



**THIS IS NOT
AN ORDER**

REQUEST FOR BIDS/PROPOSALS COVERSHEET
THE UNIVERSITY OF SOUTHERN MISSISSIPPI
Procurement and Contract Services
118 College Drive #5003, Hattiesburg, Mississippi 39406-0001

Date: September 19, 2023

BID No. 24-07

THE UNIVERSITY OF SOUTHERN MISSISSIPPI is considering the purchase of the following item(s). We ask that you submit your bid and retain one copy for your files. Right is reserved to accept or reject any part of your bid. Your quotation will be given consideration if received in Bond Hall, Room 214 on or before:

2:00 p.m. CT

October 04, 2023

Buyer: Amber Floyd

Name: _____

Company: _____

Address: _____

City/State/Zip: _____

TERMS - Bidder should state terms of sale. Our terms are 2% ten days, net 45 days.

These terms will apply per Mississippi law.

AWARDING CONTRACT - Cash terms will not be used as a basis for awarding contracts; however, the University will accept cash discounts when earned.

NOTE: If you cannot quote on the exact material shown, please indicate any exception giving brand name and complete specifications of any alternate. If additional space is required, use a separate sheet or letter of transmittal.

ITEM	QUANTITY	DESCRIPTION	UNIT PRICE	TOTAL NET PRICE
		<p>BID 24-07 Uncrewed Underwater Vehicles</p> <p>RFx # 3160006173</p> <p>PROPOSAL MUST BE RETURNED TO THE UNIVERSITY IN ACCORDANCE WITH THE SPECIFICATIONS. RFP NUMBER AND DATE OF BID OPENING MUST BE SHOWN ON THE OUTSIDE OF THE ENVELOPE IF USING THAT METHOD.</p>		

We quote you as above - F.O.B. The University of Southern Mississippi.
Shipment can be made in _____ days from receipt of order. DATE _____
Return quotation to Procurement Services at above address.

Signature Required _____



THE UNIVERSITY OF
SOUTHERN
MISSISSIPPI

**SYSTEM DESIGN SPECIFICATIONS FOR A SMALL, TWO MAN
PORTABLE, UNCREWED UNDERWATER VEHICLE WITH AN
INTEGRATED HIGH RESOLUTION SIDE SCAN SONAR SYSTEM**

The University of Southern Mississippi

Prepared by Steve Stanic and Landry Bernard

July 11/2023

SYSTEM DESIGN SPECIFICATIONS FOR A SMALL, TWO MAN PORTABLE, UNCREWED UNDERWATER VEHICLE WITH AN INTEGRATED HIGH RESOLUTION SIDE SCAN SONAR SYSTEM

I. Background

The U.S. Navy requires the ability to detect targets using recently developed low cost small Uncrewed Underwater Vehicles (UUV) using high-resolution side scan sonar systems.

These UUV systems shall have the potential to provide the Navy with enhanced capabilities to detect low signature buried and proud targets particularly in the littoral zone.

The University of Southern Mississippi's (USM) Roger F. Wicker Center for Ocean Enterprise, located at the Port of Gulfport, MS has been researching and testing advanced UUV systems using sonar designs, and on-board processing to create advanced maps of acoustic sensor data over a broad range of environmental and platform noise conditions.

To address these detection requirements USM has received funding to purchase a small portable UUV system integrated with a very high-resolution side scan sonar system.

II. Purpose

USM has developed the environmental measurement framework, data processing, visualization products, and ocean measurement systems required for the testing and performance evaluation of these new and emerging UUV systems.

This document contains the minimum requirements for a small portable UUV integrated with a high-resolution high-frequency side scan sonar system. These systems will conduct acoustic surveys to map the placement of different types of proud and partially buried targets deployed in USM's CUBEnet test range.

III. General Requirements

1. The UUV shall be two-man portable, small-class UUV.
2. It shall have a 300-meter depth rating.
3. The system shall be capable of speeds up to at least 4.5 knots.
4. The system shall be easily reconfigurable and support the integration of different payloads.
5. The system shall have at least a 1 TB hard drive.
6. An automatic target recognition and display software shall also be provided.

