

**Basic Details**

<b>Organisation Chain</b>	Indian Maritime University  IMU HQ Chennai		
<b>Tender Reference Number</b>	IMU-HQ/R/71/21/1/2021-PUR		
<b>Tender ID</b>	2022_IMU_652480_1		
<b>Tender Type</b>	Limited.	<b>Form of contract</b>	Lump-sum
<b>Tender Category</b>	Goods	<b>No. of Covers</b>	1
<b>Payment Mode</b>	Not Applicable	<b>Is Multi Currency Allowed For BOQ</b>	No
<b>Is Multi Currency Allowed For Fee</b>	No		

**Cover Details, No. Of Covers - 1**

Cover No	Cover	Document Type	Description
1	Fee/PreQual/Technical/Finance	.xls	Commercial Offer for the development and supply of remote operated Unmanned Survey Boat

**Tender Fee Details, [Total Fee in ₹ \* - 0.00]**

<b>Tender Fee in ₹</b>	0.00	<b>Fee Payable To</b>	NA	<b>Fee Payable At</b>	NA
<b>Tender Fee Exemption Allowed</b>	NA				

**EMD Fee Details**

<b>EMD Amount in ₹</b>	0.00	<b>EMD Exemption Allowed</b>	NA
<b>EMD Fee Type</b>	NA	<b>EMD Percentage</b>	NA
<b>EMD Payable To</b>	NA	<b>EMD Payable At</b>	NA

**Work / Item(s)**

<b>Title</b>	Notice to seek Commercial Offer for the development and supply of Qty. 1 No. of remote operated Unmanned Survey Vehicle with survey systems like single beam echo sounder for depth measurement in shallow waters				
<b>Work Description</b>	Notice to seek Commercial Offer for the development and supply of Qty. 1 No. of remote operated Unmanned Survey Vehicle with survey systems like single beam echo sounder for depth measurement in shallow waters				
<b>Pre Qualification Details</b>	as per bid document				
<b>Tender Value in ₹</b>	12,00,000	<b>Product Category</b>	Surveillance Equipments	<b>Sub category</b>	development and supply of unmanned survey boat
<b>Contract Type</b>	Tender	<b>Bid Validity(Days)</b>	120	<b>Period Of Work(Days)</b>	90
<b>Location</b>	chennai	<b>Pincode</b>	600119	<b>Pre Bid Meeting Place</b>	NA
<b>Pre Bid Meeting Address</b>	NA	<b>Pre Bid Meeting Date</b>	NA	<b>Bid Opening Place</b>	IMU-HQ, chennai

**Critical Dates**

<b>Publish Date</b>	22-Mar-2022 12:00 PM	<b>Bid Opening Date</b>	01-Apr-2022 11:00 AM
<b>Document Download / Sale Start Date</b>	22-Mar-2022 12:00 PM	<b>Document Download / Sale End Date</b>	31-Mar-2022 06:00 PM
<b>Clarification Start Date</b>	22-Mar-2022 12:00 PM	<b>Clarification End Date</b>	25-Mar-2022 06:00 PM
<b>Bid Submission Start Date</b>	22-Mar-2022 12:00 PM	<b>Bid Submission End Date</b>	31-Mar-2022 06:00 PM

**Tender Documents**

NIT Document	S.No	Document Name	Description	Document Size (in KB)
	1	Tendernotice_1.pdf	Commercial Offer for the development and supply of remote operated Unmanned Survey boat	2845.1

Work Item Documents	S.No	Document Type	Document Name	Description	Document Size (in KB)
	1	Tender Documents	IWAI Drifter 01.pdf	Notice to seek Commercial Offer for the development and	2845.1

supply of Qty. 1 No. of remote operated Unmanned Survey Vehicle with survey systems like single beam echo sounder for depth measurement in shallow waters
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**Tender Inviting Authority**

<b>Name</b>	Registrar (i/c)
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<b>Address</b>	IMU-HQ, chennai
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**Tender Creator Details**

<b>Created By</b>	Sini Manchala
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<b>Designation</b>	Deputy Registrar (Purchase)
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<b>Created Date</b>	22-Mar-2022 11:02 AM
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# भारतीय समुद्री विश्वविद्यालय INDIAN MARITIME UNIVERSITY

(Central University, Govt. of India)

HEADQUARTERS

21.03.2022

Ref: IMU-HQ/R/71/21/1/2021-PUR

To,

Qualified Firms/ Agencies

Sir,

**Sub:** Notice to seek Commercial Offer for the development and supply of Qty. 1 No. of remote operated Unmanned Survey Vehicle with survey systems like single beam echo sounder for depth measurement in shallow waters - Reg.

The Indian Maritime University, Head Quarters published an Expression of Interest with Ref. No. IMU-HQ/R/71/21/1/2021-PUR/EOI-01/2022 dated 06.01.2022 for the development and supply of QTY. 1 No. of remote operated Unmanned Survey Vehicle with survey systems like single beam echo sounder for depth measurement in shallow waters.

In this regard, Commercial proposal is invited from the technically qualified bidders.

<b>Department</b>	Dean Section
<b>Email ID</b>	headacademics@imu.ac.in
<b>Phone no.</b>	044-24539029
<b>EOI Ref. No.</b>	IMU-HQ/R/71/21/1/2021-PUR/EOI-01/2022 dated 06.01.2022
<b>Last date for Query</b>	25.03.2022
<b>Last date for submission of Commercial Proposal</b>	31.03.2022
<b>Estimated Bid Value</b>	Rs. 12,00,000 (Inclusive of GST)

**Note:** Bidders are advised to check for any updates / corrigendum / Addendums on IMU's website before submitting their bids. The document can be downloaded from IMU's website as well as CPPP e Publishing Portal.

The scope of work and other terms & conditions are detailed below:-

## 1. **Scope of Work**

## 1.1. GENERAL

The purpose of this document (hereinafter called the "Specification") together with the attached guidance General Arrangement Plan and other drawings and sketches and Annexure is to outline the technical and functional requirements for the design, construction and delivery of one number of Self-propelled, Twin screw vehicle (hereinafter referred to as the "Unmanned Survey Vehicle (USV)"), suitable for carrying out bathymetric survey in shallow waters.

The responsibility for the integration and performance is with the vendor. Any material or parts, the omission of which would be detrimental to the serviceability of the USV and the inclusion of which is generally accepted as good manufacturing practice, shall be provided by the vendor to the satisfaction of the buyer within the contract price and no revision in price and time schedule can be considered under any circumstances.

## 1.2. DEFINITIONS

### ***Unmanned Survey Vehicle (USV)***

A craft that operates on the surface of the water without crew. It operates either in autonomous mode or simple remote control. It is a low draft survey vehicle used for bathymetric survey using single beam echo sounder in shallow waters.

### ***Single beam Echo Sounder***

Single beam echo sounder (SBES), also known as depth sounders or fathometers determine water depth by measuring the travel time of a short sonar pulse, or "ping". They have a wide range of available features and options such as Bluetooth or Wi-Fi connectivity, internal recording, rechargeable internal battery, dual frequency transducers and advanced built-in GNSS and GPS receivers as an option.

### ***Survey Speed***

It is the speed the USV can move with full payload and battery power in the presence of ambient current. The anticipated speed-over-ground shall be in the order of 3 knots in all conditions.

### ***Payload***

The payload shall be the difference between the total USV weight and the

empty hull weight & batteries. The payload shall be less than 20 kgs at the design draft of the USV.

