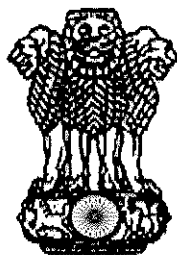


Cover Page



सत्यमेव जयते
Ministry of Defence
Government of India

REQUEST FOR PROPOSAL

BY

MINISTRY OF DEFENCE
GOVERNMENT OF INDIA

FOR

ACQUISITION OF

14 FAST PATROL VESSELS (FPVs)
FOR INDIAN COAST GUARD

This document is the property of Government of India/Ministry of Defence.
The contents of this RFP must not be disclosed to unauthorised persons and
must be used only for the purpose of submission of bids.

This document contains 224 pages including cover page and Appendices.

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Copy No. 05

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MoD ID TM(MS)/0025/CG/14 FPVs

Additional Director General
Acquisition-Technical (M&S)
Room No. 5, D-II Wing
Ground Floor
Sena Bhawan
New Delhi-110011

19 Jan 2023

To

**REQUEST FOR TECHNICAL AND COMMERCIAL PROPOSAL FOR
ACQUISITION OF 14 FAST PATROL VESSELS (14 FPVs) FOR
INDIAN COAST GUARD UNDER "BUY (INDIAN-IDDm)" CATEGORY**

Dear Sir/Madam,

1. The Ministry of Defence/Indian Coast Guard, Government of India, intends to procure 14 Fast Patrol Vessels (14 FPVs) and seeks participation in the procurement process from prospective Bidders subject to requirements in succeeding paragraphs.
2. **Broad Description of Fast Patrol Vessels.** Indian Coast Guard intends to procure 14 Fast Patrol Vessels (FPVs) which are medium sized platforms of approximately 50-55 m long, used for high speed interception in shallow waters upto depth of 3.5 mtrs and are tailor made for specific roles of Indian Coast Guard viz. Search and Rescue, Law Enforcement, Coastal Security, Anti-piracy and Anti-smuggling etc. These FPVs should be designed for operation in tropical condition, with excellent sea keeping qualities and dynamic stability. The Ship is to be sea worthy for operation upto sea state 4 and to have survivability upto sea state 6. The Ship to have minimum 1500 NM of endurance at cruising speed of 12-14 Knots.
3. The salient aspects and timelines of the acquisition are tabulated below. In case of any variation in the details furnished below or in any Annexures (s) with that mentioned in the RFP, information furnished in the main body of the RFP at referred Paragraph is to be followed.

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Ser No.	Description	Details	Reference Para of the RFP
(a)	Project/Vessel/Platform required	Fast Patrol Vessels	Appendix 'A'
(b)	Quantity Required	Fourteen (14)	Para 1
(c)	Categorisation of Procurement	Buy (Indian IDDM)	Para 1
(d)	Minimum IC Content required	60 %	Para 7
(e)	Place(s) of Delivery	Ex-Shipyard premises (Navigable) in India as per Contract	Para 1.1.1 of Appendix 'H'
(f)	Warranty Period	12 Months from date of acceptance of FPVs	Para 12
(g)	CMC Period, if any	NA	--
(h)	Offsets required, if any	NA	--
(j)	EMD Amount	₹ 05 Crore	Para 8.1 of Annexure I to Appendix 'K'
(k)	Last date for submission of Pre-bid queries	16 Feb 23	Para 23
(l)	Date and time for Pre-bid meeting	02 Mar 23 at 1100 Hrs	Para 24
(m)	Last date and time for Bid Submission	13 Apr 23 at 1100 Hrs	Para 25

4. **Special features of the RFP.** The FPVs supplied by the bidder shall be designed with the best shipbuilding practices conforming to stipulated ICG specifications and extant approved Class Notations. Also, the bidder shall deliver 14 FPVs post completion of all requisite Test & Trials as specified in the RFP, including the Part IV.

5. This Request for Proposal (RFP) consists of following four parts:-

Ser No.	Description	Page No.
(a)	Part I - General Requirements	8
(b)	Part II - Technical Requirements	15
(c)	Part III - Commercial Requirements	20
(d)	Part IV - Bid Evaluation and Acceptance Criteria	21

6. The Government of India invites responses to this request from Indian Shipyards only. The bidder is required to forward the list of authorized persons for interacting with CGHQ in relation to this instant RFP.

7. The end user of the Fast Patrol Vessels (FPVs) is the Indian Coast Guard.

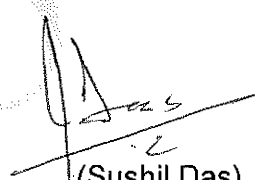
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8. This RFP is being issued with no financial commitment and the Ministry of Defence reserves the right to withdraw the RFP and change or vary any part thereof or foreclose the procurement case at any stage. The Government of India also reserves the right to disqualify any Bidder should it be so necessary at any stage on grounds of National Security.

9. This RFP is non-transferable.

10. In addition to various Appendices and their Annexures, attached with this RFP, reference to various paragraphs of DAP-2020 has been made in the RFP. The DAP-2020 is an open domain document that is available at GoI, MoD website www.mod.nic.in.

Yours faithfully


(Sushil Das)
Commodore
DDG Acq-Tech (M)

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Disclaimer

1. This RFP is neither an agreement nor an offer by the MoD to prospective Bidders or any other person. The purpose of this RFP is to provide interested parties with information that may be useful to them in submitting their proposals pursuant to this RFP. This RFP includes statements, which reflect various assumptions and assessments arrived at by the MoD in relation to the Project. This RFP document and any assumptions, assessments and statements made herein do not purport to contain all the information that each Bidder may require. The Bidder shall bear all its costs associated with or relating to the preparation and submission of proposal pursuant to this RFP. Where necessary, MoD reserves the right to amend or supplement the information, assessment or assumptions contained in this RFP. The MoD reserves the right to withdraw the RFP or foreclose the procurement case at any stage. The issuance of this RFP does not imply that the MoD is bound to shortlist a Bidder for the Project. The MoD also reserves the right to disqualify any Bidder should it be so necessary at any stage on grounds of National Security.

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PART I - GENERAL REQUIREMENTS

1. This part consists of the general requirement of the 14 Fast Patrol Vessels and Services, under categorisation "Buy (Indian-IDDMM)", hereafter collectively referred as 'Deliverables', the numbers required, the time frame for deliveries, conditions of usage and maintenance, requirement for training, Engineering Support Package (ESP), and warranty/guarantee conditions, etc. It includes the procedure and the date & time for submission of bids.

Non-Disclosure

2. The Bidding documents, including this RFP and all attached documents provided by the MoD, are and shall remain or becomes the property of the MoD. These are transmitted to the Bidders solely for the purpose of preparation and the submission of a proposal in accordance herewith. Bidders are to treat all information as strictly confidential and shall not use it for any purpose other than for preparation and submission of their proposal. The provisions of this Para shall also apply mutatis mutandis to Bids and all other documents submitted by the Bidders, and the MoD will not return to the Bidders any proposal, document or any information provided along therewith (except unopened Technical Bid, Commercial Bid and EMD, as relevant).

3. Information relating to the examination, clarification, evaluation and recommendation for the Bidders shall not be disclosed to any person who is not officially concerned with the process, or concerning the Bidding Process. The MoD will treat all information, submitted as part of the Bid, in confidence and will require all those who have access to such material to treat the same in confidence. MoD may not divulge any such information unless it is directed to do so by any statutory entity that has the power under law to require its disclosure or is to enforce or assert any right or privilege of the statutory entity and/ or MoD or as may be required by law or in connection with any legal process.

4. **Confidentiality of Information**. No party shall disclose any information to any "Third Party" concerning the matters under this RFP generally. In particular, any information identified as "Proprietary" in nature by the disclosing party shall be kept strictly confidential by the receiving party and shall not be disclosed to any third party without the prior written consent of the original disclosing party. This clause shall apply to the sub-contractors, consultants, advisors or the employees engaged by a party with equal force.

Business Eligibility

(a) **Undertaking by Bidders**. The Bidder will submit an undertaking that they are currently not banned / debarred / suspended from doing business dealings with Government of India / any other government organisation and that there is no investigation going on by MoD against them. In case of ever having been banned / debarred / suspended from doing business dealings with MoD/any other government organization, in the past, the Bidder will furnish details of such ban / debarment along with copy of government letter under which this ban /

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debarment / suspension was lifted / revoked. The Bidder shall also declare that their sub- contractor(s)/supplier(s)/technology partner(s) are not Suspended or Debarred by Ministry of Defence. In case the sub-contractor(s)/supplier(s)/ technology partner(s) of the Bidder are Suspended or Debarred by Ministry of Defence, the Bidder shall indicate the same with justification for participation of such sub- contractor(s)/supplier(s)/ technology partner(s) in the procurement case.

(b) Subsequent to submission of bids if any sub-contractor(s) /supplier(s)/technology partner(s) of the Bidder is Suspended or Debarred by Ministry of Defence, the Bidder shall intimate the Ministry of Defence regarding Suspension or Debarment of its sub-contractor(s)/ supplier(s)/technology partner(s) within two weeks of such order being made public.

6. **Shipyard Qualification Parameters.** The detailed Shipyard Qualification Parameters (Refer Para 27 of RFP) for the Bidders for participation in the instant acquisition case are placed at **Appendix 'L'** to this RFP. All Bidders are to submit details as per the criteria along with the Technical Bids. These would be evaluated by the Committees/Teams constituted by CGHQ. In case the bidder is admitted with NCLT or an appeal is pending under Insolvency & Bankruptcy Code -16 (and amendment thereof), Bidder will not be eligible for participation in the acquisition process. The date of bid submission will be considered for admission or otherwise. The bidder has to separately submit a self-declaration certificate indicating that no such case is pending under IBC along with the bid submission for examination by CGHQ.

7. **Indigenous Content.** For the purposes of this RFP and the acquisition contract (if any) signed by the Ministry of Defence with the successful Bidder, indigenous content shall be as defined under **Para 8 to 12 of Chapter I** and **Para 1 to 3 of Appendix 'B' to Chapter I of DAP 2020 with minimum IC in the proposal not less than 60%**. In addition, reporting requirements for prime (main) Bidders (and for sub-contractors/suppliers/technology partners reporting to higher stages/tiers) shall be as prescribed under **Para 4 to 7 of Appendix 'B' to Chapter I of DAP 2020**. The right to audit Bidder/ sub-contractors/suppliers/technology partners shall vest in the Ministry of Defence as prescribed under **Para 10 of Appendix 'B' to Chapter I of DAP 2020**; and aspects of delivery, certification, payments, withholding of payments and imposition of penalties shall be as prescribed under **Para 11 to 15 thereof of Appendix 'B' to Chapter I of DAP 2020**. Furthermore, Bidders will be required to submit their indigenisation plan in respect of indigenous content **with minimum IC in the proposal not less than 60%**. Compliance to IC with reference to claims made by vendors will be carried out during TEC stage, as per **Annexure VIII to Appendix 'A' of RFP**. Undertaking to comply with Indigenous Design is to be submitted as per **Annexure IX to Appendix 'A' of RFP** in accordance with **Appendix 'A' to Chapter I of DAP-2020**. Verification of the cost aspects of IC shall be undertaken at CNC stage. The DAP -2020 is available at MoD, GoI website (www.mod.nic.in) for reference and free download.

In Buy (Indian-IDD) cases, the IC claim shall be examined at TEC stage. The bidder is required to furnish necessary supporting documentation to support IC claim. Vague undertakings or assertions for IC Claim shall not be accepted at TEC stage.

8. **Year of Production.** The 14 FPVs including major equipment & systems fit supplied under the contract should be of latest manufacture i.e manufactured after the date of Contract with unused components/assemblies/sub-assemblies, conforming to the current production standard and should have 100% of the defined life at the time of delivery (*other than permitted running hours during assembly/acceptance trials*). Deviations, if any should be clearly brought out by the Bidder in the Technical Proposal.

9. **Delivery Schedule.** The delivery schedule of 14 FPVs along with its machineries, systems and equipment and the, relevant payment stages is specified at **Annexure I to Appendix 'H'**. The FPVs will be delivered along with all onboard equipment/systems, On Board Spares, Documentation, Tools, accessories and Test equipment or as specified separately. The acceptance of machinery, systems and equipment has been specified in **Appendix 'A'** of the RFP. For the ship fit whose acceptance procedure has not been indicated, the same would be undertaken as per OEM manuals after clearance by the buyer, in consultation with class society and the seller.

10. Once the contract is concluded and the delivery schedule is established, the Bidder shall adhere to it and ensure continuity of supply of deliverables and their components under the contract.

11. **Upkeep, Maintenance and Preservation of Machinery and Equipment.** The Bidder shall be responsible for the maintenance, upkeep and preservation of all equipment, material and systems procured for the 14 FPVs. All activities undertaken on machinery/systems based on Manufacturers' recommendation up to time of delivery is to be recorded and thereafter handed over to the Buyer prior to delivery. Before the date of delivery of any item of machinery to the Bidder's premises/yard, the Bidder shall advise the main machinery contractor as to when the item is likely to be installed on board the 14 FPVs for service. The preservation and packaging of the equipment shall be decided between the Bidder and the main machinery contractor, so as to ensure that there is no damage in transit and deterioration during the period when the item is in storage. Whether the item is supplied by the Indian Coast Guard or not, the removal of packaging shall be carried out in the presence of the Coast Guard Refit & Production Team. After both the overseer and the Bidder are satisfied about the condition of the equipment, the item shall become the responsibility of the Bidder for the further preservation until inducted into service. A logbook shall be maintained by the Bidder indicating the maintenance carried out till handing over of the equipment and system. The deliverables/Components are to be preserved by the Bidder till delivery to the Buyer. In case, JRI necessitates unpacking to the extent that the preserved life of the deliverables is affected, Bidder is to undertake re-packing to restore the preserved life to the specified period at his own cost. In cases of any delay in STW/installation/Integration trials/commissioning and if preservation period expires during the storage prior installation/post installation and prior trials (as applicable), the deliverables are to be re-preserved by the Bidder. In case of Buyer Furnished Equipment (BFE), cost towards upkeep and preservation will be as mutually agreed between Buyer and Bidder.

12. **Warranty.** The supplied 14 Fast Patrol Vessels (FPVs) shall carry a warranty of 12 months from the respective date of acceptance of each FPV or as specified at **Appendix 'C'** to this RFP. In case of systems/ equipment, which have not completed trials prior delivery, the warranty of that particular system/ equipment would commence from the day of successful completion of trials (as applicable on case to case basis). Warranty Clause is given at **Appendix 'C'** to this RFP.

13. **In Service Life/Shelf Life/ Reliability Assessment (as applicable).** The minimum service life of the Fast Patrol Vessels (FPVs) is required to be 20 years (catering for annual usage upto 2500 hrs). The In Service Life/Shelf Life of the vessel(s)/equipment respectively shall be stipulated in the bid. In case of shelf life of equipment, the relevant storage conditions should be clearly specified. The Bidder is required to give details of reliability model, reliability prediction and its validation by designer based on the operating parameters defined in the GLS (**Appendix 'A'**) of the RFP to ensure reliability of 14 FPVs throughout Service. The efficacy of reliability model/prediction/validation would be verified during technical evaluation as indicated in **Para 39** of this RFP.

