REQUEST FOR INFORMATION (RFI)
(To be uploaded on MoD and ICG website)
PROCUREMENT OF 05 IN NOS REMOTE OPERATED UNDERWATER SURVEILLANCE EQUIPMENT FOR INDIAN COAST GUARD

1. The Indian Coast Guard (ICG), Ministry of Defence, Government of India, intends to procure 05 in nos remote operated underwater surveillance equipment for Indian Coast Guard which will be operated by Regional Headquarters (West) Mumbai, Regional Headquarters(North West), Gandhinagar, Regional Headquarters(East) Chennai, Regional Headquarters(North East), Kolkata, Regional Headquarters (Andaman and Nicobar) Portblair. Remote operated underwater surveillance equipment will help in locating, identification and retrieval of underwater targets through HD cameras and video capabilities alongwith live streaming. High intensity lights will allow the operations in harsh, murky water as well as in night.

2. This request for information (RFI) consists of two parts as indicated below:-

(a) Part I The first part of the RFI incorporates operational characteristics and features that should be met by the equipment. Few important technical parameters of the proposed equipment are also mentioned.

(b) Part II The second part of the RFI states the methodology of seeking response of vendors. Submission of incomplete response format will render the vendor liable for rejection.

PART I

3. **Intended Use of Equipment (Operational Requirement).** Remote operated underwater surveillance equipment will help in locating, identification and retrieval of underwater targets through HD cameras and video capabilities alongwith live streaming. High intensity lights will allow the operations in harsh, murky water as well as in night.

(a) **System Background**

(i) Remote operated underwater surveillance equipment will enable to better visualize the underwater environment, collect quality data and assimilate to generate insights to make well-informed decisions. It will act as a Technology Enabler in the area of the structural integrity inspection of ship's hull, port security, intelligence surveillance & reconnaissance, maritime law enforcement and in SAR of drowning cases. Depending on the mission requirement payloads such as HD/IR cameras, laser scaler, thickness gauge, side scan sonar, imaging sonar, altimeter and gripper arm can be mounted on Remote operated underwater surveillance equipment.

(ii) **Underwater Surveillance equipment.** Underwater surveillance equipment should have vectored thrusters for forward, backward, right turn, left turn, lateral (left slide & right slide) and vertical up/ down motions. The equipment should have auto heading, auto depth, station keeping and auto navigation capabilities.

(iii) **Umbilical Cable**. The umbilical cable is an armored cable that contains a group of electrical conductors and fiber optics that carry electric power, video, and data signals between the operator and the equipment.

(iv) **Control Unit**. Control unit will consist of control console, joystick and user-friendly GUI for monitoring and control of remote operated underwater surveillance equipment, visualization of sensors data and analysis.

(v) **Payloads**. Payloads shall include cameras, laser scaler, thickness gauge, side scan sonar, imaging sonar, altimeter and gripper arm.

(b) **System Functional/Operational Requirements**. Remote operated underwater surveillance equipment must be a mobile system with multiple sensors and should be capable of operating from static/mobile platform by day and night. Remote operated underwater surveillance equipment should be modular in design, easy to deploy and capable of undertaking underwater missions up to a depth of 300 m including inspection, surveillance and object recovery. Remote operated underwater surveillance equipment should have following navigation capability modes:-

(i) Manual operation mode.

(ii) Auto heading mode (remote operated underwater surveillance equipment maintains specified heading).

(iii) Auto depth mode (remote operated underwater surveillance equipment maintains specified depth).

(iv) Station keeping mode (remote operated underwater surveillance equipment maintains 3D position).

(v) Autonomous Navigation modes for auto navigation to specified depth, heading and thrust and for auto navigation to specified sequence of GPS and depth waypoints.

(c) Remote operated underwater surveillance equipment should be capable of minimum 3 knots of speed under normal sea conditions. Remote operated underwater surveillance equipment should be capable of operation in sea state 2-3 and maximum current of 3 knots. The control unit should have user-friendly GUI for monitoring and controlling of the remote operated underwater surveillance equipment and programming of the joystick. The control unit should be capable of following:-

(i) Real time visualisation of sensor inputs from all payloads simultaneously.