***Range and Endurance***

The USV is expected to cover maximum distance at top speed of 6 knots for 4 hours in a single stretch without recharging.

***Owner***

The buying authority referred to as "owner" in the document, inclusive of its staff and employees.

***Vendor***

The supplying company/organization referred to as "vendor" in the document, inclusive of its staff and employees.

**1.3. USV PURPOSE & MISSION**

The USV will be a catamaran hullform capable of integrated, interdisciplinary activities in areas from shallow, coastal and estuaries etc. The USV shall have following features:

- Portable, unmanned surface catamaran for hydrographic survey applications
- Capable of operating using UHF remote control system up to 1 km range and provision for future Upgradation to autonomous mode.
- Easily disassembles for transport and shipping
- Manoeuvres easily with differential thrusters
- Software compatibility within the installed systems/ upgraded features.
- Outfitted with sensors like echo sounder, GPS, Digital compass, Communication systems, Control system etc.

**1.4. DESIGN CONDITIONS**

The following ambient conditions shall be considered for operation of USV:

- Maximum outside air temperature of 45°C with 85% relative humidity
- Air temperature of 50°C with 90% relative humidity.
- Maximum water temperature of 32°C
- Ambient current of 3 knots

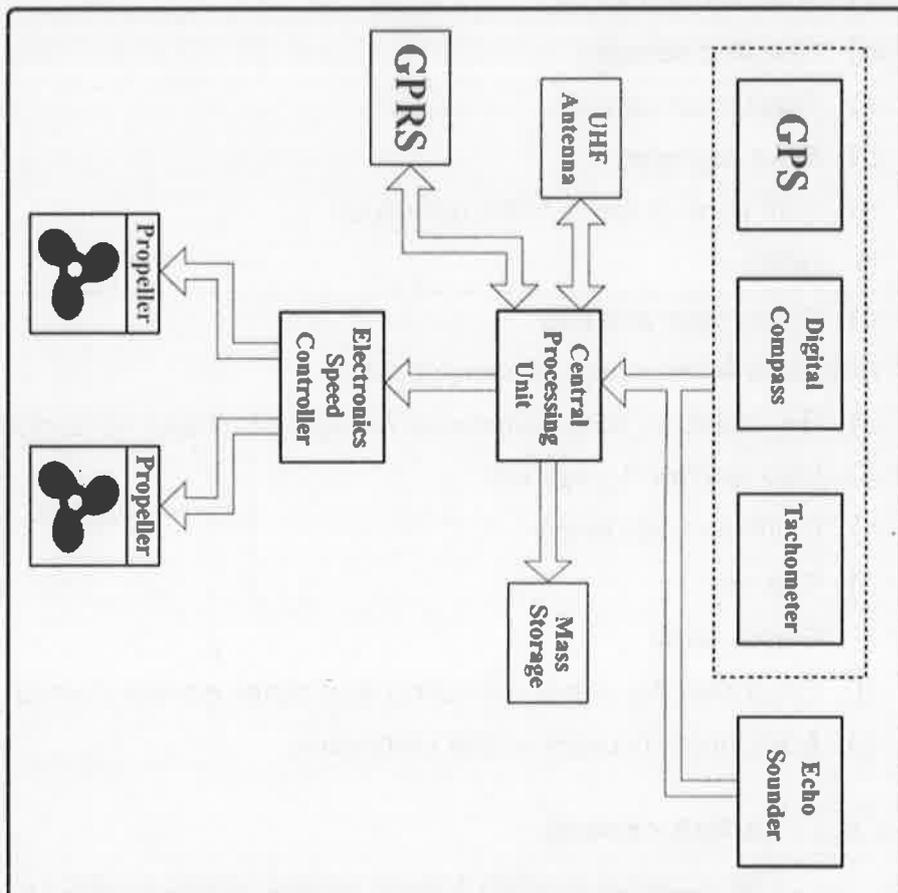
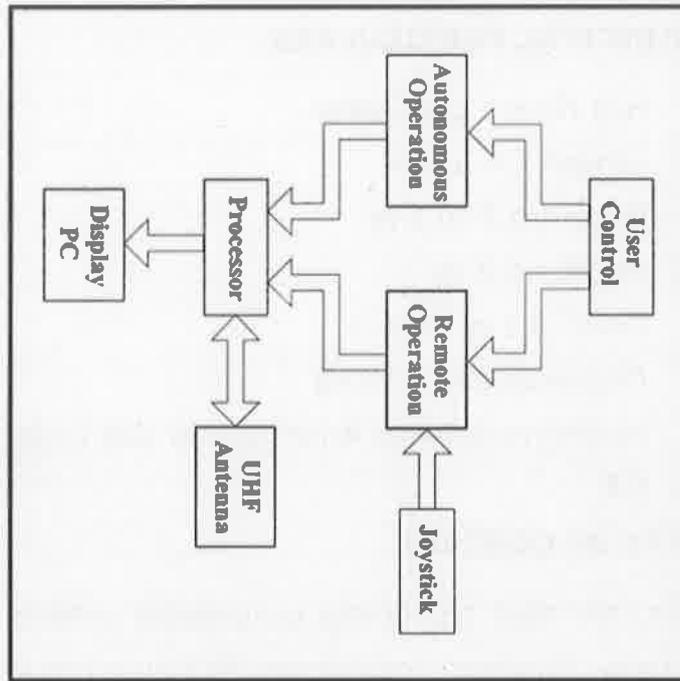


Figure 1. System architecture for the working of the USV

## **1.5. PRINCIPAL PARTICULARS**

- Hull Form : Catamaran
- Length : 1- 1.2 m
- Beam : 0.2- 0.3 m
- Depth : 0.2 m
- Draft: 0.1 m (Max.)
- Displacement: <35 kg
- Indicative General Arrangement and Lines plan enclosed in **Annexure C3**.

## **1.6. TYPE OF CONTROL**

The USV shall be remote controllable vehicle for carrying out the survey activity. However, considering the future requirement, provision to be made in the system design for enhancing the present version to autonomous mode of operation. The system shall be supplied with the following features

- a) Position Sensor
- b) Heading sensor
- c) Propulsion control
- d) Echo sounder
- e) UHF control for remote operation
- f) GPRS
- g) Data mass storage

*Provision to be made to incorporate*

- a) Upgradation to autonomous navigation (Refer to section 1.6.1)
- b) USV anchoring system
- c) Collision avoidance
- d) Camera
- e) Signal lamp
- f) Controller for water sampling and other environmental parameters
- g) Additional thruster in the centreline

### **1.6.1. Switch control**

The supplied system should have a toggle switch to transfer between remote operation and autonomous operation. When it is toggle OFF the survey computer at the mother boat should be able to

communicate to the control unit of USV through a set of mnemonics for user defined commands like uploading way points, defining the route, abort etc. However, the implementation of the autonomous mode including hardware and software beyond providing hard switch is not under the scope of supply.

The implementation of autonomous mode (with the given software of IMU) shall be supported by vendor through required modifications in supplied hardware/software.

#### **1.7. SPEED**

The USV shall operate at a survey speed of 3 knots in clam conditions. The top speed that can be achieved shall be 6 knots.

#### **1.8. TRIALS**

One set of field trials to be demonstrated by the vendor to assess the USV performance like range, endurance, bathymetric survey, manoeuvrability, data collection and retrieval of the data for post processing to the satisfaction of the owner at Chennai/Vizag/Kolkata. The trial procedure to be informed to the owner for approval.