14. **Product Support.** The Bidder would be bound by a condition in the contract that they would be in a position to provide product support in terms of maintenance, materials and spares for a **minimum period of 20 years and 10 years for electronic items**. Towards this the Bidder is to obtain contractual commitments from the various equipment manufacturers/ vendors to provide product support for the said period from the date of delivery of the FPVs at the Buyer's designated Naval/CG base port. Even after the said mandatory period, the Bidder would be bound to give at least 2 years notice to the Buyer prior to closure of the said production line, to assess the requirement of life time buy of all spares before closure of the said production line. This said aspect would also form an integral part of the Contract. This, however, shall not restrict the Buyer from directly sourcing sub-equipment/sub-assembly and spares from their respective OEMs/sub-vendors on completion of warranty. In case the sub-equipment/sub-assembly/parts require tuning/calibration/integration by the Bidder prior replacement, the same is to be undertaken by the Seller at fair and reasonable cost.

15. **Codification.** The Bidder agrees to provide existing NATO Stock Numbers (NSNs) of OEM for each item supplied under the contract as per part list (including MRLS). In case, the NSNs are not available, the bidder agrees to codify using basic technical characteristics in consultation with ICG.

16. **First Outfit of Naval Stores.** The Bidder shall supply the first outfit of Naval/CG Stores (Permanent & Consumable) along with the delivery of the FPVs as per **Appendix 'A'**. This will be factored in determination of L1 {SI (a)1(ag) of Price Bid at **Appendix 'J'**}.

17. **Training of Crew and Maintenance Personnel.** The crew of the FPVs and shore maintenance staff are required to be trained on the operation and maintenance of hull, electrical and engineering equipment, installed onboard (Details at **Appendix 'A'**) in English language and Hindi language (if required). The Crew are required to be trained for Fast Patrol Vessel (FPV) Operation and onboard Repairs while the Maintenance Personnel of Refitting Agency are to be trained for Planned Preventive Maintenance and other repairs (Details at **Appendix 'A'**) by the Bidder or the OEM of the equipment, as applicable. This training shall be designed to give the operators/ maintainers necessary knowledge and skills to operate & maintain equipment (level 1 to 4 or 'O' 'I' 'D'), - (Organisation) - Unit level repairs undertaken by crew, 'I' - (Intermediate) - Beyond the scope of unit level repairs and undertaken by specially trained personnel, 'D' - (Depot) - Component level repairs and overhaul of equipment are undertaken as applicable. The syllabus will be defined by the Bidder in consultation with the Buyer at the time of technical discussions prior to finalizing / ordering of the equipment. The maintenance training will be imparted to the satisfaction of the Buyer and Bidder will ensure that the training content and period will be to impart working proficiency up to the required level. All training requirements such as training aids, projection system, complete equipment with accessories / optionals, technical literature, spares, test equipment / test set up, charts, training handouts, power point presentations, Computer Based Training (CBT), Documentation, Simulators etc will be catered by the Bidder. The expenses towards the stay and travel of Buyer's reps will be borne by the Buyer. All training shall be scheduled in consultation with CGHQ prior delivery of 14 FPVs. The Bidder is to provide videos on maintenance and training for equipment / systems installed onboard FPVs as part of the training document.

17 (a) The Bidder would provide the following training to the personnel of the Buyer based on agreed terms of contract Exact details placed at **Section-K of Appendix 'A'**:-

- (i) Training for 04-06 personnel for 14 FPVs for duration of 02 weeks/ 01 week at Seller/ OEM premises in consultation with Buyer for different equipment and systems. The personnel shall consist of operator/ maintainer or QA reps as decided by the buyer.
- (ii) Training on Onboard maintenance and operation of machinery and equipment for complete crew onboard ship/ yard premises for a complete duration of 05 weeks.
- (iii) The above training should meet the needs of repair & maintenance of the complete vessel, equipment, SMTs/STEs, test set up, assemblies/sub-assemblies as per the stipulated repair philosophy.

18. **Government Regulations.** It may be confirmed that there are no Government restrictions or limitations in the country of the Bidder or countries from which Equipment Systems or subcomponents are being procured and/or for the export of any part of the deliverables being supplied.

19. **Patent Rights.** The Bidder should confirm that there are no infringements of any Patent Rights in accordance with the laws prevailing in their respective countries.

20. **Integrity Pact.** In the subject RFP, the Bidder is required to sign and submit Pre Contract Integrity Pact (PCIP) given at **Annexure I to Appendix 'K'** to this RFP. The bidder, while submitting commercial bid, shall submit Bid Security in the form of Earnest Money Deposit (EMD) for an amount of **Rs Five Crore only**, in favour of the Buyer in Indian Rupees as mentioned at Para 8.1 of **Annexure I to Appendix 'K'** of this RFP.

21. **Fall Clause.** If the Fast Patrol Vessels (FPVs) being offered by the Bidder has been supplied/contracted with any organisation, public/private in India, the details of the same may be furnished in the technical as well as commercial offers. The Bidders are required to give a written undertaking that they have not supplied/is not supplying the similar systems or subsystems at a price lower than that offered in the present bid to any other Ministry/Department of the Government of India and if the similar system has been supplied at a lower price, then the details regarding the cost, time of supply and quantities be included as part of the commercial offer. In case of non-disclosure, if it is found at any stage that the similar system or subsystem was supplied by the Bidder to any other Ministry/Department of the Government of India at a lower price, then that very price, will be applicable to the present case and with due allowance for elapsed time, the difference in the cost would be refunded to the Buyer, if the contract has already been concluded.

22. **Modifications.** In the event of any requirement of modifications onboard the vessel(s) during the construction/trials within or after Warranty period that would require any deviation from the approved schedules/plan of construction, the Bidder is to take up all such modifications, with cost and time implications in consultations with the Buyer. The Buyer has the right to propose such modifications which should be undertaken by the Bidder. All such modifications, if approved by the Buyer, would then be executed by the Bidder at additional costs, total of which shall not exceed **4%** of the sum of basic cost of vessel and total extended time restricted to a maximum of **4%** of original contract period under the project. The scope of the work and financial implications would be mutually agreed upon between the Seller and the Buyer.

Bid Timelines

23. **Queries.** Any queries/clarifications to this RFP may be sent to this office by **16 Feb 2023**. A copy of the same may also be sent to:-

The Principal Director Directorate of Ship Acquisition Coast Guard Headquarters National Stadium Complex New Delhi – 110 001 Tel – 011 2311 5313 Fax – 011 2307 2201 Email – dte-sa@indiancoastguard.nic.in

24. **Pre-Bid Meeting.** A pre-bid meeting will be held at **1100 hrs** on **02 Mar 23** at Coast Guard Headquarters, New Delhi (venue) to answer any queries or clarify doubts regarding submission of proposals. The Bidder or his authorised representative is requested to attend. Necessary details may be sent a week in advance to Dte. of Ship Acquisition/CGHQ, to facilitate obtaining security clearance.

25. **Submission of Bids.** The supporting documents pertaining to Shipyard Qualification Parameters (Refer para 27), Technical and Commercial bids should be sealed separately in three different envelopes and marked appropriately {each envelope should clearly state this letter No & the type of Vessel(s)}. All three envelopes shall thereafter be enclosed in one single envelope. The quotes are to be super-scribed with Bidder's name, address, and official seal and ink signed by an authorised representative of the Bidder. The single envelope containing envelopes of supporting documents pertaining to Shipyard Qualification Parameters, Technical and Commercial bids shall be submitted along with IP & EMD (be submitted inside the main envelop), as applicable, to the undersigned at the following address by **1100 hrs** on **13 Apr 2023** :-

O/o ADG Acq-Tech (M&S)
Room No 05, D-II Wing
Sena Bhawan
New Delhi - 110011

26. The Technical bids and supporting documents pertaining to Shipyard Qualification Parameters, as indicated at **Appendix 'L'**, will be opened at **1500 hrs** on **13 Apr 2023** at the same venue as indicated at **Para 25** above. The Bidder or his authorised representative is welcome to be present at the opening of the proposals. Necessary details may be sent a week in advance to facilitate obtaining security clearance.

27. **Evaluation of Shipyard Qualification Parameters.** The Shipyard Qualification Parameters i.e. Shipyard Technical Qualification Parameters and Financial Assessment Parameters in accordance with **Appendix 'L'** will be evaluated by Committees/Teams constituted by CGHQ prior to TEC, to ascertain the bidder's Technical capability and financial status. Supporting documents pertaining to Shipyard Qualification criteria, as indicated at **Appendix 'L'**, are to be submitted by the bidders in a separate sealed envelope at the time of bid submission to be opened with the Technical Bid. TEC would be progressed only for bidders qualifying the stipulated Shipyard Qualification Parameters.

28. **Technical Evaluation Committee.** The Technical Bids of qualified bidders will be evaluated by Technical Evaluation Committee (TEC). The TEC will then evaluate bids to confirm that the Vessel(s) being offered meets the essential parameters as elaborated subsequently in this RFP at **Appendix 'A'**.

PART II - TECHNICAL REQUIREMENTS

29. The second part of the RFP incorporates the aspects of Staff Requirements/ Guideline Specifications (SRs/ GLS) describing the technical parameters of the proposed vessels. The operational characteristics and features that should be met by the vessel/s are elucidated at **Appendix 'A'** to this RFP and the Compliance Table at **Appendix 'B'** to this RFP.

30. **Technical Offer.** The Technical Offer must enable detailed understanding of the functioning and characteristics of the Fast Patrol Vessels (FPVs) as a whole and each sub system independently. It must include the performance parameters as listed at **Appendix 'A'** to this RFP and any other information pertaining to the technical specifications of the Fast Patrol Vessels (FPVs) considered important/ relevant by the Bidder. The technical proposal should also include maintenance schedules to achieve maximum life and expected life of each assembly/subassembly (or Line Replaceable Unit (LRU)/Shop Replaceable Unit (SRU)), storage conditions/environment condition recommended and the resultant guaranteed in-service/shelf life of the FPVs/ equipment/ system etc.

31. **Technical Details.**

(a) The technical details should be factual, comprehensive and include specifications of the offered Fast Patrol Vessels (FPVs) including its system/ equipment/ against broad requirements listed in **Appendix 'A'** to this RFP. Post signing of Contract, the Bidder would be required to provide Statement of Technical Requirements (SOTRs) and Ordering Instructions (OIs) for vetting by CGHQ in respect of all major equipment.

(b) Insufficient or incomplete details may lead to rejection of the offer. Mere indication of compliance may be construed as incomplete information unless FPVs including its system/ equipment/ specific technical details are available in the offer. A format of the compliance table for the technical parameters and other conditions of RFP is attached as **Appendix 'B'** to this RFP.

(c) Bidder to provide an undertaking that all the requirement stipulated in the RFP/GLS have been examined & there is no deviation from the RFP/GLS. In case of any deviation from the stipulated requirement, bidder to indicate them explicitly for evaluation by TEC.

32. The technical offer should have a separate detachable compliance table as per format given at **Appendix 'B'** to this RFP stating specific answers to all the parameters as listed at **Appendix 'A'** to this RFP. It is mandatory to append answers to all the parameters listed in **Appendix 'A'** to this RFP. Four copies of the Technical Proposal should be submitted (along with one soft copy), however only one copy of the commercial proposal is required.

33. **Build Strategy.** As part of the Technical Bid, the bidder shall indicate the Broad Plan and Build Strategy of work for undertaking the construction of the FPVs in keeping with the required delivery schedule and availability of Yard resources such as station / shipyard/ dry-dock / slipway, where the Vessels are likely to be built. The details are as placed at **Appendix 'A'**. The Broad aspects to be submitted as part of Build Strategy are placed at **Appendix 'D'**.

34. **Malicious Code Certificate.** The Bidder is required to submit a '**Malicious Code Certificate**' (*only for Electronic items and Software*) along with the Technical Proposal. The format is placed at **Appendix 'E'** to this RFP.

35. **Indigenous Software.** In order to leverage the highly developed indigenous software expertise existing in the country, it is pertinent that maximum equipment should function with indigenous software (certification by the Statutory Auditor of the Bidder that the software has been developed within India) driving the desired applications while the backend software i.e. Operating Systems continues to be OEM defined. The Seller is to cater for the complete set of software and its upgrades upto at least 05 years from acceptance of FPVs without any additional cost to Buyer. The Seller is to undertake the updation of all software as and when available.

36. **Repair and Maintenance/Engineering Support Package (ESP).** After induction, the FPVs/ equipment/ system would be repaired and maintained as per the repair and maintenance philosophy at **Appendix 'F'** to this RFP. The information on Engineering Support Package that is required to be provided is enclosed at **Annexure I to V** to **Appendix 'F'** to this RFP.

37. **Spares.** There would be two types of spares required to be provided by the Seller namely MRL-OBS and MRL-B&D. The spares requirement will be as per **Appendix 'F'** to this RFP. The spares are required to be categorized in four categories as follows:-

- (a) Manufactured by equipment/ systems OEM and can be sourced as per Part No.
- (b) Bought out items and customized by the equipment/ systems OEM for the specific purpose and such customization would require OEM intervention.
- (c) Bought out from other OEMs/ Third Party as specialised items and used without any customization. Such items can be sourced by quoting their Part No./Identification No. as given by OEM/Third Party and directly utilised.
- (d) General Engineering items/ COTs which can be sourced by stating the relevant standards and item description.

Note. *The OEM Part No. /Identification No. of items in addition to bidder assigned part number are also required to be given. To the extent feasible, NATO Stock Number (NSN) be also provided.*

38. **Base & Depot (B&D) Spares.** The Seller is to arrange supply of MRLS-B&D spares for five years of exploitation, up to 15% (including levies, taxes and handling charges) of the Basic Cost of the vessel. This would be based on the likely consumption rate and exploitation pattern of the equipment. The Seller would seek the comprehensive priced part identification list of spares along with manufacturer recommended B&D spares from all sub vendors along with the technical bid of all the machinery/equipment/weapon and sensors and forward it to the Buyer post signing of contract. This list would contain price, description, pattern no. and quantity fitted on each equipment in respect of various parts/components. The format for specifying the MRL - B&D is placed at **Annexure II to Appendix 'F'**. The quotation of spares from the sub vendors should be valid for at least 18 months. The Buyer shall subsequently range and scale the B&D spares as per internal orders. The cost negotiation of B&D spares (Landing Cost) would be carried out with the Seller, by a committee constituted by the Buyer. The Seller would be required to present his Sub-vendor(s) before this Committee during cost negotiations, if and when called for by the Committee. The Seller is to undertake procurement of the ranged and scaled spares as per the ordering instructions issued by the CGHQ with approval as per internal orders. The bidder is to indicate the total handling charges, remuneration, material overhead, etc., (termed as Cost of Handling) for B&D spares in the price bid at SI (k) of the format placed at **Appendix 'J'**. This cost quoted by the bidders at SI (k) would be counted towards determination of L1. No other charges except this serial and taxes/levies on actuals would be paid over and above the B&D spares price negotiated by the Committee. The remuneration, handling charges etc of B&D spares as quoted in the price bid at SI (k) would be paid on pro rata basis along with the stage payment of B&D spares on documentary evidence.

Evaluation of Technical Offers

39. The Technical Offer submitted by the Bidder will be evaluated by a Technical Evaluation Committee (TEC) to confirm that the FPVs being offered meets the Guideline Specifications (GLS) Essential Parameters as elaborated at **Appendix 'A'**. Details of break-up of various elements in percentage (%) terms of Indigenous and Foreign Content, as per format given at **Annexure VIII to Appendix 'A'**, are to be submitted with Technical Offer.

