

TENDER SPECIFICATION OF AUTONOMOUS UNDERWATER SEARCH SYSTEM

1. **Name of Equipment.** Autonomous Underwater Search System
2. **Purpose.** To carry out Hydrographic and Oceanographic Survey, underwater search operation and wreck survey in the coastal and riverine waters of Bangladesh.
3. **General Description of the Equipment.** The Autonomous Underwater Search System should be portable, light weight and self-contained. It should be capable of carrying hydrographic & oceanographic sensors and underwater gadgets as payloads to carryout assigned survey maintaining IHO standard.
4. **Quantity.** 01 (One) complete set.
5. **Brand/Model.** To be mentioned.
6. **Country of Origin.** UK, USA, Japan, Canada, Norway, EU countries (Name of the country to be mentioned).
7. **Country of Manufacturer.** UK, USA, Japan, Canada, Norway, EU countries (Name of the country to be mentioned).
8. **Name and Address of the Manufacturer.** To be mentioned (address, telephone, facsimile number, email address are to be mentioned).
9. **Date of First Introduction in the Market.** To be mentioned.
10. **Year of Manufacture.** 2023 or later.
11. **Qualification of Bidders.** Only genuine manufacturer or authorized dealer (Foreign principal) can submit quotation through authorized agents/dealer enlisted in the Directorate General of Defense Purchase (DGDP). For participation by agents/dealer, authenticity certificate is required.
12. **Scope of Supply.** The Autonomous Underwater Search System will be supplied along with payload sensors, accessories and processing software as per the specification mentioned in this document.
13. **Technical Specification.** The Autonomous Underwater Search System should have following specifications:

Ser	Description	Requirement
1.	Length	1.5 to 3m.
2.	Diameter	To be mentioned
3.	Weight in Air	To be mentioned
4.	Operating Depth	At least 300m.
5.	Energy	Rechargeable Lithium-Ion battery with easy replaceable facilities.
6.	Battery charging time	To be mentioned.

Ser	Description	Requirement
7.	Endurance	10 hours or more.
8.	Speed	Min 2 kts, Max 5 kts of more.
9.	Propulsion system	To be mentioned
10.	Sustainability at sea	Up to sea state 3.
11.	Operating Temperature	0°C to 40° C

14. **Payload Sensors (Desired).** Following payload sensors required:

a. **Side Scan Sonar.** High Definition and turbid water capability. It should have following criteria:

Ser	Deployment method	Remarks
1.	Operating frequency	>400 KHz.
2.	Horizontal Beam-width	To be mentioned.
3.	Vertical Beam-width and Swath Coverage	To be mentioned

b. **HD Underwater Video/Still Camera (with accessories).** Details to be mentioned. Video camera is preferred.

c. **INS.** Details to be mentioned.

d. **DVL.** Details to be mentioned.

e. **Payload Sensors (Optional).** Details to be mentioned for following sensors (Price to be quoted separately):

- (1) Multiparameter probe.
- (2) Swath Bathymetry.
- (3) SBES.

15. **Software.** The Autonomous Underwater Search System and its payload sensors should have following softwares (Details to be mentioned):

- a. Easily Programmable for planning, operating, data retrieval.
- b. Necessary post processing and Analyzing software.
- c. Mission planning software.

16. **Top Side Equipment.** The Autonomous Underwater Search System should be provided with:

- a. ISO standard Containerized storage and operation facility.
- b. Surface Communication Module/ Command Console.
- c. Acoustic positioning & underwater communication system for tracking and live communication with Autonomous Underwater Search System, real time data transmitting information like Latitude, Longitude, Speed, Pitch, Heading, Roll. Altitude, Immersion etc required.