#### **1.9. GUARANTEE**

Any damages caused to the USV during fabrication or testing up to delivery, to be properly repaired by the vendor to the full satisfaction of the owner. It is the responsibility of the vendor to provided guarantee for the supplied equipment and material for a period of one year from date of handover to the owner. The documentation (manual and warrant) of the subsystems as per the OEM recommendation to be supplied to the owner.

Any modifications by the owner for the software shall be supported by the vendor for the first one year.

#### **1.10. HULL**

The USV shall be a catamaran hullform fabricated using UV resistant material like FRP/HDPE or any other equivalent material suitable for operation in calm waters with no corrosion issues. The surface to be strengthened to maintain continuity in the frames and provision for installation of the auxiliary systems like battery management, sensors etc. Care to be taken to obtain smooth hull and completely watertight as per

indicative lines plan and general arrangement drawings.

There should be provision for mounting the topside frame structure for holding the two hulls and other equipment. The topside support frame to be powder coated to avoid corrosion issues.

The compartments of the entire hull shall be adequate enough to accommodate the required auxiliary systems. In general each hull shall have two compartments i.e. compartment on both the hull with minimum space of 0.4x0.2x0.2 m each. The opening shall be made watertight with proper gasket and locking arrangement. The remaining void spaces in each hull shall be filled with liquid injected foam to make the USV self-buoyant.

#### **1.11. STABILITY**

The USV to be stable in all intact conditions. Even the case of damage in void spaces in either of the hull the USV to be buoyant. The USV shall have even keel and same draft for both the hull in full loaded condition.

#### **1.12. PROPULSION SYSTEM (OR) THRUSTERS**

The propulsion system shall use exclusive battery power for entire operation duration and is an essential part of the USV. It shall consists of two DC brushless thrusters powered by a 12-24 V LiPo battery system. Each thrusters are equipped with three blade propellers with a suitable diameters to generate a minimum thrust of 6 kg f at full throttle in forward direction and are adjusted by two speed controllers for steering respectively. The vendor recommended speed controller module to be included for ease in integration.

#### **1.13. SENSORS**

All the sensor as per the block diagram to be installed on the USV with provision for the future needs (expandable peripheral interface). In order to achieve the motion control, suitable sensors (vendor may propose additional sensors as a line item with separate cost) to be provided to know the relationship between the motion command and the thrust developed by the propeller in all operating conditions. There should be an additional support structure (Skeg) forward of the propellers to prevent damage of the propellers during operation/storage/ grounding. The surface of the propulsion system and support structure to be suitably coated to prevent

corrosion.

#### **1.14. BATTERY MANAGEMENT SYSTEM (BMS)**

The BMS shall be intelligent enough to utilize two LiPo battery packs of adequate capacity (say about 2 x 20 Ah). The BMS shall be capable to stop the power supply to the thruster when the remaining battery health is less than 20%. An emergency signal to be sent to the user end.

#### **1.15. STEERING MECHANISM**

A differential steering mechanism is required for providing necessary manoeuvring to the USV. This can be achieved by revolutions per second (rps) of each propeller say  $n_1$  and  $n_2$  at different rps using the speed control mechanism of the propellers. There is no rudder mechanism in the steering system. The straight line motion is achieved running both the propellers at same rps and the differential thrust is zero. The double thrusters need to generate steering momentum by the differential thrust between the both the propellers and change the USV heading accordingly. The mechanical structure of the USV to be simplified for improving the steering with watertight opening as necessary.

#### **1.16. CONTROL SYSTEM INCLUDING THE INSTRUMENTATION**

There shall be two instrumentation setup in the USV. One shall be at the user end and other at the USV end.

The USV end shall consists of sensors, central processing unit (CPU), mass storage unit, communication module (GPRS and UHF antenna) and electronic speed controller (ESC) as indicate in figure 1. All the data from these sensors is fed to the CPU. The data parsed by CPU from GPS, digital compass and tachometer will be used to manoeuvre the USV through the ESC. The sensors data including the echo sounder will be stored in the mass storage unit of adequate capacity i.e. 8GB. The CPU will keep on searching for GPRS network to upload the stored data to a remote server. The format of data stored should be compatible to HYPACK format. The USV end shall have provision of expandable slot for SD card to retrieve data as required.

The UHF antenna is used for the following purpose:

- Remote operation
- Real time data transmission

- Toggling between remote/autonomous operation
- Communicating user defined commands

The user end shall consist of user control unit for switching between remote and autonomous operation (provision shall be made on the Joystick for autonomous operation by a physical switch). When the user selects the remote operation mode, the USV shall be controlled via joystick. The entire operation of communication between the user end and USV shall be via UHF. The real time data received shall interface with display PC unit running HYPACK software for navigation control.

### **1.17. NAVIGATION AND COMMUNICATION**

The radio link shall be used to transfer data between the USV end and the base station (user end) and also to manually control the USV within a range of 1 km.

### **1.18. CABLES**

All the necessary cables and other auxiliary units to be provided in a watertight enclosure and concealed form through umbilical arrangements. Provisions to be made on each hull as and where required in the form of opening for passing the cables without any hindrance.

### **1.19. LIGHTING**

All lighting system are to be LED installed say port, starboard lights and provision for additional emergency and focus lights as per specifications with an insulated protection wire. In general all the light fitting to be weather proof. The fittings shall be of good quality and easy installation as far as practicable. The operation of the light shall be available through the remote RF based system and manual mode.

## **2. Terms & Conditions:**

### **2.1. Delivery Terms:**

- a) The Firm can submit Commercial Proposal for the product as per scope of work, compliance statement, outline specifications, preliminary general agreement and line plans mentioned in this document.
- b) The Firm should strictly adhere to delivery period i.e. within 90 days

from the date of agreement. Non-adherence of delivery terms may lead to cancellation of order / imposing penalty at the rate of 1% of the amount payable for each day of delay but not exceeding 10% of the Work Order Value after giving a 3-day notice to show cause against the same. IMU's decision in this regard is final. No further correspondence shall be entertained in this regard.

## 2.2. **Payment Terms:**

- a) The terms of payment is as follows :-
  - i) 50% of the estimated cost is payable upon inspection and acceptance of physical hull form structure, thrusters, GPS, heading sensor, echo sounder and other subsystems.
  - ii) 40% of the estimated cost is payable post successful integration of hardware and software along with a trial demonstration.
  - iii) 10% of the estimated cost is payable post finding utility certificate from user Agency.
- b) Payment will be done through NEFT within 15 working days from the date of receipt of Invoice at Purchase Section of IMU-HQ subject to certification of successful delivery of the materials / completion of Job at IMU-HQ.
- c) Scanned Copy of Invoice should be mailed to dr.purchase@imu.ac.in & purchase.hq@imu.ac.in
- d) The Tax Invoice raised by the supplier must be in compliance of relevant GST acts, rules & notifications made thereunder and should bear the IMU-HQ's GST Registration no. 33AAAAI2610K2Z3. The rate and amount of CGST, SGST, IGST and GST (Compensation to state) CESS, related to supply of goods, shall be shown separately in tax invoice for each item of supply. In case the bidder has opted for composition levy, the Bill of supply shall be raised by him in compliance of relevant GST Acts, rules & notifications made thereunder.