40. **Tests and Trials.** For a Fast Patrol Vessels (FPV) to be finally accepted in service it is mandatory that it successfully clears all tests/trials/evaluations as per RFP. The trial evaluation process is listed in **Appendix 'G'**.

Quality Assurance Plan & Acceptance Test Procedure

41. The Seller shall be responsible to the Indian Coast Guard for ensuring Quality of sub contracted parts or materiel. Towards this the SELLER shall ensure a robust quality organisation (QMS/ISO 9000:2015 or latest standards) and indicate quality system being followed in their Yard in the Technical Bid. After the contract is finalised, Seller would be required to provide the Standard Acceptance Test Procedure (ATP) in respect of the vessel and its main equipment to the Buyer for approval. The concerned Quality Assurance

agencies of the Buyer, reserves the right to modify the ATP, if necessary. As the Vessel is being built to Classification Society Rules/Naval specified specs (as applicable), the vessel would be inspected by the Classification Society/applicable inspecting authority. The Buyer reserves the right to undertake additional Buyer inspections either directly or through its representatives. The Project Overseeing Team of the Buyer will represent the Buyer for coordination of all inspections/trials to be conducted on board the vessel or in the Shipyard, either on its own or with the assistance of any other Buyer nominated trial/inspection agency(s). The Seller will keep the Project Overseeing Team informed of trials/inspections to be carried out by Inspecting authority/Classification Society. The Buyer, through the Overseeing Team will have final decision in this regard.

Marking and Packaging of Equipment / Spares (OBS / B&D)

42. **Marking of Deliverables.** The Bidder through OEMs/ Vendors shall ensure that each deliverable of an equipment/ Spares (OBS/ B&D) is marked clearly and indelibly, as follows:-

- (a) In accordance with the requirements specified in the RFP or if no such requirement is specified, with the indicated codification number or alternative reference number specified.
- (b) Ensure that any marking method used does not have a detrimental effect on the strength, serviceability or corrosion resistance of the deliverables.
- (c) Where the deliverables have a limited shelf life, with the cure date/date of manufacture or expiry date expressed as months and years.

43. Where it is not possible to mark a deliverable with the required particulars, these should be included on the package in which the deliverable is packed.

44. The Bidder through OEMs/ Vendors shall pack or have packed the deliverables, as applicable:-

- (a) In accordance with ICG Standard.
- (b) To ensure that each deliverable may be transported in an undamaged and serviceable condition.

45. The Bidder through OEMs/ Vendors shall ensure that each package containing the deliverable is labeled to include :-

- (a) The name and address of the consigner and consignee including
 - (i) The delivery destination/address if not of the consignee.
 - (ii) Transit destination/address (for aggregation/disaggregation, onward shipment etc).

- (b) The description and quantity of the deliverables.
- (c) The full part number in accordance with codification details or as per OEM.
- (d) The maker's part, catalogue, serial, batch number, as appropriate.
- (e) The contract number.
- (f) Any statutory hazard markings and any handling markings including the mass of any package which exceeds 3 kgs.
- (g) The Packaging Label (military J, N or P, special H, commercial A, C etc) (specify reference to ICG Standard).

46. **Monitoring of Project Based on Contractual Milestones.** After placement of order, the progress of the project will be monitored by the Buyer for compliance with various activities towards achieving contractual milestones involving delivery/installation/integration/trials etc. The contractual milestones will be integral part of the contract. In case the project does not proceed as per the indicated timelines for various contractual milestone(s), the Buyer will have the right to invoke Termination of the project. The indicative list of Contractual Milestones and broad range of timelines (earliest and latest time for completion) for the project is as follows:-

SI	Milestone *	Timeline (T0+Weeks)	Remarks
(a)	Submission of Advance BG amounting to 10% of FPV cost as per Contract	Within 03 months	From date of Contract
(b)	Stoppage/ No construction activities after Steel cutting/ launching etc	More than 03 months	Time period would be finalized with L1 bidder prior signing of Contract.

T0 refers Para 1.4(c) of Appendix 'H' to RFP

47. The Bidder is to indicate the proposed timelines for the above milestones in the Technical Bid. The timelines will be finalised with the Bidder by Contract Negotiation Committee. On conclusion of the Contract, these milestones will be monitored by the Buyer.

48. The Project Monitoring Meeting is to be organized at quarterly basis. Buyer at his own expense may depute to the Bidder's premises /Yard at quarterly (or as considered necessary) intervals, teams of representatives to review and coordinate the progress of the commitments made by both the sides under the contract. Further, the Bidder is required to depute suitable reps at their own expenses for Apex Steering Committee reviews.

49. The Post contract activities will be governed in accordance with Chapter XI of DAP – 2020.

PART III - COMMERCIAL REQUIREMENTS

50. The third part of the RFP consists of the commercial clauses and Standard clauses of contract. The bidders are required to give confirmation of their acceptance of these clauses.

Commercial Bid

51. The Bidder is requested to take into consideration the **Commercial Clauses and Payment Terms** given at **Appendix 'H'** to this RFP while formulating the Commercial Offers and confirm acceptance of these clauses. The bidders are required to quote their price in Price bid format given in **Appendix 'J'** to this RFP.

52. Commercial offers will be opened only of the Bidder whose proposal is cleared by TEC (Post qualifying Shipyard Qualification Parameters) and complying to Credit Rating criteria as on date of commercial bid opening, till determination of L1. Latest Credit rating to be submitted by the TEC qualified entities at the time of opening of commercial bid. The Commercial Offer must be firm and fixed and should be valid for atleast 18 months from the date of submission of bid as per RFP.

Commercial Bid Opening

53. The Commercial Offers will be opened by a committee (Contract Negotiation Committee/ CNC) and if Bidder desires he may depute his representative, duly authorised in writing, to be present at the time of opening of the offers.

54. The date, time and venue fixed for this purpose will be intimated separately after the Technical evaluations are completed and approved by competent authority at MoD/CGHQ.

55. The committee will determine the lowest bidder (L1). **The Buyer Nominated equipment/system/components (BNE) to be procured from a single source would be included in determination of L1.**

Additional Aspects

56. **Standard Conditions of RFP.** The Government of India desires that all actions regarding procurement of Fast Patrol Vessels (FPVs) are totally transparent and carried out as per established procedures. The bidder is required to accept our standard conditions furnished at **Appendix 'K'** to this RFP regarding Agents, penalty for use of undue influence and Integrity Pact, access to books of accounts, arbitration and clauses related to Law. These conditions along with other clauses of the Contract form the Standard Contract Document (as at Chapter VI of DAP 2020) indicates the general conditions of contract that would be the guideline for all acquisitions. The draft contract would be prepared as per these guidelines.

PART IV: BID EVALUATION AND ACCEPTANCE CRITERIA

57. A list of documents/details to be submitted along with the bids is placed at **Appendix 'M'** as a reference to help in completeness of bid and meeting the procurement process schedule.

58. The bids shall be unconditional. Any condition or qualification or any other stipulation contained in the bid shall render the bid liable to rejection as a non-responsive bid.

59. The bid and all communications in relation to or concerning the bidding documents shall be in English language.

60. **Evaluation and Acceptance Process.**

(a) **Evaluation of Shipyard Qualification Parameters.** To evaluate the bidder's qualification, assessment of Shipyard Technical Qualification Parameters and Financial Parameters as elaborated at **Appendix 'L'** would be undertaken prior to the TEC stage. TEC would be progressed only for bidders qualifying the stipulated Shipyard Qualification Parameters.

(b) **Evaluation of Technical Proposals.** The technical proposals forwarded by the Bidders will be evaluated by a Technical Evaluation Committee (TEC). The TEC will examine the extent of variations/ differences, if any, in the technical characteristics of the Vessel (s) and its equipment offered by various Bidders with reference to the GLS/ SRs and prepare a "Compliance Statement" for short listing the Bidders. This shall include technical parameters of equipment where field evaluation is envisaged. The TEC will evaluate the percentage of Indigenous Content based on brief plan of Indigenisation data provided by bidder.

(c) **Evaluation of Commercial Bid.** The Commercial bids of only those bidders will be opened, whose Shipyard Qualification Parameters have been cleared by concerned Committees/Teams and Technical bids have been cleared by TEC. Comparison of bids would be done on the basis of Evaluation criteria given in **Appendix 'J'** to this RFP. The L-1 bidder would be determined by Contract Negotiation Committee (CNC) on the basis of **Appendix 'J'** to this RFP. Only L-1 bidder would be invited for negotiations by CNC.

(d) **Contract Conclusion.** The successful conclusion of CNC will be followed by contract conclusion. The Build Specification will form part of the contract.

Appendix A

(Refers to Para 7, 9, 13, 16, 17, 28, 29, 30, 31, 32, 33 & 39 of RFP)

GUIDELINE SPECIFICATIONS

14 FAST PATROL VESSEL (FPV)

COPY NO 5

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SECTION – A

GENERAL

1. **Function / Role.** A medium range surface platform capable for operation in Maritime zones of India and around island territories in depths greater than 3.5 meters.

Essential Parameters

2. **Functions**

(a) **Primary**

- (i) EEZ and Coastal Patrol including shallow waters upto depth of 3.5 Mtrs.
- (ii) Fisheries protection and monitoring, control and surveillance.
- (iii) Interception of suspected contacts by day and night.
- (iv) Anti-Smuggling operations.
- (v) Search and Rescue operations including in shallow waters.
- (vi) Assistance to ship/ crafts in distress.
- (vii) Towing capability of ship of similar tonnage.
- (viii) Assistance during Marine pollution response operations.
- (ix) Monitoring of Marine pollution
- (x) Anti-Piracy operations.

- (b) **Secondary.** These FPVs will have inherent capability to switch over to following wartimes roles:-

- (i) Provide communication link.
- (ii) Escort coastal convoys.
- (iii) Logistic support.
- (iv) Medical Evacuation.
- (v) Supplement Indian Naval Resources.

3. **Primary Particulars**

- (a) Length Overall (LOA) : 50-55 m including water jets (without jet guards)
- (b) Beam Moulded : Should be commensurate to the tonnage and draught requirement/ As per design.
- (c) Depth Moulded : As per design

- (d) Draught : Not exceeding 2.1 m in full load displacement
- (e) Displacement : As per endurance, loading and speed requirements.

4. **Operational Capabilities**

- (a) **Max continuous speed.** 33 Knots at 92% MCR power of engines at full load displacement. The remaining 8% reserve power will be demonstrated to record speed at 100% MCR at full load displacement during CST (In sea state 0-2 and with clean hull).
- (b) **Endurance.** 1500 NM at cruising speed with 25% reserve fuel capacity and vessel should be able to operate for five days continuously at sea.
- (c) **Cruising Speed.** 12 to 14 Knots.
- (d) **Propulsion.** Three engine arrangement in combination with water jet by selected IMO Tier-II compliant type approved Marine Diesel Engines.

5. **Environmental Conditions.** The vessel shall be capable of operating in tropical environment condition i.e. 45°C ambient air and 32°C seawater temperature.

6. **Sea Worthiness.** The vessel shall be capable of operating in sea conditions up to and including sea state 4 and have sea worthiness and survivability up to sea state 6.

7. **Complement**

(a)	Officers	07
(b)	Subordinate Officers	08
(c)	Others	27
	Total	42

8. **Expected life.** The vessel shall have an expected service life of 20 years, catering for annual usage of approximately 2500 hrs of propulsion.

Special Features

9. Major underwater machineries like water jets, Sacrificial/ ICCP/ ICAF anodes shall have major periodical maintenance interval of minimum 2 years.

10. COTS technology (marine grade) to be incorporated to the maximum extent feasible Lightweight composite materials shall be used.

11. Ship to have excellent sea keeping qualities and dynamic stability.

12. The ship should be available for deployment at one hour notice.

13. Adequate maintenance envelope / space to be catered for all equipment/ machinery fitted onboard enabling unhindered installation/ removal of sub-assemblies, as required. The shipping/ unshipping route of each machinery, system shall be well defined as per Class. Soft patch to be provided on the main deck for removal/ installation of MEs and DGs.
14. Ship to have integrated Bridge System with integration of Electronic Chart Display and Information System (ECDIS) with Automatic Radar Plotting Aids (ARPA) Radars, Differential Global Positioning system (DGPS), Electromagnetic Log (EM LOG), Echo Sounder, Gyro, Auto Pilot, Satellite Automatic Identification System (Sat-AIS), Voyage Data Recorder (VDR), magnetic Compass, Anemometer etc.
15. Control and monitoring of Propulsion system from MCR and Bridge.
16. Monitoring of important auxiliary machinery including DG sets to be available from MCR. Automatic Power Management System (APMS) to be provided to enable generation, control, monitor and distribution of power. Interfacing of running parameters and alarms with MCS may be provided (Refer **Para 56 of Section 'C'**).
17. Modular construction techniques to be adopted for equipment/ system including propulsion and power plants.
18. Automation in domestic services ship husbandry, maintenance, general lighting system logistic and management services shall be adopted.
19. Modern, Modular concept may be adopted wherever feasible and to the maximum extent for Offices/ accommodation/ Dining area/ common area/galley.
20. Ship should have planned docking interval not less than two years. Major underwater machineries like waterjets, Sacrificial/ ICCP/ ICAF anodes shall have major periodical maintenance interval of minimum 2 years.
21. Two Marine version Multipurpose Drone (IP rating 56) with Artificial Intelligence (w.r.t ops scenarios) capability having minimum 10 km range and minimum 90 minutes flying time capable of holding appropriate payload (not less than 03 kgs in addition to the cameras etc.) including one-day camera (min 10X optical zoom) and one TI camera (min 640 X 480 resolution) with real-time video feed for operations in fair weather sea conditions with wind resistance upto 25 knots and capability to be operated from ships at sea to be provided. The drone should be self-capable to take off and land on moving ships in all emergency conditions. Equipped with failsafe features viz. Multiple GPS for redundancy, Return to ship on low battery & communication failure and Moving platform auto correct.
22. Adequate stowage space may be provided for keeping 02 nos. Multipurpose Drones.
23. **Classification**. The vessels shall be built and classified under dual class notation. The classification notation for **ABS is + A1 HSC (special Government service) +AMS or equivalent**. ABS or LRS or GL or BV or DNV or NK will be one classification society and IRS shall be the other classification society. A Tripartite Agreement is required to be signed between the Buyer, Seller and the Classification Societies for the project. The Buyer's representative will be part of the Technical Evaluation Process for selection of the Classification Society and finalizing the scope of the class survey. The Classification Society will be involved upto the completion of guarantee period of Ship as applicable based on buyer's directives. Satisfactory completion certificate by the Buyer rep will be a mandatory requirement for job completion by the Class.

24. **Rules and Regulations.** Following rules and regulations to be met as applicable during the time of submission of offers:-

- (a) Nominated Classification Society Class Rules.
- (b) IMO/MARPOL 73/78 reg and any further/ latest amendments including MS Act 58 and their rules.
- (c) IMO/ Anti Fouling System.
- (d) COLREG 72 and any further/ latest amendments.
- (e) International load line and environmental protection.
- (f) International tonnage 1969 and any further/ latest amendments.
- (g) SOLAS 1992 as amended in 2002 and any further/ latest amendments.
- (h) Stability standards as per NES rules (two adjacent compartment flooding criteria).
- (j) Naval Magazine Explosive Regulation (NMER).