- d. GPS positioning & Radio communication system.
 - e. Autonomous Underwater Search System battery charger.
 - f. Autonomous Underwater Search System and sensor's storage facilities (Includes Basic Servicing tools).
17. **Launch & Recovery System.** Autonomous Underwater Search System should have the facility to operate manually from ships, lightweight boats and any other suitable platforms.
18. **Emergency Locating Systems.** The Autonomous Underwater Search System should be equipped with minimum two safety locating systems (one for under water another for surface) like: Acoustic Pinger/Live tracking system/Satellite locator beacon/Radio Frequency (RF) beacon.
19. **Communication.** The equipment should have following communication methods (Details to be mentioned):
- a. Acoustic command & data link (Long Base Line/ Short Base Line).
 - b. User Selectable Radio Frequency (in surface).
 - c. Any other communication system (Optional). Price to be quoted separately.
20. **Navigation.** The equipment should have following methods of navigation (Details to be mentioned):
- a. Acoustic positioning (Long Base Line/ Short Base Line).
 - b. Inertial Navigation System (INS).
 - c. GPS.
21. **Power Supply.** The Autonomous Underwater Search System should be operated from sets of rechargeable pressure tolerant Lithium-ion battery. To meet the operational demand, the Autonomous Underwater Search System should have adequate number of battery sets that shall be IATA certified. A separate and dedicated battery charging facilities should be provided with the system.
22. **Lifetime of the Autonomous Underwater Search System.** Minimum 10 years.
23. **Condition of Equipment while Supplying.** The offered equipment must be brand new and in full operational condition.
24. **Catalogue/Brochure.** Two sets of original Catalogue/Brochure in English are to be supplied with the offer.
25. **Quality Management System.** To assess the quality management system (QMS) of the manufacturer, ISO or equivalent certificate has to be provided with the offer.

26. **Certificate/Document of Authentication.** The local supplier must provide following original certificate/document with the offer/quotation to ascertain the ingenuity of source and items in order to establish chain of links from the original source to supply items:

- a. One certificate/document by the manufacturer in favour of the supplier (In case of manufacturer as direct source).
- b. Two certificates/documents, one by the manufacturer to authorized agent and other by the authorized agent to supplier (In case of authorized agent as immediate source).

27. **Manuals.** Following manuals are to be supplied free of cost with the equipment at the time of delivery:

- a. Two sets of operating manual in English.
- b. Two sets of technical manual in English (If any).
- c. Parts Catalogue.

28. **Pre Shipment Inspection (PSI) and Factory Acceptance Test (FAT).**

a. Pre Shipment Inspection (PSI) and Factory Acceptance Test (FAT) will be carried out by a team of two BN officers for a duration of 03 (three) working days excluding journey period, at the buyer's expense (including return air ticket, food and accommodation). The supplier should inform the buyer about the date and schedule of PSI and FAT at least 08 (eight) weeks prior to the date of commencement of the said PSI and FAT. After inspection, a joint inspection report will be prepared and signed by both the seller and buyer's representatives.

b. All types of movement/transportation of the PSI/ FAT team within the manufacture/supplier's country, reception and arrangement for entry into country/ concerned area for the PSI and FAT are to be arranged by the supplier. The PSI and FAT will be carried out at manufacturer's factory premises.

c. On return from the country of manufacturer, the PSI and FAT team will submit report to the concerned directorate of Naval Headquarters (NHQ). NHQ will, in turn, forward final decision along with PSI and FAT report at the earliest, basing on which DGDP will render clearance for shipment of stores to the supplier concerned. The supplier will not make shipment of any item of the contract without clearance from the DGDP.

d. During PSI/FAT, tests will be carried out to fulfill the required conditions mentioned in the technical specification of the Autonomous Underwater Search System. Various tests for checking performance are to be carried out and recorded.

29. **Installation and Setting to Work.** The manufacturer's representative will install the Autonomous Underwater Search System on board BNS ANUSHANDHAN, Chattogram. The following requirements should be completed:

- a. Assembling of System Components. The system components of the Autonomous Underwater Search System and payload sensors should be assembled by the manufacturer's experts.
- b. Other Requirements. Interfacing the whole system and sensors with onboard Facilities should be ensured by the manufacturer's experts.

30. **Test and Trial.** Manufacturer representative will carry out test and trial of the Autonomous Underwater Search System on board BNS ANUSHANDHAN, Chattogram. Initial test and trial will be done at Harbour. Final trial will be conducted at sea with manufacturer representative on board. Cost of test and trial to be quoted separately.

31. **Training.** 03 (Three) working days training for BN personnel on the operation and maintenance of the equipment. Its troubleshooting must be conducted by manufacturer's authorized engineer/ trainer at BNS ANUSHANDHAN, Chattogram (price to be quoted separately). Tentative training contents against each day should be mentioned in the offer. The outcome of the training should encompass following:

a. Trainees should gain sufficient knowledge to use the equipment and related software efficiently and effectively to deploy and operate the equipment.

b. Have general trouble shooting knowledge on equipment and software.