2.3. As per the gazette Notification No. 45/2017 and 47/2017 Integrated Tax (Rate), dated 14.11.2017 issued by Ministry of Finance, Government of India, the applicable rate of GST is 5% for the item used particularly for

research purpose. To avail this concessional GST, IMU has applied for SIRO clearance and the billing will be subject to the same. However, for price bid the GST is to be taken at 18%.

**2.4. Evaluation of Quotations:**

- a) IMU-HQ will give due consideration to the following parameters while finalisation of Firm (i) specifications, (ii) reasonability of rates offered, (iii) delivery period and (iv) Compliance statement as per Annexure C1. After consideration of the same, IMU-HQ may accept the Firms' offer whose price (total cost inclusive of GST) is Lowest among of the offered product based on IMU-HQ's requirement.
- b) Commercial Proposals will be evaluated after giving due preference as per guideline issued under Aatmanirbhar Bharat and all other relevant guideline issued by Government of India for procurement of goods and services. Certificate for local content percentage as per **Annexure C** is to be attached by the firm.

**2.5. Period of Contract and Agreement:**

IMU shall issue a Purchase Order/ Work Order to the successful bidder(s) giving 4 working days' time to furnish the Security Deposit, submit the Non-Disclosure Agreement (NDA) as per **Annexure E** and execute the Agreement with IMU in the prescribed format as per **Annexure - D**. The Contract between IMU and the successful Bidder(s) will be for development and supply of QTY. 1 No. of remote operated Unmanned Survey Vehicle with survey systems like single beam echo sounder for depth measurement in shallow waters for a period of 90 days from the date of issue of Work Order or completion of work whichever is earlier. The Dean (NA&OE) shall be the SPOC for the period of this Contract.

**2.6. Security Deposit:**

- a) The Service Provider(s) shall be required to furnish the Security Deposit by transferring Online/ NEFT/ RTGS with necessary supporting document for the transfer effected and Transaction Number, for an amount of 3% of the contract value within 4 working days from the issue of Work Order.

- b) Security Deposit will be refunded / returned without any interest after successful completion of warranty period of the supplied scope after adjustment of dues if any to IMU or penalty imposed by IMU.
- c) The proceeds of the Security Deposit shall be payable to the IMU as compensation for any loss(es) resulting from the failure of the Vendor(s) to meet out its obligations under the Contract. This shall be in addition to any other action/ penalty taken by IMU for delays/ default/ failure on the part of the Vendor.
- d) Along first stage invoice, 50% of the contract value in BG shall be submitted with validity till 60 beyond the contract completion.

**2.6. Penalty Clause:**

- a) The above payment terms is subject to timely and satisfactory completion of all the activities certified by the Dean Section, IMU-HQ. In the event of delays on the part of the Firm not attributable to IMU or to Force Majeure causes, IMU shall have the right to levy penalty & deduct payment at the rate 3% of the contract value for each week of delay but not exceeding 10% of the Work Order Value after which the contract will be terminated.
- b) In the event of unsatisfactory performance or non-performance of any of the steps/activities not attributable to IMU or to Force Majeure causes, IMU shall have the right to withhold the corresponding payment for the activities either fully or partly after giving a 7-day notice to the Vendor to show cause against the same, and to take such other legal action to make good the losses caused by the Vendor to IMU. Penalty shall be decided by IMU without any ceiling but not more than contract value. IMU shall also have the right to terminate the contract altogether (upon which the BG and Security Deposit paid by the Vendor shall stand forfeited) and to entrust the remaining work to another Vendor.
- c) The contract may be terminated with a 30 days' notice, before the expiry of contract period owing to deficiency in service or any other reason whatsoever by IMU. The Service Provider has to give 90 days' notice in case they want to withdraw/terminate/not willing for further

extension, failing which SD, EMD, Retention money and pending bills will be forfeited.

- d) In case of any default in the service, the report from IMU-HQ shall be final.
- e) IMU shall also have the right to terminate the contract altogether (upon which the Security Deposit paid by the Vendor shall stand forfeited) and to entrust the remaining work to another Vendor in case default in the Service or due to breach of NDA.

**2.7. Confidentiality:**

The Bidder and their personnel shall not, either during implementation or after completion of the project, disclose any proprietary or confidential information without the prior consent of the IMU. IMU reciprocally agrees to do likewise regarding any proprietary or confidential information or data relating to the Bidder which may come into the possession or custody of IMU in the course of the project.

**2.8. Termination Clause:**

- a) In the event of the breach of any of the provisions of contract by the Agency, IMU shall have the right to terminate the tender summarily, at any stage and forfeit the Security Deposit. In the event of IMU terminating the contract for breach by the Service Provider of any of the provisions thereof, the Service Provider shall be liable for any loss suffered by IMU up to the time of the termination of the contract.
- b) In the event of the insolvency / bankruptcy of the Service Provider IMU shall have the right to terminate the contract summarily and forfeit the Security Deposit and to purchase in the open market any Goods / Services covered by the contract. In this case, the Service Provider shall be liable for any excess in the price paid, for any such purchases over the tender price.

**2.9. Force Majeure:**

- a) The Vendor shall not be liable for forfeiture of its performance security, liquidated damages or termination for default, if and to the extent that, it's delay in performance or other failure to perform its

obligations under the Contract is the result of an event of Force Majeure.

- b) For purposes of this Clause, "Force Majeure" means an event beyond the control of the Vendor and not involving the Vendor's fault or negligence and not foreseeable. Such events may include, but are not limited to, acts of the Purchaser either in its sovereign or contractual capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions and freight embargoes. COVID-19 is an ongoing situation and will not be considered under this clause.
- c) If a Force Majeure situation arises, the Vendor shall promptly notify the IMU in writing of such conditions and the cause thereof. Unless otherwise directed by the IMU in writing, the Vendor shall continue to perform its obligations under the Contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.

2.10. **Indemnity:**

- a) The selected bidder shall indemnify IMU from and against any costs, loss, damages, expense, claims including those from third parties or liabilities of any kind how-so-ever suffered including patent, copyright, trademark and trade secret, arising or incurred inter-alia during and after the Contract period out of:
  - b) Negligence or wrongful act or omission by the Selected Bidder or its team or any Agency/ Third Party in connection with or incidental to this Contract; or
  - c) Any breach of any of the terms the Selected Bidder's Proposal as agreed, the Tender and this contract by the Selected Bidder, its Team or any Agency/ Third Party.
  - d) Bidder (the "Indemnifying Party") undertakes to indemnify the client (the "Indemnified Party") from and against all losses, claims for damages including losses, claims for damages on account of bodily injury, death or damage to tangible.

- e) The indemnity shall be to the extent of 100% of project cost in favour of the IMU.

2.11. **Arbitration & Jurisdiction:**

In the event of disputes, differences, claims and questions arising between the parties hereto arising out of this Agreement or anyway relating hereto or any term, condition or provision herein mentioned or the construction or interpretation thereof or otherwise in relation hereto, the parties shall first endeavour to resolve such differences, disputes, claims or questions by mutual discussion and failing such settlement, the same shall be referred for arbitration by a sole Arbitrator appointed by IMU HQ. Such arbitration shall be held in accordance with the provisions of the Arbitration and Conciliation Act 1996 or re-enactment thereof for the time being in force and shall be held in Chennai. In case the Arbitration award is not acceptable to either of the parties, they may approach courts having jurisdiction at Chennai only.