25. **Certifications / Reports.** Following certificates/reports will be submitted in soft and hard copies:

(a) **Certificates.**

- (i) Classification certificates
- (ii) Builders certificate
- (iii) Certificates of Compass adjustments
- (iv) Inspection/Test Certificate for Anchors & Chain Cables
- (v) Certificates for Auxiliary Machinery and equipment
- (vi) Tonnage calculation certificates
- (vii) LSA and FFA Plans (The LS and FF items shall be supplied meeting the LSA / FFA requirement and CNAL list placed at **Annexure IV to Appendix 'A'**)
- (viii) IRS to certify compliance to MARPOL's current regulations (Date of currency shall be the date of signing of contract).
- (ix) All statutory requirements as per relevant class rules/ IACS recommendations 1999 will be submitted to IRS for vetting and CGHQ for approval.
- (x) Load Test Certificates
- (xi) Structural Fire control plan
- (xii) Fire and Safety plan
- (xiii) Bollard pull certificate by class

(b) **Reports**

- (i) Hull inspection report
- (ii) Radiographic inspection report
- (iii) Keel sight report
- (iv) Draught marks report
- (v) Test of water tightness / weather tightness
- (vi) Deck breakage report
- (vii) Final inspection report
- (viii) Model test report (in hard / soft copy)
- (ix) Trim and stability report
- (x) Test of weather deck fittings. (This includes testing of bollards, fair lead, stag horn, bull ring, towing bollards etc after manufacture as well as testing after fitment on board and measuring test results. The report shall include drawing reference, material specification, SWL and test load, authority for testing i.e. IS-4374-1980, IS-6634-1972 etc).
- (xi) Trials report (Hull, Engineering and Electrical)
- (xii) Noise and vibration trials report
- (xiii) Structural strength analysis by Finite Element Method (FEM).
- (xiv) Tank test reports
- (xv) Torsional Vibrations Analysis report

26. **Checks during Building.** The shipbuilder shall ensure thorough and regular checks during the various stages of construction that the correct form of the ship is maintained during building. Periodically during building, the straight line of keel will be sighted for fairness and additional bottom shores will be erected as necessary to correct any deflections where found.

27. Frames will be kept in correct position until adjacent longitudinal and outer bottom plates have been erected. When the inner bottom has been worked, transverse datum lines and the center line will be marked on the inner bottom to assist in erection of other structures. The centerline will be periodically checked for fairness. Transverse bulkheads will be carefully held in position until welded.

28. **General Arrangement.** Latest ship design concepts with respect to ergonomics/ functional aspects and crew comfort to be adopted. The General arrangement of the vessel should be optimised for long endurance at sea while performing routine patrol and search and rescue functions. The hull should be of single flush deck type with deckhouse amidships. Full width superstructure to be avoided to provide two passages on port and stbd of the deckhouse. This is essential for search and rescue operations such as boarding other vessels at sea, rescue of survivors, mooring of vessels etc. An under deck through passage in way of accommodation is provided for the crew in rough seas by providing hinged water tight doors on bulkheads below main deck. Propulsion is by means of Diesel engines driving Water jet.

29. In general, the crew accommodation shall be arranged forward of the machinery spaces away from main propulsion to improve crew habitability on-board. Officers should be housed separately in the deckhouse.

30. The deckhouse shall generally accommodate the CO's cabin, Ward room, Officers cabins, Wheelhouse and Open bridge, etc. Lattice mast for aerials, navigation radar and other eqpt. should be fitted above the deckhouse. Cage type ladder to be catered for the mast.

31. Bridge wings extending almost to the side of the vessel are incorporated to facilitate easy and safe maneuvering when going alongside other vessels or jetty.

32. **Operating Profile**. The operating profile of the ship will be as follows:

Ser	Duration	Speed
(a)	10% time	Below 08 knots
(b)	50% time	08 to 14 knots
(c)	20% time	Greater than 14 knots and up to 20 knots
(d)	20% time	Greater than 20 knots

33. **Stability**. The vessel shall have sufficient stability under all likely service conditions. Vessel shall also have sufficient stability to survive two adjacent compartment damage/flooding. Ship to have excellent sea keeping qualities and dynamic stability. Trim & Stability Booklet and Damage Stability booklet (06 copies each, per vessel, in hard and soft copies) as per the standard practice will be handed over to Coast Guard with delivery of each ship. The vessel to fulfil all the following criteria as per NES109 standard:

- (a) Intact Stability shape criteria for GZ curve (Area under GZ curve)
- (b) GZ maximum limitation in the Intact Stability criteria
- (c) Stability in Beam Winds
- (d) Stability due to heel caused by high speed turning
- (e) Stability due to crowding of personnel to one side

34. **Armament**. The deck structure forward should be strengthened for fitment of one 30 mm Gun (approximate weight 3000 Kg and recoil force 5000 Kgf) and one Fire Control System(FCS) (approximately 400 Kg.) and two in number 12.7 mm Gun on bridge wing (approximate weight 400 Kg). (Guns and FCS CG supply). The 12.7 mm Gun posts shall be protected by Armour plates. Magazine compartment with firefighting system shall be provided for stowage of arms and ammunition. Hatches for handling of ammunition shall be of sufficient size. The 30 mm gun shall be provided with cooling water from ships fire main system. Seating and fitment of guns and associated systems will be yard liability.

35. **Accommodation**. Accommodation (modular type) shall be provided for 42 personnel [07 Officers including CO (Commanding Officer), 35 Enrolled Personnel (including 08 SOs i.e. Subordinate Officers)]. Single cabin for CO, two tier bunks for Officers & SOs and three tier bunks for EPs shall be catered. The details are as follows:-

- (a) Cabin for CO with attached WC bathroom.
- (b) Two tier berth cabins accommodation for six officers (03 Cabins) with 01 bathroom catering for 01 wash and 03 WCs.
- (c) Two tier berth cabin accommodation for 10 SOs.
- (d) Dormitory accommodation for 28 Naviks.

- (e) Adequate no. of cabin fans shall be provided.
- (f) All cabins shall be adequately furnished (fire retardant) and shall have modular furniture.
- (g) Modular kit lockers and shoe lockers for all crew shall be provided.
- (h) Bunks (With one LED bunk light each), sofa, tables etc shall be provided in accommodation spaces designed to have built in drawers /lockers as applicable to utilize the space below for storage of items.
- (j) Adequate cap hooks shall be provided in ward room lobby and cabins.
- (k) All bunks/ beds lockers shall be in modular type.
- (l) Light weight gratings shall be provided for all bathrooms covering full area.
- (m) Full size mirror shall be provided in all mess decks and officer's cabins.
- (n) Two in no. Shoe polish machine shall be provided.
- (p) Air locks and curtains for entry to A/C space to be provided.

Construction Principles

36. **General.** The hull structure shall be of a light weight design and shall be approved by classification society. The hull plating (ship side shell and deck) while meeting class requirement for strength shall not be less than 6 mm thickness. The keel plate thickness and underwater strake shall be minimum 08 mm or as per the class requirement whichever is greater. All equipment outfit and machinery shall be to normal commercial shipbuilding standards. Details of accomplishment of work not stated in this specification shall be carried out in accordance with good Ship Building Standards and class rules. Material used on weather decks to be anti-corrosive type. Fasteners of all weather deck fittings are to be stainless steel.

37. **Service Requirements**

- (a) All accommodation, Bridge, passage ways, offices, compartments, Galley/ associated area and control rooms (other than toilets/ bathrooms) shall be air conditioned.
- (b) A berth, wardrobe and shoe locker shall be provided for each crew member. Sufficient wash places and WC shall be provided for the crew.
- (c) The galley shall be air conditioned, modular and laid out for continuous preparation of all meals on board with wet chemical fire extinguishing system. Adequate RU storage of rations alongside galley in modular racks, Refrigerators and deep freezers shall be provided for storage of perishable goods.
- (d) Adequate Stores, offices and spaces shall be provided for storage of inventory, loose equipment and spares.

Design Requirements

38. **Design Analysis and Reports.** Following shall be submitted as a part of Technical Offer for scrutiny :-

- (a) Preliminary Trim and Stability Calculations as per NES, Preliminary Sea Keeping analysis of sea motion.
- (b) Preliminary estimation of light ship and full load displacement breakdown along with weight breakdown.
- (c) Preliminary Resistance and powering calculations. Paint flow test to align bilge keel and other appendages, The value of total resistance R_T along with breakdown of R_A (Appendages Resistance), R_F (Frictional Resistance), R_R (Residual Resistance), QPC, P_E (Effective Power), P_D (Propeller Demand), P_B (Engine Break Power), at 33 Knots speed at full load displacement at 92% MCR. Block, Prismatic, Mid ship and Water plane area coefficient (C_B , C_P , C_M and C_W), Underwater surface area, Area of underwater Appendages, Half Angle of entrance and type of hull shape shall be furnished.
- (d) Endurance calculation at cruising speed.
- (e) Electric load analysis at different loading conditions.
- (f) Structural strength calculations for the complete ship shall be carried out using modeling software with emphasis on dynamic loads due to Gun firing, impact on slamming on bow structure & effects on main hull mid-section etc.
- (g) Model test report, if the hull form is proven. CFD analysis report if the hull form is not proven.
- (h) Shipyard is to indicate chosen Classification society for design and construction of FPVs. Further, Class, marks and notation for registration of the vessel as relevant to the chosen classification society are to be indicated for evaluation of technical offer.
- (j) Design must establish at an early stage itself appropriate measures to improve the system redundancy to ensure limited effect on ship's operational capability in case of any single failure.
- (k) Nominated Classification Society class/ rules.
- (l) IMO/ Anti Fouling System.

39. Full scale report on the completed vessel shall be submitted to the Coast Guard along with delivery of the first vessel. Further, Dynamic analysis including free and forced vibration of hull, shafting and main machinery including transient dynamic analysis catering to shock and impulse load shall be carried out during detailed designing and complete report shall be submitted to the Coast Guard.

40. Design must cater for appropriate measures to prevent spread of smoke and reduce vulnerability to fire. The selection of fire retardant material, insulation, ventilation system, etc. must consider this aspect.

41. Special care to be taken on distribution of critical machinery, disposition of basic pipe runs, etc., to ensure adequate separation and accessibility for easy operation and maintenance.
42. To reduce vulnerability of ship due to Fire, access plan must cater for passageways as per Class /SOLAS rules.
43. The design must cater for location of guns at a location with largest possible arc of fire.
44. Bridge shall be designed so as to have enough room for OOW/Bridge team to go to side windows/Bridge wings.
45. The Main Signal Office (MSO) shall be so designed to accommodate the communication equipment mentioned at Section "F" without any Electro Magnetic Interference/Electro Magnetic Compatibility (EMI/EMC) problem. In addition, sufficient space should be available for at least three operators to be seated after fitment of equipment.
46. **Strength Requirement.** The hull structure shall be strong enough to withstand heavy sea conditions for long periods and approved by classification society.
47. **Soft Patch.** A soft patch (Welded Type) on the main deck shall be provided for removal/ installation of Main Engines and Diesel Generators. Shipping in and out drawings shall be provided along with technical specification for all major machinery.
48. **Quality.** All elements used for the construction shall be of good shipbuilding quality and free of defects, or irregularities and approved by the quality control department of Shipyard and duly approved by the owner's representative / class surveyor as applicable. All equipment fitted and structures erected shall be new. No repaired equipment/structures shall be fitted.
49. **Growth Margin.** The vessel shall have adequate future growth margin on Weight, VCG rise and space. This shall be 5% of full load displacement (Weight), 3% VCG rise. Further 1% service margin to be considered additionally for future requirements during the service life of the vessel. Design must consider adequate (minimum 5%) construction margin, Final weight and distribution data, data on future growth margin available for weight, VCG rise and service margin shall be provided to the owner with delivery of ship.
50. **Model Testing.** Model testing is to be conducted in India with International reputed agency having wider data bank and vast experience in testing and suggesting improvements to hull form and propeller design especially military ship for carrying out Resistance test (at Light load and full load displacements), Resistance test with and without appendages, Paint flow test, Maneuvering test as IMO res A751/18 at standard and max draught, Sea Worthiness test in irregular seas as per Indian Ocean spectra for ship speed 0,2,5,10,12,16,20,24,28,32,33 and 0, 4 and 8 knot astern. Test to be in deep water. Propulsion test (standard and Max draught) and Resistance & Propulsion tests (speed range between 02-33 knots ahead and 0, 04 and 08 knots astern). The tests would be witnessed by two reps of Coast Guard. The expenditure on boarding, lodging & travel of ICG reps shall be borne by the Buyer. Details of test requirement shall be provided while finalizing building specifications. The verification of offered design especially in respect of resistance and powering shall also be undertaken through CFD analysis by an international reputed agency and submitted to CG. In case, a proven hull form is offered there will be no requirement of model test. However, the model test report shall be shared with CG for verification of the proven hull form.

51. **Dead Weight Considerations.** The Shipyard shall provide Light ship and dead weight calculations. Following Dead weight considerations shall be provisioned in addition to the design margin:-

(a) Crew (42)	150 Kg per person (Including Baggage)
(b) Fuel	as per endurance (based on yard's design)
(c) Fresh Water	12 Tons(min)
(d) Main Armament (Including FCS)	3400 Kg
(e) 12.7 mm Gun	400 Kg
(f) Ammunition	03 Tons
(g) Stores / Provisions	02 Tons
(h) Lub Oil (Tanks topped up)	to be catered on actuals as per yard's design
(j) OBS	05 Tons
(k) Kitting up items (Including CNAL, Tools & implements/ other inventory catered as contractual supply)	to be catered on actuals (Approx 01 T)

Workmanship and Materials

52. The vessel should be built properly, and suitable in all respects for its duties. As the vessel is weight sensitive, utmost care to be taken to limit weight while selecting material and equipment. All workmanship shall be of high standard of quality consistent to ensure the required strength and water tightness. The exposed surfaces will be smooth, proper fit accomplished and stress concentrations minimized.

53. Requirements of the owner and their surveyors in respect of quality of workmanship shall be taken into consideration. First class firms will be employed as subcontractors. Subcontractors with past proven experience in Construction of Naval and CG vessels will be engaged.

54. The vessel will be entirely completed, all above water portion painted and cleaned at the date of handing over. All materials used for the construction of this vessel, shall be of suitable quality and free of defects.

55. Care shall be taken during construction that all materials and equipment including BFE, if any, are suitably protected and preserved. Equipment imported or otherwise stored in the yard shall be preserved as per manufacturer's instructions meticulously. The fabricated hull units shall be periodically preserved/ painted. Any defective portion of the work will be removed or replaced satisfactorily. Sharp edges of exposed structure which are likely to injure personnel or equipment shall be removed.

56. **Standards of Cleanliness and Finish**

- (a) The ship will be built and fitted to the standards of cleanliness and finish, practiced normally in the yard.
- (b) During the entire stages of construction, a standard of cleanliness consistent with best shipyard practices will be maintained.
- (c) Particular care will be taken in erecting piping, ventilation trunking etc. to ensure that no foreign matter liable to cause damage to the equipment/ machineries is left in the systems. Open ends will be sealed when not being worked on equipment/machineries and piping systems will be flushed to ensure removal of sediments. Ventilation trunks will be thoroughly examined for cleanliness. Special stringent requirements apply to machinery systems.

57. **Welding.** Welding shall be done to shipbuilding standards and to the approved drawings. Welding electrodes as per classification requirement shall be used. Welding of hull and all structural elements shall be carried out only by qualified welders and to proper welding procedures. Welding shall be supervised by a qualified welding engineer.