(ii) Real time processing of multiple camera and multiple sonar inputs for detection of multiple objects along with their range and bearing. It should be able to track and differentiate moving and stationary targets.

(iii) Detection of human body (diver/drowned body) underwater with indication of confidence level.

(d) The system should be operable by maximum of two operators.

(e) Control unit should have provision for recording, replay, retrieval and transfer of sensor data.

(f) The system should be capable of continuous operation for duration of at least 08 hours on external power source and at least 04 hours with power pack.

4. The system should facilitate plug-and-play connection of payloads, with underwater marine grade connectors rated to 300 m depth or better, through fully digital architecture giving scalable character. Remote operated underwater surveillance equipment should come fitted with HD cameras for 360° visibility and lights. Remote operated underwater surveillance equipment should have provision for mounting of following additional payloads:-

(a) IR Camera

(b) Dual frequency multi-beam imaging sonar

(c) Doppler velocity logger

(d) Robotic arm

(e) Ultrasonic thickness gauge

(f) Side scan sonar

(g) Laser scaler

(h) Underwater cleaning system

(j) Ultra-short baseline

5. **System Non-Functional Features**. Remote operated underwater surveillance equipment should have following non functional features:-

(a) **Power Supply**. The system segments should mainly operate on 230V (±10%), Single phase, 50/60 Hz Frequency (±5%) as primary supply, or any other specified voltage required for operations on the nominated platform. The system should also be provided with power pack for at least of 04 hours of operation.

(b) **Power-On and Built-In Test**. The sub-systems should be designed to support Computerised Diagnostics in addition to POST and BITE. Upon power-on, the system should perform Power on Self-Test (POST) to determine status of its subsystems.

(c) The system design should have open architecture to enable upgrade and replacement of system elements.

(d) The System should be modular and reconfigurable, utilising open interfaces and standards to the extent possible and should be upgradable.

(e) The system should cater for ergonomic offerings in terms of flexibility of operations through HMI and remote operation capabilities.

(f) The system should be designed in a manner so as to be reliable with a high MTBF. The system should be easy to maintain onboard with a low MTTR through replacement of sub-systems/parts. The system should have adequate off-line and online diagnostics to assist in quick defect identification and repair.

6. **Important Technical Parameters**. The OSRs/Questionnaires are placed at **Appendix 'C'** of this document.

7. Vendor should confirm following conditions and which are acceptable:-

(a) The solicitations of offer will be as per "Single Stage-Two Bid System". It would imply that a 'Request for Proposal' would be issued soliciting the technical and commercial offers together, but in two separate sealed envelopes. The validity of commercial offers would be at least 18 months from the date of submitting of offers.**(Confirmation-Yes/No)**

(b) The technical offers would be evaluated by a Technical Evaluation Committee (TEC) to check its compliance with RFP.**(Confirmation-Yes/No)**

(c) The equipment of all TEC cleared vendors would be put through a trial evaluation in India on a 'No Cost No Commitment' basis. A staff evaluation would be carried out by the SHQ to analyse the result of field evaluation and shortlist the equipment for introduction in to service.**(Confirmation-Yes/No)**

(d) Amongst the vendors cleared by GS evaluation, a Contract Negotiation Committee (CNC) would decide the lowest bidder (L1) and conclude the appropriate contract.**(Confirmation-Yes/No)**

(e) Vendor would be bound to provide product for time period specified in the RFP, which includes spares and maintenance tools/jigs/fixtures for field and component level repairs.**(Confirmation-Yes/No)**

(f) The vendor would be required to accept the general conditions of contract given in standard contract document at Chapter VI of DAP 2020. **(Confirmation-Yes/No)**

(g) A **Performance-cum-Warranty Bond** both equal **5%** value of the contract inclusive of taxes and duties is required to be submitted after signing of contract.**(Confirmation-Yes/No)**

PART-II

8. **Procedure for Response**.

(a) The vendor must fill the forms of response as placed at **Appendix 'B'** to this RFI. Apart from filling details about the company, details about the exact product meeting others generic technical specifications should also be carefully filled. Additional literature on the product can also be attached with the form.