2.12. **Applicable Law:**

The Contract shall be interpreted in accordance with the laws of the Union of India and all disputes shall be subject to place of jurisdiction of Chennai Courts only.

3. **Submission of Commercial Proposal:**

- a) The Commercial Proposal can be submitted in the prescribed format (as per **Annexure-B**) as enclosed here with along with the mandatory Annexures, either in sealed covers clearly superscribing "Commercial Offer for the development and supply of Qty. 1 No. of remote operated Unmanned Survey Vehicle with survey systems like single beam echo sounder for depth measurement in shallow waters" at Purchase Section of IMU-HQ on or before **31.03.2022** till 11.00 AM. The Commercial Proposal should be printed on letterhead of the Vendor **duly signed by authorised signatory on all pages.**
- b) In case of queries a mail maybe sent within the last date for query to [dr.purchase@imu.ac.in](mailto:dr.purchase@imu.ac.in) and copy to [Registrar@imu.ac.in](mailto:Registrar@imu.ac.in) and [headacademics@imu.ac.in](mailto:headacademics@imu.ac.in). Queries will not be entertained after the last date for query.

- c) It is IMU-HQ's prerogative for extension of the Commercial Proposal submission time.
- d) The Commercial Proposals that are submitted after the prescribed time may not be considered for evaluation.
- e) The offered rates should be inclusive of delivery charges at IMU-HQ and any other charges but exclusive of applicable GST.
- f) The Offered rates should be valid for 90 days from the end date for submission of Commercial Proposal.
- g) The Firm has to submit Commercial Proposal as per the technical requirements mentioned above.
- h) The bids will be rejected for the following reasons:
  - a. Certificate in-lieu of EMD is not submitted.
  - b. If tender terms and conditions are not met.
  - c. If Bid is not submitted as per the annexures laid down in this Tender document.
  - d. If Bidder gives wrong information in the bid.
  - e. Canvassing in any form in connection with the bids.
  - f. If the bid is incomplete/ a partial bid/ a conditional bid /an unclear bid in any form.

Please read all the terms & conditions carefully before submitting the Commercial Proposal.

  
Registrar (i/c)

**Covering Letter to Accompany Commercial Bid**

*[On the Letter Head of the Bidder]*

Ref: IMU's EOI Ref. No. IMU-HQ/R/71/21/1/2021-PUR/EoI-01/2022 Dated 06.01.2022

From

**Name & Address of the Bidder**

To

**The Registrar,  
Indian Maritime University,  
East Coast Road,  
Semmencherry,  
Sholinganallur (PO),  
Chennai - 600119.**

Sir,

We are a -----  
-----  
-----

. [Introduce your company and its activities with particular reference to your experience with relevance to the subject Tender. Also furnish particulars of your registration with various statutory Tax Authorities. *Not more than 200 words*].

1) We hereby submit our Bid for:

**The development and supply of QTY. 1 No. of remote operated Unmanned Survey Vehicle with survey systems like single beam echo sounder for depth measurement in shallow waters.**

- 2) We have read and understood and hereby agree to all the terms and conditions stipulated by IMU in this tender.
- 3) We certify that all the particulars furnished in our Bid are true and correct and based on documentary evidence and as per prescribed format. We understand that if any of the particulars is found to be false or misleading, IMU has the right to summarily reject our bid at any stage.
- 4) We, hereby state and understand that if we withdraw/modify our bid during the period of validity of the tender, the IMU administration would suspend the Bidder from participation in any future tenders of IMU for a period of 6 months.
- 5) In the event of our Firm being awarded the work, and understanding the urgency involved, we undertake to remit the Security Deposit and execute the Contract with IMU within 4 (four) working days from the date of issue of the Purchase Order/Work Order failing which the Purchase Order/ Work Order may be cancelled.

- 6) We undertake to complete the project for development and supply of QTY. 1 No. of remote operated Unmanned Survey Vehicle with survey systems like single beam echo sounder for depth measurement in shallow waters within 90 days from the date of issue of work order.
- 7) Our Price Bid is submitted as per the prescribed format and the price quoted shall be firm till the execution of the entire contract.
- 8) We shall work closely with IMU and keep IMU posted at every stage about the progress made, and handover the entire data to IMU on conclusion of the project.

Yours faithfully,

Date:  
Signatory  
Place:

*Signature with Seal of Authorised*

**Format for Submission of Commercial Proposal**

(Should be printed on letter head and duly signed by the Vendor)

To

The Registrar  
 Indian Maritime University-HQ  
 ECR Road, Semmencherry,  
 Shollinganallur Post,  
 Chennai-600119

Sub: Submission of Commercial Offer for the development and supply of QTY. 1 No. of remote operated Unmanned Survey Vehicle with survey systems like single beam echo sounder for depth measurement in shallow waters - Reg.

Ref: IMU's Commercial Proposal Notice with ref.no: IMU-HQ/R/71/21/1/2021-PUR, Dt.21-03-2022.

\*\*\*\*

We, hereby submit our Commercial Offer for the development and supply of QTY. 1 No. of remote operated Unmanned Survey Vehicle with survey systems like single beam echo sounder for depth measurement in shallow waters as given below:

Items	Parameters/	IMU Minimum Requirements	Offered by Bidder	Quantity	Rate
<b>Unmanned Survey Vehicle with major subsystems as below</b>				1	
	Hull Type	Catamaran			
	Supporting frames	Powder coating to prevent corrosion			
	Motor	2x DC brushless thrusters adjusted to speed controllers			
	Propeller	3 blades (Clockwise and anti-clockwise rotation)			
	Battery	2x (12-24) VDC 20 Ah battery LiPo			
	Processor Module	As per specifications C(i) in Annexure C2			
	GPRS Module	As per specifications C(ii) in Annexure C2			
	Memory Card Module	As per specifications C(iii) in Annexure C2			
	Position Sensor	As per specifications C(iv) in Annexure C2			

	Digital compass	As per specifications C(v) in Annexure C2			
	UHF	As per specifications C(vi) in Annexure C2			
	Echo sounder	As per specifications C(vii) in Annexure C2			
GST % Applicable					
Total Cost (inclusive of GST)					
<b>Total Cost (inclusive of GST)</b>					

**Statement of Declaration**

I/We hereby declare that we have read and agreed for terms & conditions in the referred Commercial Proposal Notice and acknowledge that the above product which is quoted by me will be delivered within the specified time as per Commercial Proposal Notice once after placing the order. I / We are authorised Firm of ..... and enclosed copy of ..... in support of the same along with this Commercial Proposal.

**Signature with Seal  
Designation:  
Name & Contact No:**

**Self-Certification under preference to Make in India order**  
**Certificate**

In line with Government Public Procurement Order No. P-45021/2/2017-PP (BE-II) dated 04.06.2020 and its amendments, we hereby certify that we M/s \_\_\_\_\_ are local supplier meeting the requirement of minimum local content i.e., \_\_\_% as defined in above orders for the material against IPR Enquiry/ Tender No.....dated.....

Details of location at which local value addition will be made as follows:

---

We also understand, false declarations will be in breach of the code of integrity under rule 175(1)(i)(h) of the General Financial Rules for which a bidder or its successors can be debarred for up to two years as per Rule 151(iii) of the General Financial Rules along with such other actions as may be permissible under law.