58. When non-watertight structural members pass a welded seam or butt, the member shall be notched with a semi-circular cut to allow the weld to pass. All seams and butts shall be so welded that the welds penetrate the full depth of the plate.

59. All moisture, slag, dirt or other foreign matter shall be removed from surfaces to be welded. All finished welds on the outside shell will be wire-brushed to base metal to remove all traces of slag.

60. **Structural Steel.** The hull material shall be class certified indigenous HT steel (ABS grade AH36 or equivalent) for life span of 20 years. The class verified material certificate for steel and aluminium used for main structure shall be handed over to ICG.

61. **Aluminium Alloy.** Aluminium alloy as per relevant class specification may be used for super structure. The interface between the steel deck and aluminium structure is designed to eliminate galvanic corrosion. Bimetallic joints shall be used between the aluminium deckhouse and steel main deck. Aluminium used for the deckhouse and other structural members shall be as follows:-

- (a) Plates A 5083 or A 5086 or equivalent.
- (b) Sections A 6061 T6 or equivalent.
- (c) The interface between steel and aluminium structure shall be designed to eliminate galvanic corrosion. Explosion bonded interface shall be used to join the aluminium to the steel. Aluminium welding will be carried out as per standard practices. Class certificate of aluminium/ steel used shall be provided.

62. **Piping.** All piping material for main system shall be specified in the system description. Piping shall be led directly, as far as practicable, with adequate number of bends and flanged joints allowing ready accessibility and removal without structural disturbance. As far as possible, practicable bends, Bulkhead / deck penetration shall be prefabricated. All piping systems shall be supported to prevent vibration. The piping shall be routed in machinery compartment in such a way to have access to bilges for routine hull maintenance. All fasteners for piping and weather deck fittings shall be of SS material.

63. Pipe diameters shall be designed to have fluid speed in accordance with yard's standard practice. Pipes shall have suitable thickness for each service and shall be pressure tested in accordance to rules requirements. All valves and cocks shall be to marine standards.

Vibration, Shock & Noise Damping

64. **Hull & Machinery Vibrations.** The vessel and all components will be free from excessive vibration and conform to ISO 6954 (2000) on vibration. The hull design and details of construction are such as to avoid vibrations that tend to cause damage to equipment or hull structure or to interfere with proper functioning of equipment on board. Hull and machinery vibration measurement around all major equipment will be carried out and recorded and handed over as a report to the Owner. Hull and Machinery vibrations shall be measured/ recorded for all vessels. All critical electrical panels will be provided with requisite anti vibration mountings to prevent excessive vibrations. Measures for damping excessive noise will be undertaken during construction stage and the noise levels will be recorded for different compartments during sea trials prior delivery of the vessel. The noise level will strictly comply with IMO Resolution A 468 (XII).

65. **Noise Damping.** The design measures on noise control shall address aspects like hearing, conversation, habitability and audibility. The noise criteria for accommodation, machinery and service spaces shall be in accordance with IMO resolution A 468 (XII)/ Latest as on date of signing of contract for this class of ship. The same shall be measured/ recorded for all vessels. Use of double door in engine room and Acoustic insulation to reduce noise level be considered. Sound proofing measures of compartments especially MCR & MSO to be adequate to prevent disturbance.

66. The calculation / prediction of noise levels should be done at the design stage itself and will be sent to Coast Guard and classification society for approval. Noise and Vibration trials to be carried out at cruising speed and full speed during sea trials and report to be submitted.

Supervision and Approval

67. **Supervision.** Inspections by classification society will be conducted as per class requirements in association with CGRPT. CGRPS will be the Coast Guard representative for all inspections/trials shall be conducted on board ship or in yard by himself or any other inspection agency. The systems/ equipment/ part of construction not covered under scope of Class inspections shall be inspected by CGRPS/ CG reps and Shipyard's QA department IAW a QAP (Quality Assurance Plan) duly vetted by Class and Coast Guard. Overall coordination and arranging inspections shall be the yard's responsibility. There will be a tripartite agreement between Class (both classification societies), Shipyard and CG for inspections and Quality Assurance. CGRPS shall be informed of trials/ inspections to be carried out by Classification Society, sufficiently in advance.

Test and Trials

68. **General.** A test and trial schedule shall be submitted by the yard to the owner's representative sufficiently in advance/ ahead in time(mutually agreed) to allow the owner's representative to properly monitor the construction and testing of the vessel. Test and Trial protocol to be prepared in consultation with classification society (as applicable), OEM, CGRPT by the Shipyard and to be submitted for approval of CGHQ.

69. The owner's representative shall be informed in advance for all tests and trials, which are to be made in his presence. Tests and trial schedule shall be drawn in consultation with CGRPT. The record of readings of deck breakage, keel sighting, stern drop and alignment as measured by the yard for the construction purpose of the ship will be handed over to Coast Guard from time to time. The inspection, tests and trials formats and programme of the ship shall consist of four parts as follows.

- (a) **Part I.** Inspection, tests, trials and other important events during the vessel's construction phase from the date of signing the contract to contractor's sea trials.
- (b) **Part II.** Contractor sea trials.
- (c) **Part III.** Examination of machinery and final examination and machinery trials in final acceptance.
- (d) **Part IV.** Trials pertaining to Weapon system etc. Post induction of Ship.
- (e) The installation inspection, harbour trials of auxiliaries, basin trials of main propulsion machinery, contractor's sea trials, examination of machinery, machinery demonstration shall be done in accordance with class requirement and as mutually agreed trial programme and format.

70. **Testing of Water Tightness.** Hose testing of doors (WT sliding doors), hatches, other shell side windows, scuttles etc. and deck openings will be done according to Classification Society requirements. For tanks, all watertight and oil tight longitudinal and transverse bulkheads and tank tops will be tested as per Classification society rules. Watertight bulkheads below main deck, weather-tight doors, windows, portholes will be hose-tested as per Classification requirements. The sealing material shall be neoprene rubber impregnated with MgO, Stearic Acid, China clay, Dioctyl Phthalate, Factice, MBTS (Mercapto dibenzothizol di sulphate, NA-22 (Ethylene thiourea), ZnO and other fillers in appropriate proportions. The tensile strength shall be 120 Kg/cm² (min).

71. No permanent deformation of structural members, such as bulkhead, due to pressure testing shall be permitted. In case the deformation of structural members during testing is so large that by further increasing of pressure, permanent deformation is suspected, the testing shall be continued only after suitable stiffening has been added to the structure. Proper tightness shall be assured in case additional work has to be carried out on watertight and oil tight partitions after their testing. For all tanks, the tests will be carried out to a height of water as required by classification rules.

72. Defects shall be made good and re-tested. The record of testing of water tightness will be handed over to Coast Guard.

73. **X-Ray Testing.** X-ray testing will be carried out as per Class requirements. As per request of Overseeing authority or Class, X-ray control photographs for a minimum of 2-4% of the weld length shall be catered, who will indicate the welds to be photographed. Rejected welding shall be repaired and X-ray photographs retaken if necessary.

74. **Inclining Experiment.** The inclining experiment shall be conducted when the ship is as nearly complete as possible, to ascertain the light ship weight and vertical centre of gravity. It shall be conducted on first of the series vessel. For subsequent vessels, Light ship assessment shall be conducted as per classification guidelines. The experiment shall be conducted in the presence of the CG Overseer. The builder shall deliver to the buyer the stability book for various service conditions and light ship assessment reports (06 Copies in hard and Soft mediums). The Inclining experiments, however, shall be repeated on subsequent ships of the Class in any one of the following situations:-

- (a) Changes in major equipment/ structural modification.
- (b) When hull construction is subcontracted with material to a third party.
- (c) Light ship weight and LCG of follow on ships exceeds the permissible limits as per class society requirements.
- (d) As per Classification Society rule requirements.

75. **Basin Trials.** All systems and equipment which would be used at sea shall be operated and tested so as to allow any minor defects, observed during the trials, to be rectified. The WJ shall be operated at maximum speed. The propulsion system shall be operated to drive with jet ahead and astern in various configurations for all the three waterjets. Simultaneously, all methods of control of propulsion system shall be tested and all remote reading instruments checked. All precautions involving establishing communication between control positions, securing of the ship with hurricane hawsers and additional wires to shore bollards, manning of Bridge/ wheelhouse, ASP, foxle, quarterdeck, machinery compartments, MSBs, dropping of both anchors underfoot, due notice and care for alongside ships shall be taken. Any other precaution as deemed necessary shall also be taken. Onus of the safety of ship shall be with the Shipyard. Basin trials shall comprise of trials of all propulsion machinery, DG sets, anchor/ mooring equipment, IMCS & FDS will be undertaken by Shipyard in the presence of Class reps as applicable and CG overseers.

76. **Ship Builder's Trials (SBT).** Basin trials shall be successfully conducted and rectification of all defects/ deficiencies accomplished prior SBT. SBT shall be carried out by the Shipyard for all vessels for testing performance of various systems, including main propulsion, at sea.

77. **Sea Trials.** On successful completion of Basin trials and SBT, the Shipyard will propose Contractor Sea Trials (CST). Therefore, CST shall be carried out under the responsibility of the Shipyard, who will also provide the Pilot/ crew and other inventory for the trials. All the systems and equipment onboard must be tried and proved as per trial protocol prior to delivery. The trials shall include following:-

- (a) Starting of engines
- (b) Steering trials
- (c) Turning circle trials
- (d) Speed trials
- (e) Turning Circle dia /angle of speed at max. speed trials
- (f) Crash stop trials and maneuvering trials
- (g) Endurance trials

- (h) Trials of all equipment/ system fitted onboard other than listed above and as per Class requirements.
- (j) Magnetic Compass Swing trials
- (k) Fuel consumption trials
- (l) Anchor and Capstan trials
- (m) Noise survey & vibration trials (for Hull and Machinery)
- (n) EM log and Echo Sounder trials / calibration
- (p) Sewage disposal system trials
- (q) Air conditioning and ventilation system trials
- (r) Recording of hull and machinery vibration and noise levels at cruising and full speed.
- (s) Testing and trials of communication-navigation equipment
- (t) DG set trials
- (u) RO plant trials
- (v) IBS Trials
- (w) IMCS trials

78. Speed trials for the vessel will be carried out at full load displacement at 92% MCR. The speed at 100% MCR shall also be demonstrated and recorded. All costs in connection with the inspection test and trial will be in the account of the yard.

Technical Documentation and Delivery

79. **Submission of Drawings.** Drawings for approval shall be submitted to the owner. Two prints of the approved drawings shall be returned to the yard for production. Hard copies of "As Fitted" drawings and equipment drawings shall be provided to the ship and the owner. "As Fitted" drawings made by yard and equipment drawings shall be provided on external hard disk, in addition to hard copies (06 Copies each). Following drawing to be fitted in frame onboard :-

- (a) GA
- (b) Bilge and Ballast System
- (c) Tank Capacity Plan
- (d) Fire and Safety Plan
- (e) Risk and Damage Control Marking Arrangement

80. All drawings, data sheets and records will be in English. Class approved drawings as per Classification Society requirement shall be submitted by the Shipyard for approval of the Coast Guard. Approval or any comments thereof on the drawings other than Classification drawings shall be given by Owners within two weeks from date of receipt.

81. **Documents.** The following documents will be delivered to the owner's representative with respect to each vessel in hard as well as soft copies: -

Item	Issued by	No. of Copies
Instruction books, manuals, Part identification list (for major machinery) and maintenance manuals for outfit and machinery	Manufacturers	06
Work test certificates for outfit and machinery	Manufacturers	06
Test and Trial Protocol & D787	Builders	06

82. **Photographs.** The vessel shall be photographed commencing from keel laying to delivery. About 60 photographs (4"X6") will be delivered to owners in duplicate, in both hard and soft copies. The ship shall be photographed when completely fitted out and before handing over. In addition, a complete set of photographs, made up as follows and showing the present appearance of each ship shall be forwarded to the CGHQ through the principal overseer in hard and soft copies.

- (a) Broadside views taken from port and starboard
- (b) Views taken from port and stbd. from bow
- (c) Views taken from port and stbd. quarters
- (d) A view from directly ahead
- (e) A view from dead astern

83. Photographs shall be taken for all vessels of the series. All or some of the following shall be photographed as applicable from different aspects:-

- (a) Bridges and equipment
- (b) Anchor and cable equipment
- (c) Radar and mast fittings
- (d) Typical mess space and dining hall
- (e) Galley
- (f) Typical cabins
- (g) Typical bathrooms
- (h) Typical offices and workshops
- (j) Spaces for electrical equipment
- (k) Machinery, piping and ventilation arrangements of special interest.
- (l) Armament
- (m) Vessel crane arrangement
- (n) Superstructure and deck stowage.
- (p) The photographs of underwater fittings will be taken and sent to CGHQ (with labeling & position marking)

84. **Delivery.** The vessel shall be delivered afloat at the builder's yard (navigable) after successful completion of the trials. Ships will be delivered with fuel, lub oil and fresh water tanks fully topped up. The shipyard will hand over a Certificate of Delivery at the time of delivery. As circumstances may require, the Certificate of Delivery can be accompanied by an Agreed List of Outstanding Items. The owner shall hand over a Certificate of Acceptance at the delivery.

85. **Guarantee Period and Docking.** The ship will be docked, bottom cleaned and painted before delivery. Under water valves will be tested and defects if any to be rectified. Bracket bush clearance shall be measured and recorded. Any U/W defect, if observed, shall be made good. A guarantee for a period of one year from delivery will be granted for all equipment and workmanship as well as failures or Imperfections arising out of bad material fabricated by the builder itself. However, damages resulting from mishandling of equipment or installation or operation of the latter contrary to instructions by the owner, are excluded. If the period between launching and delivery exceeds 01 year, the ship will be docked for inspection of underwater hull and fittings, clearing up and painted, as required before sea trials. Each vessel will also be docked during guarantee at the cost of Builder preferably towards the end of the guarantee period for inspection of underwater hull appendages, shafting & impellers, sea tubes, ICCP, ICAF and undertake guarantee repairs, as necessary at Yard's premises or any place near to base port of ship as agreed mutually. All the charges for the yard facilities during Ships GRDD i.e. electricity, tugs, pilot, fresh water and any other charges envisaged during GRDD are to be borne by the Shipyard including if the ship is sought at Yard premises by shipyards for guarantee repairs. The vessel will be positioned at Shipyard premises or any other location as mutually agreed by ICG as per provisions of the contract

86. **Procurement of Machineries and Equipment.** Procurement of all machineries and equipment shall be carried out as per yard's procedures. The Statement of Technical Requirements (SOTR) for all machineries and equipment shall be approved by the owner before tendering by the Shipyard. The technical offers of all vendors shall be submitted to owner for vetting before scheduling TEC. The owner's representative will be part of the TEC for procurement of major machineries/ equipment.

87. **Vendor Selection.** Shipyard may select vendors for supply of equipment having dedicated equipment test and trial facility. The vendor shall also have dedicated after sales support in India including A&N and Lakshadweep Islands and having references of supply to Indian Navy, Indian Coast Guard or firms of international repute shall, only be proposed. Propulsion option submitted by shipyard in their technical offer will be evaluated and frozen during TEC. No addition to vendor list for propulsion plant will be permitted over and above those evaluated and fixed during TEC. In order to have wider choice and latest technology absorption, addition of vendors for procurement of machinery other than propulsion system shall be permitted provided there is no downward change in technical specification.