(b) The filled form should be dispatched to the under mentioned address:-

User Directorate

The Director General
{for Principal Director(COM & SAR}
Coast Guard Headquarters
National Stadium Complex
New Delhi-110001

TEL: +91 011-23386700

FAX: +91 011- 23073529

E Mail Id: dte.com@indiancoastguard.nic.in

(c) Last date of acceptance of filled form is 08 Aug 2024. The vendors shortlisted for issue of RFP would be intimated.

9. The Government of India invites response to this request only from Original Equipment Manufacturers (OEMs)/Authorised Vendors/Government Sponsored Export Agencies (applicable in the case of countries where domestic law do not permit direct export by OEMs).The end user of the equipment is Indian Coast Guard.

10. This information is being issued with no financial commitment and Ministry of Defence reserves the right to change or vary any part thereof at any stage. The Government of India also reserves the right to withdraw it should it be so necessary at any stage. The acquisition process would be carried out under the provisions of DAP.

Appendix 'A'

REQUEST FOR INFORMATION: PROCEDURE FOR RESPONSE

Request for Information for Procurement of 05 Remote Operated Underwater Surveillance Equipment

1. The Indian Coast Guard is planning to procure **05 remote operated underwater surveillance equipment** to enhance Search and Rescue capabilities with the view to identify probable vendors who can undertake the said project. OEMs/Authorised Vendors are requested to forward information on the product which they can offer. The parameters/broad specifications of the items are mentioned in the questionnaire attached as per **Appendix 'C'**. In addition the vendors are required to furnish details as per performa at **Appendix 'B'**

2. Apart from the information as per the Appendices the vendors may also forward technical details/product brochures/literature etc pertaining to the items in question.

3. The required information/details may please be forwarded at following address by 08 Aug 2024.

(a) **User Directorate**

The Director General
{for Principal Director(Com & SAR}
Coast Guard Headquarters
National Stadium Complex
New Delhi-110001

TEL: +91 011-23386700

FAX: +91 011- 23073529

E Mail Id: dte.com@indiancoastguard.nic.in

(b) **ADG Acquisition Technical**

The ADG (Acquisition-Technical)
Maritime & System
Defence Procurement Board
Room No-05, D-2 Wing
Ministry of Defence
New Delhi-110011
Tel: +91 011-21411712
Telefax: +91 011-21411710
E Mail Id: tmms-modacq@navy.gov.in

Appendix 'B'
(Refer Para 8(a),Part-II of RFI)

VENDOR INFORMATION PROFORMA

1. **Name of the Vendor/Company/Firm.**

_____

_____

(Company profile including share Holding pattern, in brief, to be attached)

2. **Type (Tick the relevant category).**

Original Equipment Manufacturer (OEM)	Yes/No
Authorised Vendor of foreign Firm	Yes/No (attach details, if yes)

Others (give specific details)

_____

_____

3. **Contact Details.**

Postal Address:

_____

_____

City : _____ State : _____
Pin Code : _____ Tele : _____
Fax : _____ URL/Web Site: _____
Email:_____

4. **Local Branch/Liaison Office/Agent**

Name & Address: _____
Pin code : _____ Tel : _____ Fax : _____
E Mail:-_____

5. **Financial Details.**

Category of Industry (Large/medium/Small Scale):_____

6. **Certification by Quality Assurance Organisation**.

Name of Agency	Certification	Applicable from (Date & Year)	Valid Till (Date & Year)

7. **Details of Registration**.

Agency	Registration No.	Validity (Date)	Equipment
GeM			
DGQA/DGAQA/DGNAI			
OFB			
DRDO			
Any other Government Agency			

8. **Membership of FICCI/ASSOCHAM/CII or other Industrial Associations**.

Name of Organisation	Membership Number

9. **Equipment/Product Profile (to be submitted for each product separately)**

(a) Name of Product : _____

{Indian – Indigenously Designed Developed and Manufactured(IDDM) Capability be indicated against the product}

(Should be given category wise for e.g. all products under CDDS to be mentioned together)

(b) Description (attach technical literature): _____

(c) Whether OEM or Integrator: _____

(d) Name and address of Foreign collaborator (if any):_____

(e) Industrial Licence Number: _____

(f) Indigenous component of the product:-

(i) Overall IC (in percentage) _____

(ii) IC for material/component/software manufactured in India (in percentage) _____

(g) Status (in service /design & development stage): _____

(h) Production capacity per annum: _____

(j) Countries/agencies where and quantity of equipment supplied earlier:

_____

_____

_____.

(k) Estimated price of the equipment _____.