32. **Acceptance.** On completion of satisfactory test and trial final acceptance certificate will be signed jointly by the representative of manufacturer and the buyer.

33. **Warranty.** The following requirements should be completed:

a. At least one year warranty after satisfactory acceptance by BN is to be provided.

b. For warranty repair/replacement, the supplier will collect the defective item from NSD Chattogram and re-supply the same to collecting place after warranty repair or replacement within 90 (ninety) days from the date of defect. Cost of the replaced unit/component including air freight is to be borne by the supplier.

c. Warranty period will be extended for the duration of non-operational time for the equipment.

34. **Tools.** Tools required for servicing and maintenance are to be supplied with the Autonomous Underwater Search System at the time of delivery. List of tools are to be provided with the offer.

35. **Standard Accessories.** Standard Accessories will include the item and accessories, which are essential to install and operate the Autonomous Underwater Search System, whether those are mentioned in this specification or not.

36. **Spares.** Following are to be given with the offer:

a. One set of spare battery with charger for Autonomous Underwater Search System (Price to be quoted separately).

b. Spares require for 05 years trouble free operation are to be quoted separately.

c. Supply of spares for minimum 10 years is to be ensured and in this regard a certificate is to be submitted in original pad of the manufacturing company.

d. List & price of consumable/spares are to be submitted separately.

e. If the item is of one time use/not reparable that is to be mentioned clearly.

Note: Quoted price of spares will influence the evaluation of final acceptance.

37. **Optional Items.** Any optional items which may be provide are to be quoted, indicating item wise price. However, 100% performance guarantee of the equipment is to be given without such optional items.

38. **Documents.** Following documents are to be submitted with the offer:
- a. Original Catalogue.
 - b. List of Standard Accessories.
 - c. List of Optional Accessories.
 - d. List of 10 years spares parts.
 - e. List of Tools.
 - f. User list.
 - g. Manufacturer's authenticity certificate.
 - h. Design/drawing of portable installation method and associated fittings (if not included in original catalogue).
39. **Record of Sale.** Record of sale for last five years indicating year and name of the user to be provided in the offer.
40. **Validity.** Up to 30 June 2024.
41. **Shipments and Delivery.** The following requirements should be completed:
- a. The supplier will arrange shipment of all items by sea/air to Chattogram sea/air port, Bangladesh within 180 days from the date of contract signed.
 - b. All items are to be delivered in proper packing to ensure safe transit by sea/air.
 - c. All packages are to have packing notes showing their contents in detail and all packages shall be marked with the name and address of the consignee and gross weight.
 - d. The supplier will supply the item at NSD Chattogram. While delivering, the supplier will carry the items from Chattogram sea/air port (as applicable) to NSD Chattogram at the cost and risk of supplier.
42. **Source of Supply.** The bidder is to mention the name, address and contact detail of original source from where the Autonomous Underwater Search System will be imported.
43. **Port of Shipment.** Any port of the manufacturing country (to be mentioned).
44. **Consignee.** The Commanding Officer, Naval Store Depot, New Mooring Chattogram.
45. **Price without Import Duties.** Quoted price is to exclude all import duties as those will be consigned against BN.

46. **Terms of Payment.** Necessary letter of credit will be opened for full purchase amount in favor of the principal with the following terms of payment.

- a. 80% of CFR value will be paid on delivery of the items described under the scope of supply on production of necessary shipping document.
- b. Remaining 20% CFR value and 100% cost of test/trial & training amount will be paid after satisfactory acceptance by BN.

47. **Condition for Acceptance of Quotation.** Quotation may not be considered if detailed information/ specification, original maker's books and catalogue about the same model of the offered item, accessories, scope of supply etc are not provided.

48. **Compliance Statements.** A complete statement fulfilling all the requirements of the tender is to be submitted for evaluation as required:

- a. Article wise compliance report must be given. An incomplete compliance statement may attribute to cancellation of the offer.
- b. If any clause of this specification does not commensurate with offered item, the deviation has to be spelt out clearly.