7. The system shall have surface lights and locating strobe.
8. The system shall come with its own transportation crate with shock absorbent mounting.
9. Each system shall come with the auxiliary equipment required to operate the vehicle.
10. The system shall be iridium capable.
11. The UUV and high resolution side scan sonar and all supporting equipment shall be delivered to USM within 90 days after contract award.
12. The delivery arrangements and transportation costs shall be the vendor's responsibility.
13. The UUV and side scan sonar system shall be delivered to USM's Marine Research Center, 1030 30th Ave Gulfport, MS 39501.

IV. Specific Specifications for an UUV and integrated high resolution side scan sonar system

The following minimum specifications shall ensure that the UUV and integrated high-resolution side scan sonar system shall perform the tasks necessary to satisfy USM's project's objectives.

1. The following table outlines the minimum system specifications that the UUV system shall meet.

UUV Specifications	
Property	Description/Value
Diameter	Approx. 19 cm
Length	2.1 m
Weight	58.0 kg
Maximum Range	100 km
Recharging Time	11 hours
Run Time	At least 18 hours
Maximum Depth	300m
Battery	At least 3.0 kWh
Max speed	5 knots
Propulsion and Control	Direct drive DC brushless motor, open 3-blade propeller

2. The following table outlines the minimum specifications that the UUV payload shall have.

Payload Specifications	
Properties	Description/Value
Communications	High frequency (20-30 kHz) acoustic communications; 2.4 GHz WiFi; Iridium
Antenna	GPS, WiFi, Iridium, LED status lights and visible and infrared (IR) recovery locating strobe
Navigation	High resolution navigation system
Doppler Velocity Log (DVL)	300 kHz phased array DVL with 200m bottom lock
External Connections	Vehicle Interface Program for mission programming and post-mission analysis
Other Sensors	Conductivity and temperature (CT) sensor, depth sensor
Safety Features	Ground fault detection, Leak detection, RJE International emergency locator beacon, Health status
Tracking	Mission monitoring,
Operations	Capable of system networking

3. The following table outlines the minimum system specifications that the Ultra-high resolution integrated Side Scan Sonar System shall meet.

General Sonar Specifications	
Ultra-high resolution Sonar System	Description/Value
Transducers	Simultaneously dual frequency
Frequency range	900 kHz and 1800 kHz
Resolution	5 cm max
Swath range	At least 150 m

4. The vendor shall provide the cost of the following potential UUV options.

UUV System Options
The vendor shall provide the cost of a surface communication station
The vendor shall provide a list and cost of onboard spares
The vendor shall provide the cost of an UUV simulator
The vendor shall provide the cost of additional battery modules
The vendor shall provide the cost of a synthetic aperture sonar system and processing software
The vendor shall provide the cost of a high-resolution camera system

V. Software

The vendor shall provide Complete Software Package (backup) and product documentation for all systems. The vendor shall provide Vehicle Interface Program for mission programming and post-mission analysis. This includes packages that provide high-resolution acoustic images, signature displays, and automated target recognition.

VI. Training

The vendor shall provide training on the operation, software, maintenance and troubleshooting integration of all systems. This shall include mission planning, basic mission data analysis and display, and at sea operations. This training shall take place at the USM facility located in Gulfport MS.

VII. Proof of Performance

The vendor shall provide a proven record of the UUV and side scan sonar measurements and operating system performance. The vendor needs to provide references where these systems and their operating system in a substantially similar configuration as specified above have operated successfully within the last 3 years. The above requested information will assist USM in determining the bidder's capability of meeting these requirements.

VIII. Warranty Services

At a minimum, the Contractor shall provide software/hardware warranty support for one year from acceptance. Longer warranty periods are preferred. The Vendor shall agree to repair, adjust, and/or replace as determined by the University to be in its best interest) any defective materials at the Vendor and/or manufacturers' sole cost. The University will incur no costs for service or replacement of materials during the warranty period. The Vendor will be the sole point of contact for warranty issues.

IX. Documentation

The Contractor shall provide UUV and sonar system Operations and Maintenance manuals to USM. Documentation provided shall include, but not be limited to the following:

- A. Theory of operation
- B. Operating procedures
- C. Interfacing instructions with connector pin outs
- D. Troubleshooting and maintenance procedures
- E. IPB (Isometric Parts Breakout) drawings showing how all parts, especially mechanical parts, relate to one another.
- F. Documentation of the various software packages.
- G. All sensor documentation and manuals.