(l) Indigenously produced subsystems, Line Repair Units, software and critical spares of the product: _____.

(m) Devices/Line Repair Units for which Input/Output Protocols are Indigenously available for enabling replacement by indigenous equivalents or interfacing with equipment of own choice: _____.

(n) Capability for carrying out Comprehensive Maintenance, Repair and Overhaul, calibration and obsolescence management of the equipment/platform/system along with associated jigs, fixtures and test setups, during the designed service life of the equipment within India: _____.

10. Alternatives for meeting the objectives of the equipment set forth in the RFI

11. Any other relevant information: _____.

12. **Declaration.** It is certified that the above information is true and any changes will be intimated at the earliest.

(Authorised Signatory)

Appendix 'C'
(Refer Para 6,Part-I of RFI)

REQUEST FOR INFORMATION: QUESTIONNAIRE

Ser	Specifications/ Parameter	Reply	Remarks
1.	**System Design**. Remote operated underwater surveillance equipment will enable to better visualize the underwater environment, collect quality data and assimilate to generate insights to make well-informed decisions. It will act as a Technology Enabler in the area of the structural integrity inspection of ship's hull, port security, intelligence surveillance & reconnaissance, maritime law enforcement and in SAR of drowning cases. Depending on the mission requirement payloads such as HD/IR cameras, laser scaler, thickness gauge, side scan sonar, imaging sonar, altimeter and gripper arm can be mounted on Remote operated underwater surveillance equipment.		
2.	**Underwater Surveillance Equipment**. Remote operated underwater surveillance equipment should have vectored thrusters for forward, backward, right turn, left turn, lateral (left slide & right slide) and vertical up/ down motions. The equipment should have auto heading, auto depth, station keeping and auto navigation capabilities.		
3.	**Umbilical Cable**. The umbilical cable is an armoured cable that contains a group of electrical conductors and fiber optics that carry electric power, video, and data signals between the operator and the equipment.		
4.	**Control Unit**. Control unit will consist of control console, joystick and user-friendly GUI for monitoring and control of remote operated underwater surveillance equipment, visualization of sensors data and analysis.		
5.	**Payloads**. Payloads shall include cameras, laser scaler, thickness gauge, side scan sonar, imaging sonar, altimeter and gripper arm.		
6.	**System Functional / Operational Requirements**. Remote operated underwater surveillance equipment must be a mobile system with multiple sensors and should be capable of operating from static/mobile platform by day and night. It must fulfil following operational requirements:-		

	(a)	Remote operated underwater surveillance equipment should be modular in design, easy to deploy and capable of undertaking underwater missions up to a depth of 300m including inspection, surveillance and object recovery. Remote operated underwater surveillance equipment should have following navigation capability modes:- (i) Manual operation mode. (ii) Auto heading mode (remote operated underwater surveillance equipment maintains specified heading). (iii) Auto depth mode (remote operated underwater surveillance equipment maintains specified depth). (iv) Station keeping mode (remote operated underwater surveillance equipment maintains 3D position). (v) Autonomous Navigation modes for auto navigation to specified depth, heading and thrust and for auto navigation to specified sequence of GPS and depth way points.		
	(b)	Remote operated underwater surveillance equipment should be capable of minimum 3 knots of speed under normal sea conditions. Remote operated underwater surveillance equipment should be capable of operation in sea state 2-3 and maximum current of 3 knots.		
	(c)	The control unit should have user-friendly GUI for monitoring and controlling of the remote operated underwater surveillance equipment and programming of the joystick. The control unit should be capable of following:- (i) Real time visualisation of sensor inputs from all payloads simultaneously. (ii) Real time processing of multiple camera and multiple sonar inputs for detection of multiple objects along with their range and bearing. It should be able to track and differentiate moving and stationary targets.		