Thanking You

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**Signature with date :**

**Name :**

**Designation :**

**Official Seal**

**Compliance Statement**

<b>S No</b>	<b>Item</b>	<b>Specifications</b>	<b>Complied [Y/N]</b>
1.	Hull type	Catamaran	
2.	Typical survey speed	3 knots	
3.	Max. Speed	6 knots	
4.	Length	1-1.2 m	
5.	Breadth	0.2-0.3 m	
6.	Draft	not more than 0.1 m	
7.	Hull Material	FRP/HDPE/Equivalent	
8.	Lightweight	less than 10 kgs	
9.	Payload	less than 20 kgs	
10.	Endurance	4 hours at speed of 3 knots	
11.	Supporting frames	Powder coating to prevent corrosion	
12.	Opening	To be watertight closures	
13.	Motor	2 x DC brushless thrusters adjusted to rotary speed controllers	
14.	Propeller	3 blades (clockwise and anti-clockwise rotation)	
15.	Steering	Differential	

16.	Battery Power	2x (12-16) VDC 20 Ah Battery LiPo	
17.	Processor Module	As per specifications C(i) in Annexure C2	
18.	GPRS Module	As per specifications C(ii) in Annexure C2	
19.	Memory Card Module	As per specifications C(iii) in Annexure C2	
20.	Position Sensor	As per specifications C(iv) in Annexure C2	
21.	Digital compass	As per specifications C(v) in Annexure C2	
22.	UHF	As per specifications C(vi) in Annexure C2	
23.	Echo sounder	As per specifications C(vii) in Annexure C2	

**Outline Specifications****(A) Hull**

- i. Type : Catamaran
- ii. Material : HDPE/FRP or equivalent (Corrosion free)
- iii. Operating Conditions : Inland/lakes or clam waters
- iv. To be watertight in all operating conditions

**(B) Thrusters:**

- i. Type : DC brushless
- ii. Min. Thrust: 6 kgf each
- iii. Operating voltage: 7-20 volts
- iv. Steering: Differential thrusters

**(C) Sensor suite**

1. All the sensors and the processor shall be supplied with interfaces that have electrical and mechanical compatibility at no additional cost.
2. The formats and protocols for data interchange shall have latest version.
3. The sensors, processors, modules shall be selected to be fitted into the waterproof enclosure and will be housed in the slots provided in the hull.
4. Care should be taken to avoid possible signal interference among each module.

<b>S No</b>	<b>Items</b>	<b>Parameters</b>	<b>Specifications</b>
C (i)	Processor Module		
		RAM	2GB
		Peripherals	100 Base Ethernet
			50-pin extended GPIO
			4 USB 2 ports
		Serial Communication	Enabled with RS232 communication
		Memory slot	Micro SD card
		Micro SD for loading operating system	>16GB
C(ii)	GPRS Module		
		Compatibility	with the processing unit
		Connectivity	3G/4G

C(iii)	Memory Card Module		
		Data storage	8GB
C(iv)	Position Sensor		
		Satellite Signals	GPS: L1, L2
		DGPS Link	Receiver to be supplied for DGPS corrections
		Data Format	NMEA
		Data Interface	RS232, USB, Ethernet
		Accuracy	Better than 3m in DGPS mode Better than 15m in standalone mode
		Update Rate	Better than 5 Hz
		Preferable makes	GARMIN, TRIMBLE, TeleNav equivalent.
C(v)	DIGITAL COMPASS		
		Heading output frequency	10 Hz
		Output heading	+/- 3 degree
		Operating voltage	9VDC-20VDC
		Preferable makes	GARMIN, TRIMBLE, TeleNav equivalent.
C(vi)	UHF		
		Radio frequency communication between USV and user end	1km
C(vii)	ECHO SOUNDER		
		Transducer Frequency	200-250 kHz
		Depth Range	0.3-50 meters
		Accuracy	Better than 3 cm
		Data output Rate	2 Hz or better
		Data Format	NMEA format
		Preferable makes	Seafloor, Ceeducer, Sonarmite, Teledyne equivalent

(D) Hardware

All hardware must be of contemporary technology with latest version available in the

market for ease in repair or replacement.

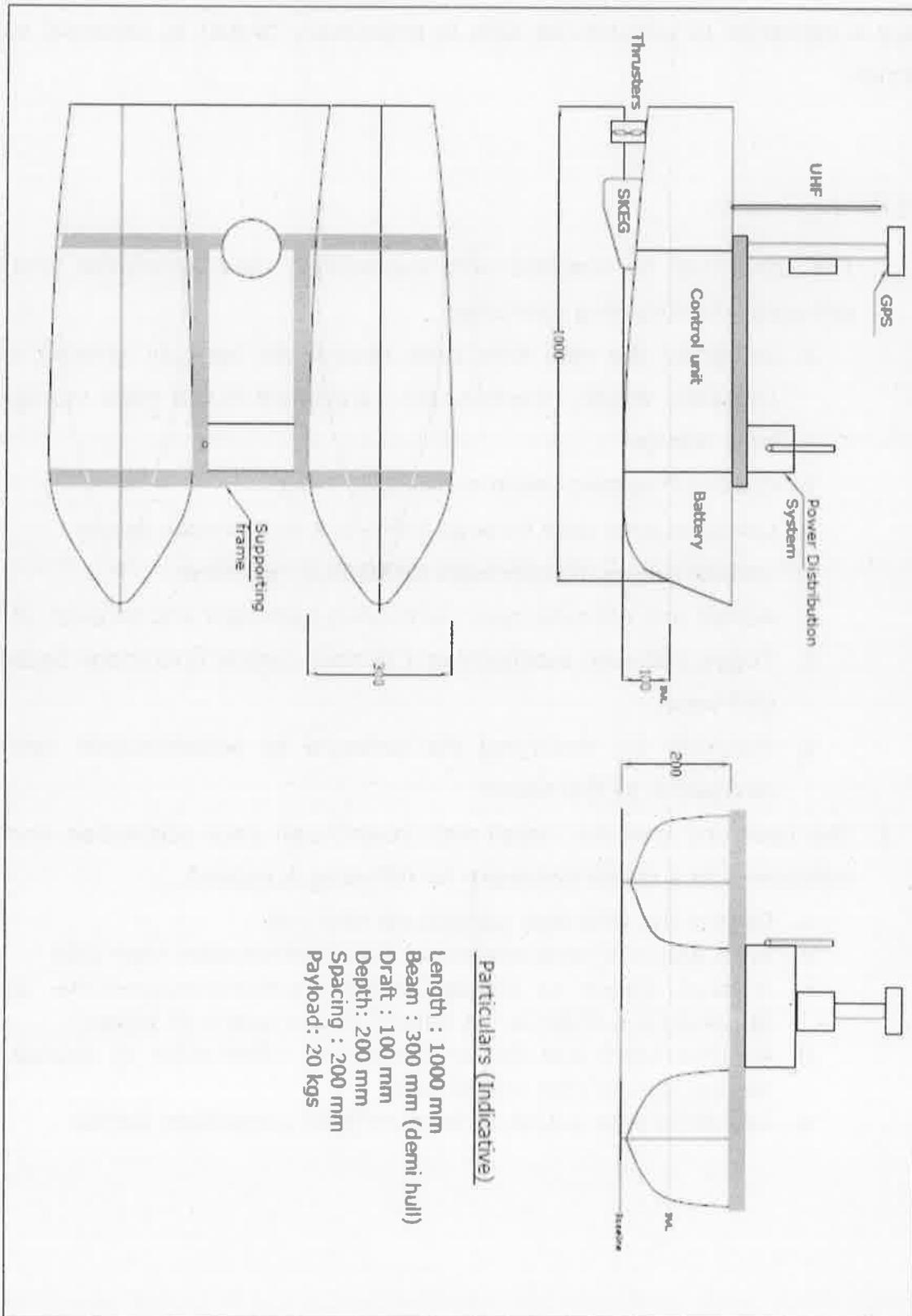
(E) Software

The software must provide in universal accepted digital exchange format or should have a converter to convert the data in proprietary format to universal exchange format.