88. **Product Support and Logistics.** Shipyard shall seek assurance from OEMs that the equipment being supplied shall be most modern and compliant to latest IMP Regulations and shall not become obsolete at least till 05 years from expiry of guarantee period for the last ship in class. Further software upgrade also shall be catered without cost implications by OEM/s for up to 05 years from completion of guarantee period of last ship of the Class.

89. **Annual Maintenance / Rate Contract.** Shipyards shall ensure that post completion of guarantee period, OEMs are willing to enter into Annual Maintenance Contract (AMC)/ Rate contract directly with ICG for navigation, communication equipment, main engine & controls, RO plant, STP, Vacuum Toilet system, ICCP, DG sets, IBS, IMCS on case to case basis. The contracts would include provision of services and supply of spares.

90. **Artificial Intelligence.** A separate AI capable Predictive Maintenance system with requisite software and hardware (with PCs/ MFDs) to be provided. The software to be equipped with self-learning algorithm for analysis of major machinery viz. Main Engine, DAs, Gear-Box, HP Air compressor parameters and inputs from IMCS to perform following functions:

- (a) Anomaly detection in performance of machineries.
- (b) Provide health score for machineries to improve maintenance practices.
- (c) Predict the probability of failure of a sub-system/ component well advance in time.
- (d) Identify potential causes of failure.
- (e) Maintenance scheduling.

91. **Modifications.** Based on the experience during construction of the delivered vessel, necessary modifications/ design improvement to be carried out on follow-on vessels arising due to defects in design, workmanship, material etc. without any additional cost.

92. Rules and regulations/ standards as indicated in the Guideline Specifications (**Appendix 'A'** to the RFP) are to be complied with. However, in case any rules and regulations/ standards are found superseded by fresh ones, the same may be proposed by Shipyard and proven upto satisfactory standards.

93. Two no. Scale models of the ship will be supplied per ship. The scale shall be 1:100. The model shall be supplied enclosed in a transparent Perspex casing with teakwood base. The material used for construction of the model and casing shall be of highest quality.

SECTION –B

HULL

1. **Hull Structure.** The vessel will be built and classified under dual class notation. ABS or LRS or GL or BV or DNV or NK will be one classification society and IRS shall be the other classification society. The classification notation of ABS is, **+A1 HSC Special Government Service**, +AMS capable of operating up to and including sea state 4 and seaworthy up to and including sea state 6. The equivalent class notation of LRS/GL/ BV/IRS/DNV/ NK is applicable for others. Transom stern plating and outlet for water jet are to be adequately strengthened against deformation. Weather deck shipside edges to be provided with half round bar to avoid chaffing of ropes/ berthing hawsers.
2. Mono hull form is to be considered for the vessel to minimise hull resistance and optimise the sea keeping parameters with optimum Energy Efficiency Design Index (EEDI). Transom stern plating to be adequately strengthened to prevent deformation.
3. **Material of Construction.** Hull material will be Class approved indigenous Ship Building High Tensile Steel for Hull (ABS grade AH36 or equivalent) + Aluminum Alloy Superstructure for life span of 20 years. The class verified material certificate for steel and Aluminium used for main structure is to be handed over to Coast Guard.
4. **Corrosion Allowance.** Corrosion allowance should be catered as per Class rules. A minimum of 2 mm allowance should be catered for Keel and two strakes on both sides adjoining keel.
 - (a) The minimum thickness of shell plating is to be 8 mm or as per class rules whichever is greater for underwater hull. The remaining portion of shell and deck plating is to be in conformity with Class requirement and shall not be less than 06 mm thickness.
 - (b) Material used on weather decks are to be anti-corrosive type. Fasteners of all weather deck fittings are to be of Stainless Steel (SS-316L).
5. **Stem.** Formed welded steel plates of suitable thickness shall be used for the stem.
6. **Transom.** Transom shall be of steel plate with transverse stiffeners, vertical web girders and connected by brackets to longitudinal in bottom and deck and will be suitably strengthened for water jet system and buckets. Transom stern plating will be adequately strengthened for preventing deformation.
7. **Shell Plating.** The shell plating shall be butt welded. Interference of butts and seams with longitudinal bulkheads and other structural members shall be minimised as far as practicable. Shell plating, in way of Anchor handling, shell appendages and where excessive corrosion or large local loads are expected will be increased in thickness. Adequate corrosion allowance shall be catered as per class rules.
8. **Shell Appendages.** Shell appendages shall be fabricated from mild steel plates. The underwater appendages shall be of watertight construction and inside of these shall be filled up with Bitumen solution and drained off.

9. **Bottom Girders and Floors.** These shall be provided as per class approved drawings. The bilge plates shall be of Al alloy and non-skid type supported by MS frames with provision to avoid bimetallic corrosion.
10. **Longitudinal Framing for Shell.** Longitudinal framing shall be designed to support the shell plating under normal loads, buckling and longitudinal strength criteria of the hull girder. Where the heavy foundation attached or large vibratory forces are expected, the longitudinal frames shall be increased in scantling and appropriate brackets and/ or inter coastal shall be provided as per class rules.
11. **Transverse Framing for Shell.** Transverse frames shall stand normal to the base line. Collars shall be provided as per class rules.
12. **Floor Plates.** Floor plates of aluminium non-skid type shall be installed in all machinery spaces. Extra support shall be provided at all points where heavy weight or particularly rough usage is expected. Portable/ hinged sections of floor plates shall be installed in areas where access is required below them.
13. **Watertight Bulkheads.** Structural bulkheads shall be provided to form watertight or oil tight subdivisions and designed to the hydrostatic heads expected during service as well as the damaged conditions.
14. Where the plating is cut out for passage of continuous beams, deck girders, longitudinal etc. plate collars shall be fitted to restore the full strength of the bulkhead plating and maintain the required tightness.
15. Where transverse bulkheads are broken by decks, the stiffeners above and below the deck shall be in alignment as far as local conditions permit. Wherever practicable, the heads and heels of stiffeners shall land on deck beams, girders, floors, longitudinal or other structural members. Structural Fire Protection Plan shall be provided as per Class.
16. **Decks.** The arrangement of decks and platforms will be in accordance with the approved drawings. The coaming shall be provided on upper deck. Weather deck shipside edges shall be provided with half round bar to avoid chaffing of ropes/ berthing lines.
17. In vicinity of gun mountings, decks, and their supporting structure will be capable of withstanding and firing loads and gun blast pressures to which they may be subjected. The deck plating shall be of increased thickness in way of gun supports, davits, bollards etc. and other positions where local loads occur.
18. Where openings are cut in girders adequate compensation for loss in strength shall be provided. All deck openings shall be provided with rounded corners. Adequate shear and camber will be provided on all exposed decks.
19. **Superstructure.** The arrangement of superstructure will conform to the General Arrangement Plan. The boundary bulkheads shall be of anti-corrosive aluminum alloy with scantlings conforming to Classification Society requirements.
20. The superstructure and bulkheads shall lie on a supporting bulkhead or deck beam. The ends of the vertical deckhouse stiffeners shall wherever practicable, line up with framing above and below. Ends of these stiffeners shall be sniped. Particular attention will be given to structure supporting heavy weights such as mast.

21. Wood wherever used will be coated with fire retardant paint.
22. Wooden gratings to be provided for all weather deck bollards.
23. **Pillars.** Pillars shall be provided to support the decks and platforms as applicable. These will be arranged to align vertically with adequate strength members above and below. The numbers and locations shall be so that failure of any one of them shall not cause the total collapse of decks or platforms supported. Where the interference caused by pillars is not accepted, girders of sufficient strength shall be provided. All pillars shall be of circular section.
24. **Access to Compartments.** Access shall be provided to all compartments, usable spaces and voids within the ship by means of doors, hatches, and manholes as appropriate to afford the most convenient practicable access. The arrangement and sizes of access is as per the approved plan by Coast Guard.
25. The degree of tightness of doors, hatches, manhole covers shall be the same as that of the structure in which they are installed. Compartments, decks, hatches, doors, and manhole covers shall be fitted with brass tallies in accordance with location markings.
26. Inspection and trials of water tight doors, hatches and scuttles shall be carried out before the Builder's sea trials when all work in this connection is complete. At this inspection, openings will be cleared of obstructions so that doors, hatches etc. can be freely shut and readily clipped back to their open positions. Class approved Stairs and ladders as appropriate will be provided as required.
27. **Doors and Hatches.** The arrangement, type and sizes of doors is in accordance with the approved access plan. The Cabin doors shall be fitted with kick out panel and ventilation louver where applicable. All doors exposed to weather are to be weather tight meeting class requirement. Main entrance doors to lobbies will be single lever operated. Doors as per class requirement shall be provided for fire boundaries. Doors exposed to weather deck shall be provided with type approved clear toughened safety glass with dead light for darkened conditions as applicable. For providing through passage below main deck, class approved water tight hinged doors will be fitted on water tight bulkheads. Securing arrangement for hatches in open position to be provided.
28. All hatches will be made of suitable material, hinged and hatch retaining arrangement for open condition provided. Spring loaded arrangement to be provided for hatches and clearance to be minimum 600 mm. The arrangement and size will be as per approved plan. Hatch covers will be provided with appropriate brass tally plate in accordance with the location markings to identify the compartment to which the hatch gives access. Hatches for handling of ammunition shall be of sufficient size. All hatches leading to water tight compartments will be provided with ITP (Indicator Test Plug).
29. **Manhole Covers.** Flush-deck manhole shall be used in working, walking, or operating areas, where above deck projections create a hazard to personnel. Raised manholes shall be located out of walking areas on inner bottoms. Where there is a possibility that bilge water may enter an open manhole, a high coaming will be installed. The spacing of studs for manhole cover for either watertight or oil tight installation shall comply with the requirements for oil water tight construction. At least two manholes shall be provided for larger tanks/ void spaces to the extent feasible. Void Spaces will be provided with appropriate arrangement, meeting class requirement.

30. **Windows**. Window frames in the deckhouse shall be of light alloy/ brass. Rectangular fixed windows shall be fitted in wheelhouse. The Bridge window frames shall be of minimum width so as to minimise blind zones of vision. Arrangement will be provided for cleaning front bridge windows with fresh water.

31. **Ladders**. Inner vertical ladders will be provided as required for access from main deck to compartments. Light weight sloping ladders with non- skid steps shall be provided for access to super structure and compartment from main deck. All ladders shall be class approved for material and disposition. Escape ladders are to be mild steel.

32. Rungs / steps as required will be provided for access to tanks etc as required.

33. Arrangement and disposition of ladders are as per the approved plan.

34. **Provision for Machinery Removal**. The plan for removal of Main Engines should be with minimum removal of adjacent equipment/items. The plan for removal of major machinery (Main Engines, Diesel alternators and Water jets) is to be submitted along with technical specification. Withdrawal route for hydrophore tanks, STP, OBS and washing machines, etc to be planned during design stage. Adequate head space to be given for operators in machinery compartments and height of entrance doors also to consider the same.

35. **Insulation and Lining**. Partition bulkhead and insulation shall be provided in accordance with General Arrangement drawing and approved insulation plan respectively. Thermal insulation shall be provided on all ship side, deck heads exposed to weather in accommodation/air-conditioned spaces. Thickness shall be as per the insulation plan. Linings/Panelling shall be fitted in spaces of preferably lightweight Honey Comb Structural Panel (HCSP).

36. **Deck Covering**. Lightweight epoxy deck covering schemes complying with latest NCD 3717/ Epoxy based deck covering to be carried out for bathrooms, Alleyways, AHU and galley shall be provided. Deck covering drawing shall be approved by Coast Guard.

37. Pergo type fire retardant (water proof) tiles flooring for Wardroom, CO cabin and officer cabin to be considered.

38. **Guard Rails and Stanchions, Storm Rails and Awnings**. Guard rails and stanchions arrangement is to be as per the approved drawings. Guard rails and lines shall be installed parallel to the deck along deck edges and walk ways and along other boundaries wherever there is a danger of personnel falling over board, falling to a lower level in the ship/becoming meshed with hazardous operating machinery. Fixed rail provision to be catered for bridge top deck and monkey fists shall be provided on the bridge for personnel movement during rough weather.

39. Guards, stanchions shall be sufficiently high. The stanchions shall be spaced sufficiently apart but arranged to suit fair leads, bollards etc. and to allow sufficient space for gang ways without slackening of adjacent guard wires.

40. The sockets of hinged type stanchions are of galvanized steel, well connected to the deck by welding and fitted with Naval brass drop-nosed bolts. Keep chains (SS) will be provided for securing stanchions in upright position.

41. Guard wires will be of PVC coated FSWR. A Stainless Steel rigging chain with long link Stainless Steel shackle at end in lieu of wire at the gangways and accommodation hatches, as applicable, will be provided. The end of the Guard rail wire shall be connected with stainless steel bottle screw slip and D-shackle. The SS material shall be 316-L. Earthing / bonding straps shall be provided for collapsible / removable guard rail stanchions.
42. **Storm Rails.** At all external walls, passage-ways, staircases etc. storm rails of stainless steel will be provided.
43. **Awnings.** Water proof Awnings shall be provided over vessel's free main deck forward, aft deck and on bridge top deck aft of wheel house (as required). One set of ceremonial awnings shall also be provided covering to all such decks.
44. The awning arrangement shall be provided using light alloy stanchions with stays and ridge ropes.
45. **Rigging.** Rigging plan including the bill of material shall be approved by Coast Guard.
46. One water tight flag locker close to mast shall be provided. Stowage arrangement for NUC light and anchor lantern close to the mast shall be provided.
47. **Names.** Ship's name (Bilingual as per CG policy) in chromium plated brass letters on varnished wooden plate is fixed to both sides of deckhouse.
48. **Tactical Number.** The tactical number is painted on both sides of shell in the forward region as well as on transom. Ship's name in Hindi and English is painted on side shell aft P&S, as per CG policy (CGBR 382, Issue-2). Indian Coast Guard writing shall be made on port and stbd ship side (In Hindi and English). The outline of the letters is marked using weld beads.
49. **Draught Markings.** Draught marks are painted on stem, amidships, and transom and on Port & Starboard sides. Horizontal marks at every 100 mm distance, metrical scale for forward and aft marks. The draught marks are marked using weld beads. Propeller draft markings shall also be provided. Draft sensors (02 for Port and Stbd) shall be catered and their feed given to IMCS.
50. Boot top is marked at the shell by welding strips of 50mm length, spaced 1.0 m. The vertical limit of boot top is from lightship draught to fully loaded draught (5% margin of growth vis-à-vis full load displacement is also catered while deciding upper limit of the boot top).
51. **Markings.** The following markings as per standard/ CG specifications to be provided and plan for the same to be submitted:-
- (a) Marking of Frames, Bulkheads and Underwater Opening.
 - (b) Volumetric Marking of compartments.
 - (c) Water Tight and Gas Control Marking
 - (d) Escape Route Marking (luminescent).
 - (e) Below water line marking in compartments.

52. Bulkheads shall be marked on the main deck by weld beads. Brass tally plates indicating position of underwater openings and underwater fittings shall be fitted on the main deck at side. NBCD markings shall also be provided (watertight and gastight). Marking plan will be send to Coast Guard for approval. For docking purposes, the positions of the main bulkheads will be indicated on tally at weather deck.