		(iii) Detection of human body (diver/drowned body) underwater with indication of confidence level.		
	(d)	The system should be operable by maximum of two operators.		
	(e)	Control unit should have provision for recording, replay, retrieval and transfer of sensor data.		
	(f)	The system should be capable of continuous operation for duration of at least 08 hours on external power source and at least 04 hours with power pack.		
	(g)	The system should facilitate plug-and-play connection of payloads, with underwater marine grade connectors rated to 300 m depth or better, through fully digital architecture giving scalable character. Remote operated underwater surveillance equipment should come fitted with HD cameras for 360^0 visibility and lights. remote operated underwater surveillance equipment should have provision for mounting of following additional payloads:- (i) IR Camera (ii) Dual frequency multi-beam imaging sonar (iii) Doppler velocity logger (iv) Robotic arm (v) Ultrasonic thickness gauge (vi) Side scan sonar (vii) Laser scaler (viii) Underwater cleaning system (ix) Ultra-short baseline		
7.	**System Non-Functional Features**			
	(a)	**Power Supply**. The system segments should mainly operate on 230V (±10%), Single phase, 50/60 Hz Frequency (±5%) as primary supply, or any other specified voltage required for operations on the nominated platform. The system should also be provided with power pack for at least of 04 hours of operation.		

	(b)	**Power-On and Built-In Test.** The sub-systems should be designed to support Computerised Diagnostics in addition to POST and BITE. Upon power-on, the system should perform Power on Self-Test (POST) to determine status of its subsystems.		
	(c)	The system design should have open architecture to enable upgrade and replacement of system elements.		
	(d)	The System should be modular and reconfigurable, utilising open interfaces and standards to the extent possible and should be upgradable.		
	(e)	The system should cater for ergonomic offerings in terms of flexibility of operations through HMI and remote operation capabilities.		
	(f)	The system should be designed in a manner so as to be reliable with a high MTBF. The system should be easy to maintain onboard with a low MTTR through replacement of sub-systems/parts. The system should have adequate off-line and online diagnostics to assist in quick defect identification and repair.		

8. **Deliverables**

Ser	Descriptions	Quantity (Per System)	Reply	Remarks
(a)	Remote operated underwater surveillance equipment with fitted camera and LED lights	05 Set		
(b)	Umbilical cable	05 Set		
(c)	Control unit consisting of laptop, application software and GUI	05 Set		
(d)	Transportation case (reusable, all weather, field worthy)	05 Set		
(e)	Payloads consisting of (i) Dual frequency multi beam imaging sonar (ii) Doppler velocity logger (iii) Ultra short baseline (iv) Ultrasonic thickness gauge	05 each		

Ser	Descriptions	Quantity (Per System)	Reply	Remarks
	(v) Laser scaler (vi) Side scan sonar (vii) Underwater cleaning system (viii) IR camera			
(f)	User manual	05 set		
Services				
(g)	HATs and Op Checks	05 Set		

9. **Technical Specifications - Remote Operated Underwater Surveillance Equipment**

Ser	Parameter	Specification	Reply	Remarks
Remote Operated Underwater Surveillance Equipment				
(a)	Operating depth	Up to 300 m or better		
(b)	Weight (without payloads)	Less than 50 kg		
(c)	Dimension (LxWxH)	90-100 cm x 40-50 cm x 30-35 cm (± 5%)		
(d)	Buoyancy	Positively buoyant		
(e)	Carrying capacity of Payloads	≥ 5kg		
(f)	Construction material	Corrosion resistant, impact proof and lightweight alloys		
(g)	Degree of freedom	Better than 4, all motions remotely controllable		
(h)	Speed	≥ 3 knots		
(j)	Power source	Operating on 230V 50/60 Hz A/C external power supply		
(k)	Camera	Camera 1 ▪ 4k H265 camera ▪ Minimum 60^0 diagonal field of view ▪ Sensitivity – 0.1 lux or better Camera 2 ▪ Full HD camera ▪ Tiltable ($\pm 90^0$) ▪ Wide angle lens		