(F) Mission Profile:

1. The USV shall be installed with customized data acquisition and control software with following functions:
  - a. Integrate the real time data acquisition from all sensors on-board (position, depth, direction, etc.) and store in the mass storage with a time stamp.
  - b. Control thrusters based on the UHF input
  - c. Upload survey data through GPRS link to a remote server
  - d. Upload survey data through UHF link in real-time
  - e. Accept and execute input commands from user end through UHF link
  - f. Toggle between autonomous / remote control operations based on the UHF input
  - g. Provision for modifying the software to accommodate autonomous navigation by the owner.
2. The user end shall be install with customized data acquisition and control software with suitable hardware for following functions:
  - a. Control the USV with joystick via UHF link
  - b. Send and receive commands / status information from USV
  - c. Physical switch to toggle between autonomous/remote operations (autonomous mode is not part of vendor scope of supply)
  - d. Analyse, store and display the survey information on display unit for manual survey plan and control
  - e. Real-time data output to be in HYPACK compatible format

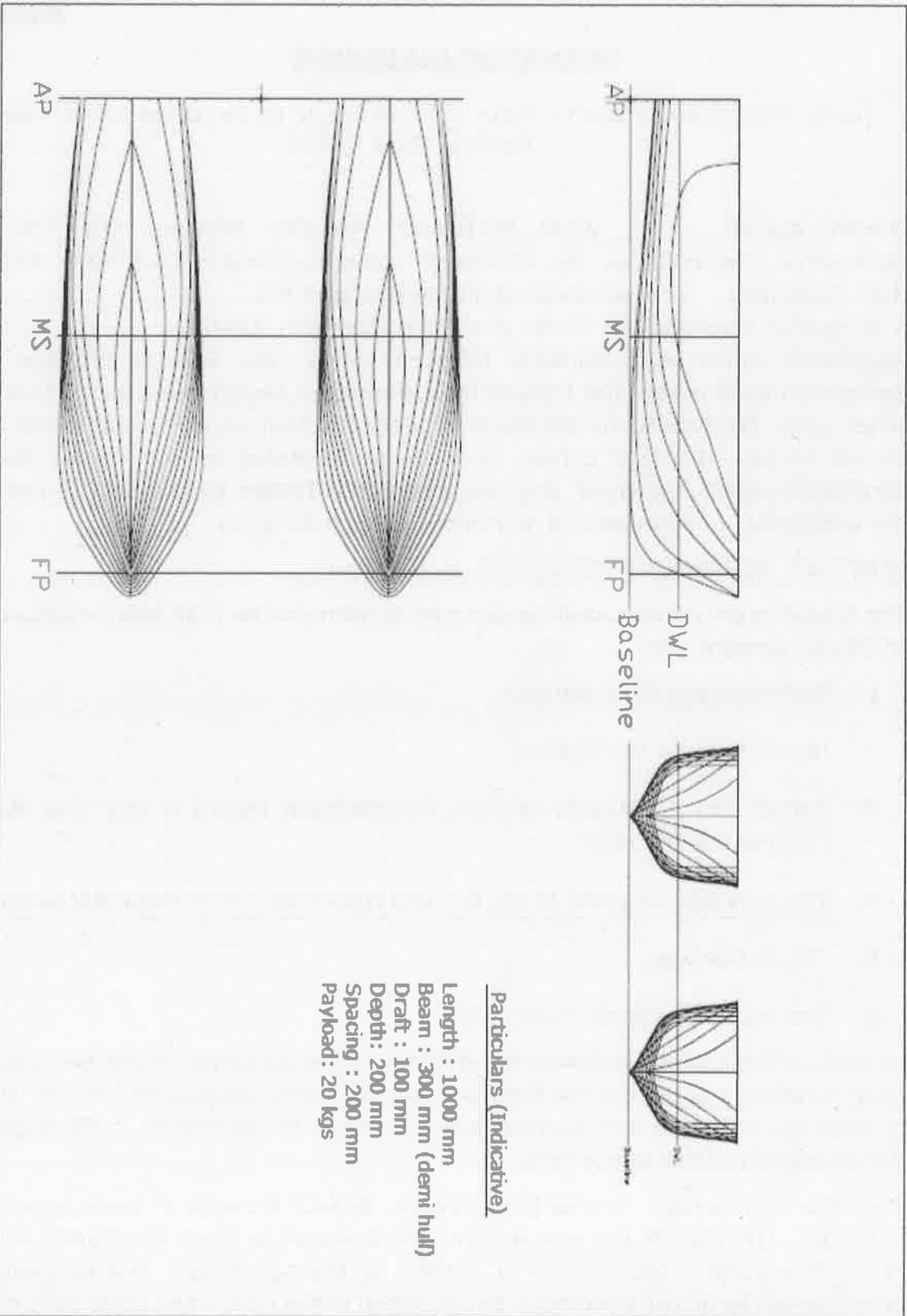
**Preliminary General Arrangement Plan**



Particulars (Indicative)

- Length : 1000 mm
- Beam : 300 mm (demi hull)
- Draft : 100 mm
- Depth : 200 mm
- Spacing : 200 mm
- Payload: 20 kgs

**Preliminary Lines Plan**



**FORMAT OF AGREEMENT**

(To be submitted on stamp paper of Rs.200/-, to be executed within 4 days of issue of Work Order)

It is this day of \_\_\_\_\_ 2022 MUTUALLY AGREED between the IMU - HQ, hereinafter referred to as "the Employer" (which expression shall mean and include their assignees and successors) on the one part M/s ..... a company/ incorporated under the companies Act, 1956..... having its Registered office at hereinafter referred to as "the Service Provider" (which expression shall mean and include their permitted assigns and successors) on the other part: WHEREAS the Employer is desirous that certain Goods and Services should be provided and certain Services be executed as per tender documents hereinafter called "Services" and has accepted a Tender by the Service Provider for the execution, completion and guarantee of such Services.

NOW THIS AGREEMENT WITNESSES as follows:-

The following documents shall be deemed to form and be read and construed as part of this agreement, viz.,

1. Technical and Financial bids
2. Instructions to the Bidders
3. Terms and Conditions of EoI, Corrigendum issued if any and Notice for Commercial Bid offer.
4. The Services specified in the EoI and Notice for Commercial Bid documents
5. The Annexures.
6. The Purchase Order/ Work Order

In consideration of the payment to be made by the *Employer* to the *Service Provider* as hereinafter mentioned, the *Service Provider* hereby covenants with the *Employer* to execute, complete and guarantee the Services in conformity in all respects with the provisions of the Agreement.

The *Employer* hereby covenants to pay the *Service Provider* in consideration of the execution, completion and guarantee of the Services for price mentioned in Price Bid at the times and in the manner prescribed by the Agreement. The Agreement shall be governed by all the conditions as described in the terms and conditions of tender, work mentioned in the tender documents and any other conditions given in the tender documents.

