1.0 Background and Objectives

Naval Surface Warfare Center, Carderock Division (NSWCCD) Code 653 requires specialized Non-Destructive Testing (NDT) inspection services to support recertification of the 13-foot diameter multi-layer pressure vessel located in A-bay of Building 19 West Bethesda facility. There are concerns of corrosion in the outer layers of the vessel's lower hemisphere, but this section is encased in asphalt and rests on a concrete foundation so it's externally inaccessible.

The objective of this procurement is to acquire NDT services to assess the condition of the lower hemisphere. The assessment of the test chamber bottom hemisphere can be broken down into several line items. First the preliminary evaluation of the methodology on the test chamber, second the full evaluation of the lower hemisphere. The proposed tasking shall assess the condition of the inaccessible outer layer of the lower hemisphere without requiring disassembly, entry into the interior of the pressure vessel, or lifting it from its foundation. Additionally for further assessment of the test chamber there is an OPTION for an Acoustic Emission Evaluation and an OPTION for additional data collection on the test chamber.

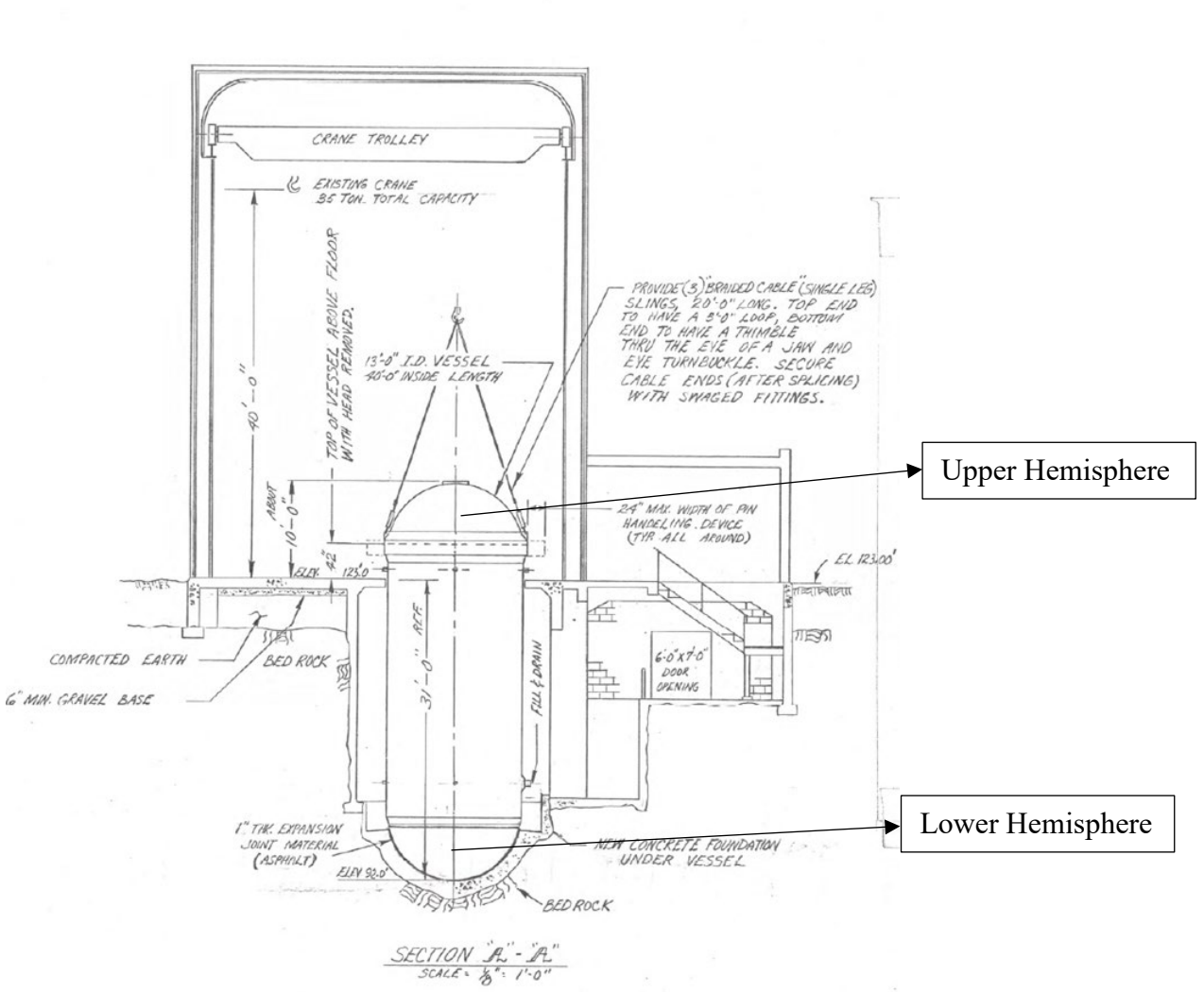

Figure 1: 13-ft Diameter Pressure Vessel Located in A-Bay

2.0 Objective

The contractor shall provide all personnel, equipment, materials, and supervision necessary to perform the following tasks:

2.1. Base Requirement: Guided Wave Evaluation of the 13ft Test Chamber

- **2.1.1 Initial Planning:** The contractor shall develop and submit a plan describing the proposed technical approach for the study. The contractor's technical approach shall include GWPA (guided wave phased array) scanning and magnetostrictive B-scanning.
- **2.1.2 On-site Preliminary Evaluation:** Upon approval of the plan, the contractor shall mobilize a team to NSWC Carderock to perform initial evaluation of the test chamber and application of the scanning methodology.
- **2.1.3 Guided Wave Evaluation:** Utilizing findings from the preliminary evaluation, the contractor shall perform a full evaluation of the lower hemisphere of the 13ft test chamber. The Government's target objective is full volumetric inspection coverage of the inaccessible outer layer. However, the Government acknowledges that the vessel's encasement in asphalt may physically limit signal propagation. The contractor shall inspect the maximum extent practicable. If full coverage is unachievable, the contractor shall document the limiting factors and the actual region of coverage achieved in the final report.