Ser	Parameter	Specification	Reply	Remarks
	IR Camera	with minimum 180^0 field of view ▪ Sensitivity – 0.1 lux or better		
(l)	Lights	▪ LED lights having cumulative illumination of minimum 6000 lumens ▪ Controllable light intensity		
(m)	Thrusters	▪ Horizontal plane – 4 ▪ Vertical plane – 2		
(n)	Umbilical cable (tether)	▪ >300m length with access to multiple spare wires ▪ Neutral or slightly positive buoyant ▪ Pull load capacity ≥ 50 kg		
(p)	Control Unit	Control Console ▪ Rugged control console with a outdoor readable display of 15 inch ▪ Intel core i7 processor with 32 GB RAM, 1TB SSD or better ▪ Connectivity – minimum 3 USB ports, 1 Ethernet, 1 HDMI ▪ Splash proof keyboard, mouse/ trackpad ▪ IP 53 or better water and dust ingress protection Joystick ▪ Rugged joystick with waterproof user programmable buttons and axes ▪ Option to control sonar setting using joystick ▪ IP 53 or better water and dust ingress protection		
(q)	Application software	▪ User friendly GUI for monitoring and controlling of the		

Ser	Parameter	Specification	Reply	Remarks
		remote operated underwater surveillance equipment and programming of the joystick ▪ Real time visualisation of multiple cameras, sonar, remote operated underwater surveillance equipment location on map and other payload data in a single software application ▪ Cross-platform compatibility (Windows/Linux/Mac) ▪ Recording of all log files containing all data received from remote operated underwater surveillance equipment ▪ Capability of mission planning for waypoint navigation ▪ AI based object detection using advanced dual frequency multi beam sonar - Real time processing of live multi beam sonar data for detection of multiple objects - Detection of human body (diver/drowned body) underwater with indication of confidence level - Provides range and bearing to identified objects		

Ser	Parameter	Specification	Reply	Remarks
(r)	Recording options	▪ Camera and sonar video recording and still capture in internal storage ▪ Provision for copying of video/screen images through USB port ▪ Internal storage capacity of minimum 100 hours of video recordings ▪ Overlay of timestamp, depth, heading, and other operational parameters as required		
(s)	Transportation case	▪ Industrial grade customised carrying case with proper foam cutouts for safe transportation of all components ▪ Reusable ▪ All weather field worthy		
(t)	Ballast	Modular ballast weights to control remote operated underwater surveillance equipment's buoyancy		
(u)	Navigation capability	▪ Manual operation mode ▪ Auto heading mode (remote operated underwater surveillance equipment maintains specified heading) ▪ Auto depth mode (remote operated underwater surveillance equipment maintains specified depth) ▪ Station keeping mode (remote operated underwater surveillance		

Ser	Parameter	Specification	Reply	Remarks
		equipment maintains 3D position) ▪ Auto navigation to specified depth, heading and thrust ▪ Auto navigation to specified sequence of GPS and depth waypoints		
Payload – Dual Frequency Multi beam Imaging Sonar				
(a)	Operating Frequency	▪ 700-800kHz ▪ 1-1.4MHz		
(b)	Depth Rating	Minimum of 100m		
(c)	Range	▪ Minimum 0.1m or lower ▪ Maximum 120m/40m or above		
(d)	Interface	Ethernet		
Payload – Doppler Velocity Logger				
(a)	Bottom tracking altitude:	▪ Min 50m		
(b)	Position Accuracy	▪ Long term accuracy of 1%		
(c)	Depth Rating	▪ Minimum of 100m		
Payload – Robotic Arm				
(a)	Grip force	▪ Minimum of 90 N		
(b)	Pressure Rating	▪ Minimum of 300 m		
(c)	Jaw Opening	▪ Minimum of 60mm		
(d)	Depth Rating	▪ Minimum of 100m		
(e)	Load carrying capacity	▪ Up to 5kg		
Payload Ultra Short Baseline				
(a)	Slant Range	▪ Minimum 300 m or better		
(b)	Range Resolution	▪ Minimum 0.1 m or better		
(c)	GPS Type	▪ Base station with integrated GPS receiver		
(d)	Depth Rating	▪ Minimum of 100m		
Payload Ultrasonic Thickness Gauge				
(a)	Measurement Range	▪ 3 mm to 100mm of steel plates		
(b)	Measurement Accuracy	▪ ±0.1mm or better		
(c)	Probe Holder	▪ Suitable UT probe holders for curved		