53. **Labels.** All valves, hand wheels, levers, doors, ventilation etc. are indicated by name plates of Brass with engraved black letters in English. All compartments shall have bilingual (Hindi+ Eng.) Brass tally plates. Brass tally plates shall be provided for air pipes and sounding pipes.

54. **Bollards and Fairleads.** Welded Twin Bollard of galvanized steel will be fitted as per approved berthing/ mooring plan. Bollards and Fairleads shall be welded on main deck as per approved plan.

55. Fairleads of cast steel galvanized are fitted with closing bar welded on deck, one located near each bollard. Towing and mooring arrangement is as per approved plan.

56. **Anchor Chain Pipe & Hawse Pipe.** The anchors shall be situated as per the General Arrangement drawing. Chain (Naval & Hawse) pipe of steel welded to the deck and extended to the chain locker. The end of chain pipe is to be armoured with round bar.

57. **OBM Tank / Flushing Kit.** Two OBM tanks and one flushing kit shall be provided. Suitable location for stocking up POL for OBM to be provided.

58. **Fittings.** Mast, detachable jack staff and Ensign Staff shall be fitted. Mast rigging arrangement for flags and navigational shapes shall be provided. Jack and Ensign staff complete with stay, cleats and halyard shall be made foldable with electrical connections and guard rails.

59. **Furniture and Fittings.** All furniture and upholstery (modular) shall be of approved fire retardant type. Locks shall be fitted where applicable and key with key tally shall also be provided. A ceremonial dais, as per CG specifications shall be provided. All furniture, lockers, cupboard, etc. will be manufactured from lightweight honeycomb material as finalised in consultation with CGRPS.

60. All bunks shall be of light alloy and shall have fabric covered polyurethane foam cum coir mattresses (6 Feet x 3 Feet). All bunks in messes to be provided in fore and aft direction. The lower bunks shall have two drawers. The upper bunks shall be of alloy tube frames. Fabrics foam cum coir mattresses shall be provided. The mattresses shall be provided with two Velcro straps for securing them in place during rough weather.

61. Light weight bunks with reading LED light shall be provided.

62. All berths shall be provided with two foam pillows and two pillow covers each.

63. 45 Nos. Blankets and 90 bed sheets shall be provided.

64. All settee shall have fabric covered polyurethane foam cushions.

65. All fittings for interior doors and furniture are chromium plated brass / steel.

66. The fabric covers for mattress & pillows shall be fire retardant.

67. **Curtain.** Two sets of fire retardant curtains shall be provided for all doorways, side scuttles and bunks in the COs, Officers, Sub officers and Naviks accommodation spaces ward room & dining spaces. Shade of the curtains will be decided in consultation with CGRPT/Ship Staff.

68. **Clock.** Quartz clocks shall be fitted in all messes, all machinery spaces, ward room, dining halls, galley, ship's office. Marine Quartz clocks shall be fitted in MCR and Bridge.

69. **Notice Boards.** The following notice boards shall be provided :-

- (a) 01 no. in under deck passage, lockable
- (b) 01 no. in deckhouse passage, lockable
- (c) 01 no. in Sub Officer cabin
- (d) 01 no. in Naviks mess
- (e) 01 no. NBCD Board
- (f) 01 no. Watch and Station Bill
- (g) 01 no. General Information Board

70. 08 sleek notice boards shall be provided with aluminum anodized frame without locking arrangement. The size and location of the notice boards for various compartments are finalised in consultation with CGRPT.

71. The following additional boards shall also be provided:-

- (a) 01 no. Navigational data board
- (b) 01 no. State of fishing trawlers
- (c) 01 no. Equipment state board navigation
- (d) 01 no. Paint state board
- (e) 01 no. Manpower state board.
- (f) 01 no. Equipment state board Engineering
- (g) 01 no. POL state board.
- (h) 01 no. Commissioning state board (Brass Engraved)
- (j) 01 no. Small arms & Ammunition state board
- (k) 01 no. Ship's historical note board (Brass engraved)
- (l) 01 no. Warning board
- (m) 03 nos. Succession board (brass engraved)
- (n) 03 nos. Safety board(Man aloft, Man aloft negative transmission, Danger high voltage)

72. The above boards except otherwise mentioned are of marine plywood fixed with 1.5 mm thick white Formica on either sides and Perspex sheet on front. The boards are provided with teak wood beading all around. The location of the additional boards shall be decided by ship staff.

73. **Keys and Keyboards.** The following keyboards with locks and duplicates key, tally plate are provided:-

- (a) 01 no. in C.O's cabin
- (b) 01 no. in deckhouse passage
- (c) 01 no. in under deck passage
- (d) 01 no. in M.C.R.
- (e) 01 no. in wheelhouse
- (f) 01 no. in EXO's cabin
- (g) 01 no. in TO's Cabin
- (h) 01 no in Quartermaster post

74. All cupboards, drawers, doors and hatches are fitted with locks and duplicate keys are provided. All keys shall be provided with identification tallies of SS engraved with numbers written in one side.

75. **List of Furniture/Accessories**

(a) **Commanding Officer's Cabin**

- (i) 01 no. Fixed bunk with LED bunk light two drawers and one stowage space
- (ii) 01 no. Upholstered sofa
- (iii) 01 no. Writing desk
- (iv) 01 no. Swiveling chair with fabric covered cushions
- (v) 01 no. Wardrobe locker
- (vi) 01 no. Mini refrigerator
- (vii) 01 no. Colour 40" UHD 4K Smart LED TV
- (viii) 01 no. 5.1 channel Music System with Blue Ray player (Latest version with WiFi)
- (ix) 01 no. Television Shelf with showcase for housing music system, crests etc (To be designed in consultation with CGRPT)
- (x) 01 no. Bookshelf
- (xi) 01 no. Waste bin
- (xii) 01 no. Clock
- (xiii) 01 no. Ashtray
- (xiv) 2 + 2 hook for hats and coats at the wall
- (xv) 01 no. Low table (centre)
- (xvi) 01 no. Oscillating fan with speed control
- (xvii) 01 no. Double combination key safe
- (xviii) 01 no. Water bottle/ tumbler stand
- (xix) 01 no. Shoe rack
- (xx) 01 no. Play Station (latest brand)
- (xxi) 01 no. mirror of suitable size
- (xxii) Securing arrangement to be catered for all appliances

(b) **Two Officers Cabin (03 Nos) - Each with**

- (i) 01 no. Fixed lower bunk with LED bunk light ,two drawers and one stowage space
- (ii) 01 no. Fixed upper bunk with LED bunk light
- (iii) 01 no. Armchair, fabric covered cushion
- (iv) 01 no. Settee with cushions
- (v) 02 nos. Wardrobe lockers
- (vi) 01 no. Writing table
- (vii) 01 no. Bookshelf
- (viii) 02 no. Waste bin
- (ix) 01 no. Clock
- (x) 01 no. Ashtray
- (xi) 02 no. Hook for hats and coats at the wall
- (xii) 02 nos. Oscillating fan with speed control
- (xiii) 01 no. Mirror of suitable size
- (xiv) 01 no. Water bottle/ tumbler stand
- (xv) 02 nos. Shoe racks
- (xvi) 01 no. Bluetooth Soundbar (Branded)
- (xvii) Securing arrangement to be catered for all appliances

Note: One cabin to be provided with double combination key safe and remaining with money coffer.

(c) **10 Subordinate Officers Cabin**

- (i) 05 nos. fixed Two tier bunks each with LED bunk light, 02 drawers (shoe cabinet) and one stowage space
- (ii) 04 nos. chairs
- (iii) 05 nos. double wardrobe lockers
- (iv) 01 no. table
- (v) 02 nos. bookshelf
- (vi) 02 nos. waste bin
- (vii) 01 no. clock
- (viii) 10 nos. hooks for hats and coats at the wall
- (ix) 05 nos. Oscillating fans with speed control
- (x) 01 no mirror of suitable size
- (xi) 01 no. settee
- (xii) 01 no. 40" UHD Smart LED TV
- (xiii) 01 no. Television Shelf with showcase for housing music system,
- (xiv) 01 no. Latest Music system
- (xv) 01 no. Refrigerator 120 L
- (xvi) 10 nos. Water bottle/ tumbler stand
- (xvii) 02 nos. Shoe racks
- (xviii) Securing arrangement to be catered for all appliances

(d) **28 Naviks Mess**

- (i) 14 nos. two tier bunks with LED bunk light, two drawers and one stowage space
- (ii) 14 nos. Double wardrobe lockers
- (iii) 10 nos. Oscillating fans with speed control
- (iv) 05 nos. Waste bins,
- (v) 04 nos. Clocks
- (vi) 04 nos. Mirror of suitable size
- (vii) 04 nos. Shoe racks
- (viii) 28 nos. Water bottle/ tumbler stand
- (ix) 01 no. Bluetooth Soundbar (Branded)

(e) **Naviks' Toilet (Equipped with)**

- (i) 04 nos. Western style marine WCs, SS seats, Vacuum toilet system.
- (ii) 01 no. Urinal
- (iii) 04 nos. showers with instant water heaters and mixers (hot/cold)
- (iv) 04 nos. wash basins.
- (v) 04 nos. mirror lockers
- (vi) 04 nos. toilet roll holders
- (vii) 08 nos. hooks
- (viii) 04 nos. soap holders
- (ix) 04 nos. Towel rails
- (x) 01 no. Eight Kg Front loaded fully Automatic washing machine
- (xi) 01 Retractable clothing line

(f) **Sub Officers Toilet**

- (i) 02 nos. Western style marine WCs, SS seats, Vacuum toilet system
- (ii) 01 no. Urinal
- (iii) 02 nos. Shower with instant water heaters and mixers (hot/cold)
- (iv) 02 nos. Mirror locker
- (v) 02 nos. Toilet roll holder
- (vi) 02 nos. Hooks
- (vii) 02 nos. Soap holder
- (viii) 02 nos. Wash basin
- (ix) 02 nos. Towel rail
- (x) 01 no. Eight Kg Front loaded fully Automatic washing machine
- (xi) 01 retractable clothing line
- (xii) 01 Instant water heater

(g) **One Attached Toilet for Commanding Officer (Equipped with)**

- (i) 01 no. Western style marine WC, SS seats, Vacuum toilet system
- (ii) 01 no. shower with instant water heater and mixer (hot/cold)
- (iii) 01 no. wash basin
- (iv) 01 no. mirror locker
- (v) 01 no. toilet roll holder
- (vi) 02 nos. hooks
- (vii) 01 no. soap holder
- (viii) 01 no. towel rail
- (ix) 01 retractable clothing line
- (x) 01 Instant water heater

(h) **In Deckhouse One Toilet for Officers (Equipped with)**

- (i) 03 nos. Western style marine WCs, SS seats, Vacuum toilet system
- (ii) 01 no. Urinal
- (iii) 01 no. shower with instant water heater and mixer (hot/cold)
- (iv) 02 nos. wash basin
- (v) 02 nos. mirror lockers
- (vi) 02 nos. toilet roll holder
- (vii) 02 nos. hooks
- (viii) 01 no. soap holder
- (ix) 01 nos. towel rail
- (x) 01 no. Eight Kg Front loaded Fully Automatic washing machine
- (xi) 01 retractable clothing line
- (xii) 01 Instant water heater

(j) **Ward Room (Attached Pantry) (Equipped with)**

- (i) 01 no. Refrigerator (At least 360 L) with deep freezer facility
- (ii) 01 no. Upholstered sofa
- (iii) 01 no. Dining table
- (iv) 02 nos. Upholstered chairs without armrest
- (v) 01 no. Built-in locker.
- (vi) 01 no. Pistol Locker
- (vii) 02 set curtains (fire retardant fabric)
- (viii) 01 no. clock
- (ix) 01 no. Television (42") UHD Smart 4K LED
- (x) 01 no. Television Shelf
- (xi) 01 no. Latest 5.1 channel music system speakers with Blu Ray player with WiFi
- (xii) 01 no. Video Game Station
- (xiii) 01 no. Microwave oven (28 litre)
- (xiv) 01 no. Toaster (4 slice)
- (xv) 01 no. RO water purifier with UV Sterilization
- (xvi) 01 no. Food warmer (04 container capacity)
- (xvii) 01 no. Wine locker

- (xviii) 01 no. crockery locker
- (xix) 01 no. Food processor
- (xx) 01 no. Ultra sonic Pest Repellant (Insect Killer)
- (xxi) 01 no. Integrated (Bean to Brew) Espresso coffee machine
- (xxii) 01 no. Ashtray
- (xxiii) 03 Oscillating fans with speed control
- (xxiv) 01 Foot Massager
- (xxv) Securing arrangement to be catered for all appliances
- (xxvi) Musical instruments viz. one each Synthesizer, Flute, Mouth Organ and Congo Triple Lap Tabla to be provided.
- (xxvii) Indoor and outdoor games items viz. one set of Cricket Kit, Badminton Kit, Table Tennis Kit (without TT Table), Squash Kit and Volleyball to be provided.

(k) **Naviks and SOs' Dining Space/ DCHQ (equipped with)**. Dining space for 10 SO (preferably combined with SO's accommodation) and 28 Naviks with standard fittings to be also provided with following:-

- (i) Benches (underneath storage space) with cushion to seat adequate no. of SO/EP (Separate enclosure and Table to be catered for SOs) (Min capacity 10 SOs & 28 EPs).
- (ii) 03 nos. Dining tables
- (iii) 01 no. TV (42") UHD 4k Smart LED.
- (iv) 01 no. 5.1 channel Music system with Blu Ray players latest version with Wi Fi (with securing arrangements)
- (v) 03 nos. Toaster (8 slice)
- (vi) 08 nos. Oscillating fans with speed control
- (vii) 01 no. Microwave Oven 28 Ltrs capacity
- (viii) 01 no. Ultra sonic Pest Repellant (Insect Killer)
- (ix) 01 no. Double selection Tea/Coffee vending machine
- (x) 01 no. Television Shelf with showcase for housing music system
- (xi) Securing arrangement to be catered for all appliances
- (xii) 01 no. Food warmer (04 container capacity)
- (xiii) 01 no. RO water purifier with UV Sterilization

(l) **Cutlery / Crockery**. Adequate SS Cutlery/ Crockery (Bone china with CG crest) for Commanding Officer, 06 Officers, 10 SOs and 28 EPs shall be provided.

- (m) The following miscellaneous furniture shall be provided on main deck.
- (i) 01 no. Quarter Master table with built-in lockers, fixed table light and Provision for fixing microphone of PA system.
 - (ii) 01 no. Officer's & Duty state Board
 - (iii) 01 no. Foldable water proof Canopy system for Quarter Master post.

76. **Galley.** Common air-conditioned modular galley for officers and naviks with standard fittings, upholstery, serving table and serving window to be provided. The galley to be equipped with fixed wet chemical FF system, Galley shall be provided with:-

- (a) 01 no. Stainless Steel dresser table with a locker below.
- (b) 04 nos. Hook (SS)
- (c) 01 no. Clock
- (d) 01 no. Heavy duty modular Provision store (350 kg)with racks
- (e) 01 no. Stainless Steel sink with locker below
- (f) 01 no. Oscillating fans with speed control
- (g) 01 no. Instant water heater
- (h) 02 nos. Ultra sonic Pest Repellant (Insect Killer)
- (j) 01 no. Foldable sitting arrangement for cooks (to seat two persons)
- (k) 03 nos. stowage bins of capacity 20 ltrs
- (l) Adequate racks for utensils, storage lockers and provisioning of sufficient steel and plastic jars (5-10 ltrs capacity)

77. **Domestic Facilities.** One Industrial water cooler (Heavy duty) with RO –UV water purifier.