- **2.1.4 Comprehensive Data Analysis:** The contractor shall analyze all data from the full-scale inspection to identify and characterize any indications of corrosion, wall thinning, cracking, or other structural defects.
- **2.1.5 Final Reporting and Debrief:** The contractor shall prepare a *Comprehensive Final Inspection Report* detailing all findings and providing an assessment of the vessel's lower hemisphere. A final debrief meeting with Government TPOCs is required upon submission of the report. Debrief meeting may be held remotely.

2.2 (OPTION 1): Acoustic Emission Evaluation

- **2.2.1 Sensor Placement:** The contractor shall place acoustic sensors for evaluation of structural response of the test chamber under internal hydrostatic loading.
- **2.2.2 Data Collection:** The contractor shall record data during a pressurization run of the 13ft test chamber. NSWC Carderock Code 653 is responsible for operation of the 13ft test chamber during the pressurization run.
- **2.2.3 Results Report:** The contractor shall prepare a Report detailing the findings of the acoustic sensors and condition of the 13ft test chamber.

2.3 (OPTION 2): Additional Data Collection

- **2.3.1 Collection of Additional Guided Wave Data:** The contractor shall perform additional Guided Wave NDT of the 13ft test chamber and update the Report from the Base scope with the results. This data collection shall be planned for up to 5 days of work. Contractor shall provide a daily rate for this work.

3.0 Special Qualifications:

N/A

4.0 Performance and Deliverable Requirements:

Upon award of contract, the contractor shall coordinate the schedule for on-site services and submission dates for all deliverables with the Government TPOC.

The Contractor shall provide the following Contract Data Requirements Lists (CDRLs) from Table 1:

Table 1: New Item Requirements

Item #	Description	Quantity
A001	Guided Wave Inspection Report	**1**
A002	Acoustic Inspection Report	**(1)**
A003	Additional Guided Wave Inspection Report	**(1)**

5.0 Period of Performance

The Base Requirement shall be completed NLT 45 days after contract award.
The Contracting Options, if exercised, shall be completed NLT 45 days after the option is exercised by the Government.

6.0 Place of Performance

The contractor shall perform the on-site inspection services at the location below. All deliverables shall be submitted electronically to the Government TPOCs listed in Section 8.0 of this SOW.

Location:
NSWC Carderock
9500 MacArthur Blvd.
Bethesda, MD 20817
Building 19, A-Bay

7.0 Government-Furnished Items: N/A

8.0 Government Technical Point of Contact (TPOC)s

*Will be provided upon award.