Ser	Parameter	Specification	Reply	Remarks
		surfaces		
(d)	Depth Rating	▪ Minimum of 100m		
Payload – Laser Scaler				
(a)	Type and Class	▪ Dual Green Line laser ▪ Class 3A human safe to use		
(b)	Laser Spacing	▪ Spacing of 100mm between Laser		
(c)	Depth Rating	▪ Minimum of 100m		
Payload – Side Scan Sonar				
(a)	Operating Frequency	▪ Operating frequency: 450 kHz or higher		
(b)	Depth Rating	▪ Minimum of 100m		
(c)	Range	▪ Minimum 100m or better		
(d)	Interface	▪ Ethernet		
Payload – Underwater Cleaning System				
Type A				
(a)	Type	▪ Detachable Soft brush spot cleaning system		
(b)	Size	▪ Min of 100mm Diameter		
Type B				
(a)	Type	▪ Cavitations Based Cleaning System		
(b)	Nozzle	▪ Zero Back Thrust Lance suitable to attach with remote operated underwater surveillance equipment and respective attachment clamps		
(c)	Pressure Pump	▪ Petrol based pump to provide sufficient water pressure and flow rate for effective cleaning		
(d)	Pressure Hose Length	▪ Minimum of 20m long neutrally buoyant pressure hose		
(e)	Depth of operations	▪ Minimum of up to 20m(by hose length)		

10. **Miscellaneous Information for compliance**

Ser	Requirement/Information	Reply	Remarks
(a)	The system when deployed/used should meet performance requirements as specified for operating environmental conditions specified herein. The system should operate within specified tolerances during the tests specified herein without adjustment or alignment other than those controls required for normal operation of the system. The system should operate without degradation to specified performance standards in the environmental conditions specified in subsequent paragraphs.		
(b)	**Operating Conditions**. The system shall be capable of being stored and operated in the following environmental conditions- (a) Operating Temperature : 0°C to 60°C (b) Storage Temperature : -10°C to 60°C (c) Relative Humidity (RH) : 95% at 40°C		
(c)	**Environmental Specifications**. The system to be certified as per Environmental tests as per JSS 55555:2012/ MIL STD 810 H and IP 65 rated tests.		
(d)	**EMI/EMC Specifications**. The system should conform to EMI/EMC MIL STD-461 F. The EMI/EMC testing should be carried out at any of the accredited labs as per MIL STD 461 F standards. Prior conduct of EMI/EMC test, the EMI/EMC Acceptance Plan formulated by Vendor will have to approved by CGHQ. Final test report will also be approved by CGHQ. All relevant test reports are to be submitted for scrutiny of CGHQ for clearance which will be one of the pre-requisites for dispatch of equipment to end consignee.		
(e)	The system should be modular in design with easy accessibility for maintenance in field conditions by replacing modules and PCBs.		

(f)	The system shall provide a GUI based 'Operation & Maintenance' interface for debugging, troubleshooting and for providing faut, configuration and performance data.		
(g)	The system control software shall interact with various hardware/ software and provide the health status.		
(h)	The system should have life cycle of not less than 8 years.		
(j)	**Maintainability and Testability**. The system shall be designed for ease of maintenance and also to reduce preventive and corrective maintenance requirements. The Mean Time to Repair (MTTR) of the equipment at system level for a single fault shall be less than 15 minutes. The maximum on board repair time for single occurrence of multiple faults shall not exceed 120 minutes.		
(k)	**Power-On and Built-In Test**. Upon power-on, the systems should perform Power on Self-Test (POST) to determine status of its sub-system. The sub-systems should be designed to support computerised diagnostics in addition to POST and BITE.		
(l)	**Qualification (Type) Tests**. The Qualification (Type) tests on the equipment/ system shall be undertaken on prototype or first of the production model.		
(m)	**Quality Assurance Plan (QAP)**. Inspection and acceptance tests shall be jointly carried out by the representatives of the Indian Coast Guard and the manufacturer as per QAP document.		
(n)	**System Performance**. The system parameters both for factory acceptance and post installation onboard are to be checked as per mutually agreed ATPs, FATS, HATs and Op checks document.		
(p)	**System Maintenance**. The firm is to provide warranty period for two (02) year for all components supplied with the system (hardware and software). Further, the firm is to undertake repair and maintenance of the system under the terms and conditions of a Comprehensive Maintenance Contract (CMC) for a period of six (06) years from the date of completion of warranty.		