This agreement shall be governed by the laws of India and shall be subject to the Jurisdiction of the Courts in Chennai only.

IN WITNESS WHEREOF the parties hereto have caused their respective common seals to be hereunto affixed (or have hereunto set their respective hands and seals) the day and year first above written.

SIGNED AND DELIVERED

On behalf of the Service Provider

Signature

Name

Address

On behalf of IMU

Signature

Name

Address

Official Seal

Place

Date

Official Seal

Place

Date

On behalf of the Contractor

Witness:

(i) Signature

Name:

Address:

Place

Date

On behalf of the Employer

Witness:

(i) Signature

Name:

Address:

Place

Date

(ii) Signature

Name:

Address:

Place

Date

(ii) Signature

Name:

Address:

Place

Date

Non-Disclosure Agreement

**NON-DISCLOSURE  
CERTIFICATE**

**[On a Non-Judicial  
stamp paper of  
Rs.200/-]**

This Non-disclosure Certificate ("**Certificate**") is made and entered into as of \_\_\_\_\_, 20\_\_\_\_, by and between **M/s.** \_\_\_\_\_, the principal, address of which is \_\_\_\_\_ ("**Service Provider**") and **Indian Maritime University (IMU), A Central University under Ministry of Shipping, Government of India** the principal address of which is East Coast Road, Semmancherry, Sholinganallur (PO), Chennai 600 119 ("**Recipient**").

It is the intention of the parties to this Certificate to facilitate discussions regarding possible transactions between the parties by the protection from unauthorized disclosure or use of the Confidential Information (defined below). Therefore, the parties agree as follows:

1. For the purposes of this Certificate, "Confidential Information" shall mean any information disclosed by IMU, whether in writing, orally, visually or otherwise, including data transferred, user information, network information and all other similar nature of matters.
2. Confidential Information excludes, however, information which:
  - (i) is or becomes known or available to Service Provider without restriction from a source other than IMU with a legal right to disclose the same to Service Provider;
  - (ii) is or without violating the terms of this Certificate becomes, generally available to the public;
3. With respect to all Confidential Information disclosed hereunder, Service Provider agrees that from and after the date of this Certificate, Service Provider shall not:
  - a. use the Confidential Information except for purposes of its business relationship with IMU (the "Authorized Purpose"); or

- b. disclose the Confidential Information to any third party except to anyone authorized by IMU in writing at the written request of the Service Provider.
  - c. does not terminate or loop the internet connection of IMU anywhere in between IMU and service provider hub.
4. Service Provider undertakes that its Representatives who receive any Confidential Information to comply with the terms and conditions of this Certificate and Service Provider shall be responsible for their compliance herewith. Service Provider shall use at least the same degree of care or more to protect the confidentiality and ensure the proper use of the Confidential Information as Service Provider uses with respect to its information of a similar kind or nature, but in no event less than reasonable care.
5. IMU grants no rights in or to the Confidential Information. All Confidential Information shall remain the sole property of IMU.
6. No contract or Certificate providing for any transaction or any commitment to enter into a transaction shall be deemed to exist by reason of this Certificate, except as provided herein.
7. Any provision to the contrary notwithstanding, Service Provider's obligations under this Certificate are subject to any disclosure requirement of law, regulation or legal process, but only to the extent of such requirement. Service Provider shall promptly notify IMU of any such requirement, cooperate fully with IMU's requests to prevent or minimize the effect of such disclosure and make all reasonable efforts to have such disclosures placed under a protective order or otherwise obtain confidential treatment of the Confidential Information.
- 8. THE CONFIDENTIAL INFORMATION IS DISCLOSED "AS IS" WITHOUT ANY REPRESENTATION, WARRANTY, ASSURANCE, GUARANTEE, OR INDUCEMENT OF ANY KIND, INCLUDING WITHOUT LIMITATION ANY EXPRESS OR IMPLIED WARRANTY OF COMPLETENESS, ACCURACY, MERCHANTABILITY, SUITABILITY, NON-INFRINGEMENT OR FITNESS FOR PURPOSE, SUBJECT TO THESE TERMS.**
9. Upon IMU's written request, Service Provider shall promptly: (i) deliver to IMU and cease to use all Confidential Information in Service Provider's (including its Representatives') possession, custody or control; or (ii) destroy the same and delete all electronic records containing the Confidential Information, provided

that IMU may require Service Provider to certify in writing such destruction and deletion, and it is open to IMU to verify the same.

10. Service Provider agrees that money damages would not be a sufficient remedy for breach of this Certificate and that, in addition to all other remedies, IMU shall be entitled to specific performance and injunctive or other equitable relief as a remedy for such breach, apart from damages wherever feasible.
11. This Certificate sets forth the complete and exclusive terms of the parties' Certificate with respect to the subject matter hereof. This Certificate may not be waived or modified except pursuant to a written Certificate signed by the parties.
12. Any provision hereof which is found to be unenforceable or contrary to applicable law shall be deemed to be invalid from this Certificate and the other terms and conditions hereof shall remain in full force and effect.
13. This Certificate shall bind and benefit the parties and their respective successors and assigns. Service Provider's obligations under this Certificate shall survive any termination hereof.
14. Termination of the Certificate: This Certificate is valid till the completion of validity period of Original Certificate entered between the Service Provider and the Recipient.
15. This Certificate shall be governed by the Indian Laws. The parties consent to the jurisdiction of Chennai.

Executed on the dates set forth below but effective as of the date first written above.

M/s. \_\_\_\_\_ :

INDIAN MARITIME UNIVERSITY

By: \_\_\_\_\_

By: \_\_\_\_\_

Name: \_\_\_\_\_

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Date: \_\_\_\_\_

**ECS MANDATE FORM  
(Account/s Information form)**

**ELECTRONIC CLEARING SERVICE (CREDIT CLEARING) / REAL TIME GROSS SETTLEMENT (RTGS)/ NATIONAL ELECTRONIC TRANSFER (NEFT) / INTRA BANK ACCOUNT TRANSFER FACILITY FOR RECEIVING PAYMENTS FROM INDIAN MARITIME UNIVERSITY (IMU).**

**A. DETAILS OF ACCOUNT HOLDER:**

NAME OF ACCOUNT HOLDER / FIRM:  
COMPLETE CONTACT ADDRESS:  
MOBILE NUMBER / PH NO:  
E.MAIL:  
PAN:

**B. BANK ACCOUNT DETAILS:**

**(Please attach a Cancelled Cheque along with the account information form.)**

ACCOUNT NAME (Name appearing in your Cheque Book):  
BRANCH NAME WITH COMPLETE ADDRESS:  
TELEPHONE NO:  
BRANCH CODE:  
COMPLETE BANK ACCOUNT NUMBER:  
(Please note that the Bank Account must be in the name of the Firm as appeared in the bill. In case of other Beneficiaries (Non-vendor) the Account name must be in the name of Applicant)  
IFSC CODE:  
TYPE OF ACCOUNT (SB/CURRENT/CASH CREDIT):  
MICR CODE OF BANK:

I hereby declare that the particulars given above are correct and complete. If the transaction is delayed or not effected at all for reasons of incomplete or incorrect information I would not hold the IMU responsible.

( ..... )  
Signature of Beneficiary  
Date:

**Mandatory for Vendors/suppliers/Contractors etc., Payment:**

Certified that the particulars furnished above are correct as per our records.  
(Bank's Stamp with Date & Place)

( ..... )  
Signature of Bank Manager