body requirements
9. Schedule requirements

All designs shall meet the requirements of the applicable portions of the following:

1. Code of Federal Regulations (CFR), Title 46, Shipping, Chapter I, Coast Guard, Department of Transportation
2. American Bureau of Shipping (ABS) Rules for Building and Classing Marine Vessels (MVR)
3. Other Governmental, industrial, and commercial standards as specified in the individual task orders

In the event of conflict between the requirements of the above regulations, resolution shall be sought from the Technical Point of Contact (TPOC), the COR, or the Government Contracting Officer.

Most vessels of the NOAA fleet have load lines assigned by ABS. NOAA Ship Oregon II and NOAA Ship Rainier carry only load line certifications with ABS. Additionally, the following vessels are and/or will be maintained with an ABS classification:

1. NOAA Ship *Ronald H. Brown*
2. NOAA Ship *Oscar Dyson*
3. NOAA Ship *Fairweather*
4. NOAA Ship *Nancy Foster*
5. NOAA Ship *Gordon Gunter*
6. NOAA Ship *Thomas Jefferson*
7. NOAA Ship Oscar Elton Sette
8. NOAA Ship Henry B. Bigelow
9. NOAA Ship Pisces
10. NOAA Ship Bell M Shimada
11. NOAA Ship Okeanos Explorer
12. NOAA Ship Ferdinand R. Hassler
13. NOAA Ship Reuben Lasker
14. NOAA Ship Oceanographer - New Construction expect delivery 2026
15. NOAA Ship Discoverer – New Construction expect delivery 2027
16. NOAA Ship Surveyor- New Construction expect delivery 2028
17. NOAA Ship Navigator- New Construction expect delivery 2029
16. Any future vessel to be introduced into the NOAA ship fleet.

Adherence to the ABS regulations shall be maintained in all work performed for the above vessels. This includes drawing review and approval by ABS where required by the regulations for critical engineering systems. United States Coast Guard (USCG) Navigation and Inspection Circular (NVIC) 4-94,

Elimination of Coast Guard Plan Review for Non-Critical Engineering Systems and Cargo Barges, applies to non-critical systems. Per this NVIC, drawings for such non-critical systems may be reviewed and certified by a registered PE or ABS, in lieu of USCG.

The contractor shall utilize the Construct life cycle Engineering Manager within the NOAA ABS My Freedom portal for submittal of all documents to ABS for their review and approval. Access to this portal shall be provided when needed by the COR.

Deliverable items other than drawings, specifications, studies, and engineering reports shall be new or like new and shall be functional for the intended use.

d. **Quality Control Procedures**: The Contractor shall accomplish the following:

1. Assign responsibility for the detailed examination and review of each deliverable item.

2. Provide a written procedure for detailed examination, review, and correction with final certification of acceptance for each deliverable.

3. Verify the qualifications of personnel performing the detailed examination and review.

4. Include a checklist to be used in the detailed examination and review of the deliverables. This checklist shall be included with the submittal of the deliverable to the Government.

5. Include a list of acceptance criteria for examination of drawings, specifications, studies, and engineering reports. This list shall be included with the submittal of the deliverable to the Government.

V. CURRENT NOAA FLEET

a. Active Ships

Active Ships of the NOAA Fleet		
Ship	**Length (Feet/Meters)**	**Home Port**
NOAA Ship *Henry B. Bigelow*	208.6 / 63.6	Newport, RI
NOAA Ship *Ronald H. Brown*	274.0 / 83.5	Charleston, SC
NOAA Ship *Oscar Dyson*	208.6 / 63.6	Kodiak, AK
NOAA Ship *Okeanos Explorer*	224.0 / 68.3	Newport, RI
NOAA Ship *Fairweather*	231.0 / 70.4	Ketchikan, AK
NOAA Ship *Nancy Foster*	186.5 / 56.8	Charleston, SC
NOAA Ship *Reuben Lasker*	208.7 / 63.6	San Diego, CA
NOAA Ship *Gordon Gunter*	224.0 / 68.3	Pascagoula, MS
NOAA Ship *Thomas Jefferson*	208.0 / 63.4	Norfolk, VA
NOAA Ship *Oregon II*	170.0 / 51.8	Pascagoula, MS
NOAA Ship *Pisces*	208.6 / 63.6	Pascagoula, MS
NOAA Ship *Rainier*	231.0 /70.4	Newport, OR
NOAA Ship *Oscar Elton Sette*	224.0 / 68.3	Honolulu, HI
NOAA Ship *Bell M. Shimada*	208.6 / 63.6	Newport, OR
NOAA Ship *Ferdinand R.Hassler*	124.0 / 37.7	Newcastle, NH

b. **New Construction Ships**

New Constructions Ships of the NOAA Fleet		
Ship	**Length (Feet/Meters)**	**Home Port**
NOAA Ship *Oceanographer*	244 / 74.4	Honolulu, HI
NOAA Ship *Discoverer*	244 / 74.4	Newport, RI
NOAA Ship Surveyor	268 / 81.7	TBD
NOAA Ship Navigator	268 / 81.7	TBD

Note: The above tables of ships in the NOAA fleet may change during the length of this contract. Further information regarding the NOAA fleet may be obtained by consulting the NOAA Marine Operations Center web site at https://www.omao.noaa.gov/.