(q)	No component/ part of system is to be of PRC country origin.		
(r)	**Product Support and Upgradability**. The system should be upgradable in hardware and software by the manufacturer, if required, for enhanced performance features to obviate recurring defects and faults. Upgrades in hardware and software should be provided for entire duration of warranty and Comprehensive Maintenance Contract by the Vendor.		
(s)	The training of Operators and Maintainers should be carried out at Level 1 (O level).		
(t)	**System Safety**. The system, including its software should be designed for minimum risk to personnel and equipment. The system design should preclude functional failure resulting in critical or catastrophic hazards to personnel or equipment.		
(u)	**Electrical Safety**. The system should incorporate safe electrical design and hazard mitigation. It should protect against the risk of electrical shock and other hazards under all conditions of normal use (installation, operation and maintenance). The system should also protect against the risk of electrical shock and other hazards under a likely fault condition including human error.		
(v)	**Mechanical Safety**. The system should be designed for minimum risk to personnel during installation, operation and maintenance. The system should have design such that it can be removed, handled and lifted safely. Equipment power switches should be protected so as to prevent inadvertent actuation.		
(w)	Vendor infrastructure profile		
	(i) Orders in hand (aa) For government agencies (ab) For private agencies		
	(ii) Orders executed (ac) For government agencies (ad) For private agencies		
	(iii) Countries where the equipment has been supplied		
	(iv) Annual production capacity		
	(v) Estimated price of the offered product		
	(vi) Applicable key technology		
	(vii) Any suggestion for enhanced		

	performance		
	(viii) Financial information (aa) Balance sheet last three financial years (year wise) (ab) Profits made (ac) Net worth (ad) Debt/Equity ratio (ae) Quick ratio (af) Attach copies of certified published annual report showing turnover and financial status in support of above information.		
	(ix) Whether the vendor is authorised OEM/ dealer/ distributor/reseller for remote operated underwater surveillance equipment. Installation & Commissioning and lifecycle maintenance support for equipment in India? If yes, furnish relevant supporting documents		
	(x) Whether Indian Vendor are capable to indigenously design and develop the required solution or through ToT agreement? If so, the time frame and details thereof.		
	(xi) Whether the vendor is capable of supplying remote operated underwater surveillance equipment of ICG.		
	(xii) Whether the vendor is capable for providing AIAMC support at various locations in India including Andaman & Nicobar and Lakshadweep & Minicoy Islands. If yes, furnish locations of maintenance support centres available in India. This office required operations of equipment of five locations i.e Mumbai, Chennai, Port Blair, Porbandar and Haldia.		
	(xiii) Whether the vendor is providing copy of the applicable certification/ type approval certificates of the proposed equipment, if applicable.		
	(xiv) What is the past experience of vendor in supplying, installation & commissioning and providing maintenance support in respect of remote operated underwater surveillance equipment or other similar equipment in India? Furnish client details.		
	(xv) Whether any vigilance enquiry has either been undertaken in the past or contemplated on the firm.		
	(xvi) Whether the vendor would be able to comply with all provisions of DAP 2020		

	or not. If not, para/clause of DAP 2020 would not be agreed to with reasons.		
	(xvii) What is the lead time of delivery of the equipment after signing of contract ?		
	(xviii) Whether the vendor is acceptability of payment terms as per DAP 2020.		
	(xix) Any other relevant information		
(x)	Indigenisation status and plan for the critical and niche technologies planned to be delivered.		
(y)	Any dependency on foreign OEM for critical component/technology and long-term plan for indigenisation of such foreign components/technology.		
(z)	Details about subsystems, LRUs and software that shall mandatorily be indigenously produced or developed along with details of foreign dependencies for critical enabling technologies/component etc.		
(aa)	Mandatory indigenous capabilities and training requirements needed to carry out comprehensive maintenance, repair, obsolesce and life cycle management of the equipment/platform/system along with associated test setups/equipment required during the design, development & service life of the system.		
(ab)	In case of foreign collaboration, along with scope, depth & range of ToT, details of formal acceptance by foreign partner's government (i.e country of origin) that any license required to transfer the technology will be granted in case selected. If any inter-governmental agreement is required, same also needs to be stated.		