78. **Ship's Office equipped with.**

- (a) 01 no. Table with locker below
- (b) 01 no. chair
- (c) 01 no. clock
- (d) 01 no. Personal Computer with heavy duty printer.
- (e) 01 no. Coffe with double locks.
- (f) 01 no. Oscillating fans with speed control
- (g) 01 no. Dust Bin

79. **Canteen.** One canteen with serving window, wall coffer, mini refrigerator, with double lock, electronic billing machine, adequate racks (slotted angle & GI sheet), 01 Oscillating fan and serving counter.

80. **Wheel House.** The Wheelhouse shall have Bridge-Wings on either sides with double door arrangement for easy access. Wheelhouse is equipped with two Pedestal Mounted Marine Seats (watch keepers'/ Captain's chairs), waste bin, two ashtrays, two hooks, 03 Oscillating fans, navigation aid shelf, one magnifying glass, 02 quartz clock, lockers for storing navigations books, chart plotting equipment and one hinged type chart table with lighting arrangement and darken curtain.

81. **Deck Store.** One deck store in the fore peak compartment and one store shall be provisioned in the deck house. Adequate Rack/bin arrangement along with notice board to be provided.

82. **Naval & OBS Store.** Naval store and OBS (Hull, Engg. & Electrical) store shall also be provided. Adequate storage space in form of boxes with provision for lashing/securing, etc. to be provided. Adequate rack/bin arrangement along with notice board to be provided in each store.

83. **Diving.** Diving equipment locker shall be provided in suitable internal compartment. Adequate Rack/bin arrangement also to be provided. One in no. diving set charging tank to be provided.

84. **Medical Requirements.** Following medical equipment to be provided alongwith the stowage arrangement :-

(a) One Neil Robertson/ SAR stretcher and one Scoop stretcher to be provided along with their stowage.

(b) One portable multi-parameter monitor, one portable semi-automatic AED, 01 Pulse Oximeter, 01 Manual BP Machine, 01 ECG machine and 02 portable pneumatic splints to be provided.

(c) One locker for medical stores.

85. Baggage Store to be provided with racks and securing arrangement.

86. Heavy duty Modular stowage arrangements for 30 Days ration (1 ton) by means of victualing store to be provided. Heavy Duty Modular Stowage arrangements for 30 days dry ration (1 ton) by means of victualing store. Securing arrangement with provision for loading/ unloading, adequate modular racks, rodent control steel mesh, weighing arrangement and permanent lighting arrangement, etc., to be provided. One Heavy Duty Modular daily provision store (350 Kg) to be provided close to ship's galley with storage lockers and provisioning of sufficient steel and plastic jars (5-10 ltrs capacity) similar arrangement to cater for daily needs. Proper water tight hatch/ opening / door to be made for victualing store.

87. **Tanks for Liquids.** All tanks of welded steel construction shall be incorporated in the hull structure. Dissimilar tanks shall be separated by coffer dams. Number and arrangement of tanks for diesel fuel, lub oil and fresh water shall be as per general arrangement plan. All tanks are of welded steel construction, incorporated in the hull structure. Separate ready use (RU) tanks of adequate capacity preferably bulk head mounted shall be provided. The fuel delivery to Main Engines and Diesel Alternators by gravity from RU tanks shall be provisioned. Flow meter arrangement shall be provided for Supply and Return/leak off lines leading to Main Engines for measuring fuel consumption.

88. Two manhole shall be provided for each tank (as feasible) one at the top and the other on the side (Top manhole opening for grey water and fresh water is mandatory for lowering submersible pumps). Record of tank testing as per class standard shall be handed over to Coast Guard. All tanks shall be cleaned & flushed prior to first filling.

89. **Protection against Corrosion.** The immersed surfaces of the hull shall be protected by portable sacrificial zinc anodes should have minimum life of 03 years of suitable quantity during construction after launching. Wherever anodes are catered as fitment during operational cycle, the quantity of anode material to last minimum docking schedule of **02 years** shall be catered. All drainages from domestic equipment/ coolers etc will be led to either Grey water tank or overboard. No drain shall be led to the bilge area.

90. **Painting.** To be in accordance with CGBR 382 Issue II. Tin free paints as per latest IMO regulations are to be incorporated for underwater hull. However, the paint scheme for Bilges, machinery spaces and Ballast tanks are to be indicated by yard with life not less than half life of the ship. Jet intake and jets are to be coated with special sea growth resistant paints as per OEM recommendations. Weather decks to have anti-skid coatings with anti-abrasive qualities. Sufficient protection of Skeg to be incorporated and Maintenance procedure to be specified. Paint specification to be adopted as per CGBR 382 latest issue. Performance Guarantee of minimum five years to be provided by paint manufacturer.

91. Surface preparation and painting shall be strictly performed in accordance with paint manufacturer's recommendation unless other instructions are included in the schedule.

92. Painting shall be carried out by airless spray, brush or roller as stated in the method of application in the painting schedule.

93. Time schedule of painting of each coat shall be decided according to the builder's construction schedule and to the painting interval between coats as stated in the painting schedule.

94. Painting of machinery and electric equipment shall be as per the manufacturer's standard but finish colour will be in accordance with painting schedule, wherever specified.

95. Offices and spaces containing electronic/radio/gunnery/equipment will be painted with brush and not spray painted.

96. In compartments containing electronic or other precision equipment, the equipment will be shielded and protected adequately during painting.

97. Damaged portions of paint on engines, auxiliary machinery, deck machinery etc. will be touched up by the same colour as painted by manufacturers.

98. All seating shall be painted similar to that of surrounding areas.

99. Owner approved Painting scheme shall be applied.

100. **Surface Preparation.** All steel plates and profiles before fabrication shall be blasted to SA 2.5 and shop primed. Preparation of surface before final painting as follows:-

(a) **Steel Surfaces:** All surfaces of main hull above boot topping line shall be thoroughly wire brushed and cleaned, also chipped where necessary so as to remove all loose mill scales, weld beads and make the surface smooth and free from rust before final painting. All exterior under water surfaces below upper boot topping line will be blast cleaned to SA 2.5.

(b) **Light alloy Surfaces:** Light alloy surfaces shall be previously treated by degreasing of all light metal parts and protected with primer coating.

(c) **Wooden surfaces:** Before priming wooden parts shall be carefully smoothed and cleaned of dust. Fire retardant paint will be applied on the wood to impart the fire retarding properties.

101. Suitable area around ICCP anodes/electrodes will be covered with FRP as suggested by ICCP manufacturers.

102. Weather deck will be painted with CG approved heavy duty anti-skid paint.

103. Underwater areas shall be painted as per the CG approved painting scheme.

104. **Anchor Capstan and Mooring Arrangement**

(a) Two electric driven "Anchor Capstan" on fore deck with dual speed for independent anchor/cable operation. Anchor Capstan should have provision for manual operation/cross connection for operation in case of emergency.

(b) One Dual speed electric motor driven vertical type Mooring Capstan with warping head and brake on aft deck.

(c) Two Anchors of Super High Holding Power (SHHP) as per class.

(d) Anchor chain cable as per class. Cable arrangement to be as per standard seamanship by provision of Anchor strops, Blake slips, Screw Slips, Devil's claw, etc.

(e) Mooring rope, towing rope, heaving line, hawser line to be provided. Towing Bull ring diameter must be selected to ensure easy passage of towing hawser of standard size in the fore part and closed fairlead/ring be fitted for easy towing of vessel near Transom.

(f) Securing of anchor stop to be ensured. Anchor shank to be long enough for securing by visible lug less shackles.

(g) Control levers of both anchor capstans and mooring capstans to be mounted on one single operating post at central line to ensure easy operation.

(h) Roller fairleads to be provided on fore deck and aft deck.

(j) Cable lockers to be provided with easier access with quick opening arrangement. Cable clench to be provided inside locker.

(k) One each foldable anchor platforms for Port and Stbd anchors.

(l) Gangway openings at suitable locations.

(m) Provision for manual hoisting of anchor arrangement in capstan in case of power failure.

(n) Relevant measures to avoid EMI may be incorporated for various hull fittings and items as appropriate during design.

105. **Towing Hook.** Ship shall have an arrangement for towing/being towed. One 5 tons Towing Hook bollard pull (continuous) with auto release to be provided and shall be fitted at the main deck aft. The design and layout shall cater for suitable arrangement at aft deck and fore deck respectively for 'towing a vessel of similar tonnage' and for 'self-towing'. All necessary towing hooks gears to be provided.

106. **Aluminum Gangway.** Two numbers Aluminum Gangway with load testing of adequate size shall be provided in consultation with CGRPT.

107. **Pneumatic Rubber Fenders.** 06 nos. cylindrical thermo laminated closed cell fenders (size – 32") shall be provided.

108. The Chart table shall be provided with curtain arrangement so as to block chart table lighting in the bridge at night.

109. **Dressing Line.** Dressing line of adequate size shall be provided. Dressing line shall be rigged from the foot of the jack staff to the mastheads and then to the foot of the ensign staff. Each line shall be made of 25 mm circumference, steel wire rope and braided nylon rope, and shall be made up with shackle at one end rigging to cleat at the other end. Flags with Inglefield clips, as required for use onboard, shall be supplied as specified by CGRPS.

110. **Flags and Hoists.** Flag hoist halyards shall be synthetic rope and shall be installed on signal yards. Hoists for a personal flag command pennant or commission pennant shall be run to the highest point in the mast as far as feasible consistent with other arrangements. Six sets of National and Coast Guard flags shall be provided. Size of flags shall be commensurate with the size of the vessel and will be specified by ICG.

111. **Wash Places and Sanitary Fittings.** All washbasins are fitted with cold and hot water supply. The washbasins shall be fitted with water taps of ergonomic design. One water tap shall be provided in each shower cubicle. All wash places shall have one each soap dispenser and hand drier.

112. **Sanitary Spaces.**

(a) The vacuum toilet system shall be provided for water closets and urinals. Water closets for vacuum toilet system shall be provided with flush valve and health faucets. A toilet seat of plastic shall be provided with all water closets.

(b) All water closets shall be of European type and stainless steel. Washbasin and urinals shall be also stainless steel

(c) All common toilets on 01 Deck shall have at least 01 toilet not connected to vacuum system and shall be able to operate even in non-operational state of vacuum toilet system.

(d) Washbasins with LED mirror lights as required in all bathrooms.

(e) All bathrooms to have retractable clothing line.

(f) One in number Hand dryer will be provided in the common toilets.

113. **Life Saving Appliances.** Following Life Saving appliances to be provided:-

(a) Life rafts meeting the latest SOLAS requirements with Hydrostatic release gear to be provided and fitted on deck.

(b) Life jackets as per SOLAS requirement and CG policies in vogue {General Service Life Jacket (GSLJ)-120% of the complement and Hazardous Duty Life Jacket-50 % of the complement}.

- (c) Life Buoys meeting the latest SOLAS requirements. At least three be with waterproof light and smoke signal and three to be with waterproof light fitted appropriately at various locations.
- (d) Distress signals in wooden box consisting of 04 no's parachute signal, 04 no's self igniting light, 01 no smoke signal and 04 no's fire signal to be provided.
- (e) Two in number each Body recovery stretcher, Rescue sling and Scramble net to be provided in midship.
- (f) Suitable light fittings including emergency light for life raft position and boat deck.
- (g) 02 nos. Wirelessly Controlled Remote Water Rescue Craft Lifebuoy with min duration of 40 mins and endurance of 3-4 miles for rescuing survivors during rough sea with facility of joystick for guiding the craft towards the survivor for rescue operation to be provided with self-righting capability and easy recovery from ship's free board.

114. **Boats and Cranes**

- (a) One eight men Rigid Inflatable Boat (RIB) SOLAS compliant with accessories having max speed 30 Knots to be provided. Provision to be made in RIB control panel to check consumption of fuel/ RPM for endurance calculations, Self-righting capability.
- (b) One six men inflatable boat equipped with 25 HP OBM (Petrol engine, 4 stroke) and accessories. One spare OBM of same capacity to be provided.
- (c) One articulated crane for handling boats and RIB (SWL to meet Buyer's as well as Classification Society's requirement). The crane shall be located at the center of the deck so as to allow freedom of boat lowering on either side of the ship. The length of the arm in fully extended position must ensure quick/smooth hoisting/lowering operation. Mechanical indication limits to be provided to prevent tripping of crane due to overload and extension of boom beyond limits and other safeties. The Crane will be located in such ways that overboard discharge of Main Engine, D/A, AC Plant and Fire/Bilge &GS Pumps will not affect lowering of boat.

115. Two in no. Ceremonial lifebuoy with brass Ashoka emblem stand as per Coast Guard Specifications shall be provided.

116. **First Aid Kits**. Five first-aid kits shall be provided and suitably positioned and secured.

117. **Pilot Ladder**. One number pilot ladder of adequate size shall be provided.

118. **Diving Equipment**. Two sets of BASCA with associated auxiliaries and repair kit shall be provided. Diving equipment lockers to be provided in internal compartment. List of diving equipment is placed at **Annexure I to Appendix- A**.

119. **Tools for Ship Hull Husbandry.** Tools for ship's hull husbandry shall be provided as specified in **Annexure II to Appendix-A.**

120. List of webbings shall be supplied for Boarding/ Landing party is listed at **Annexure 'V' to Appendix- A.**

121. **Magazine Compartment and Ammunition Davit.** A Magazine compartment for storing Ammunition and other small arms/ other guns shall be catered. The compartment shall have flooding and sprinkling system for firefighting. Racks for stowage of rifles/ other arms/ ammunition shall also be catered with lock/ release arrangement in consultation with CGRPT. A portable davit for removing heavy ammunitions/ gunnery stores shall also be catered at weather deck i.e. through a suitably located hatch on the weather deck. Magazines for Ammunition as per Explosive Regulation (NMER-0862) shall be provided. Two magazine keyboards, 01 in captain's cabin and 01 in officer's cabin to be provided with lock and key (mesh type), talley plate etc. to be provided .

122. **Paint Store and RU locker.** A Paint store shall be catered with a remotely operated flooding and sprinkling system for fire-fighting. RU lockers (for storing deck implements/ropes etc) and fire hose boxes shall also be catered at foxle and quarter deck. RU lockers at foxle and quarter deck also to be provided.

123. Separate Rope reels for stowage of ropes for seamanship evolutions etc is also catered on weather deck at foxle and quarter deck.

124. **General Requirements**

- (a) Lifting gear necessary for maintenance of machinery components like chain hoists, pulleys, beam clamps, wire ropes, etc., shall be provided along with special gear provided by manufacturers of machinery.
- (b) Provision of one each request men table and bar table.
- (c) Provision of ship's book (Part I & II).
- (d) Mooring rope, Towing rope, Heaving line, Hawser line & adequate no. Rat Guard to be provided.
- (e) Adequate measures to avoid EMI may be incorporated in various hull fittings and items as appropriate.
- (f) One ship's bell (Material Naval Brass, size 8) with ship's name engraved to be fitted on an appropriate location.
- (g) Provision of 02 DC locker at two locations (Foxle and Quarter deck).
- (h) Two sets of flame retardant water proof canvas covers shall be provided for all Weather-deck machinery and equipment.
- (j) Drainage/Scupper arrangement on weather decks to be provided to ensure non accumulation and easy drainage of water.

- (k) Jack staff and Ensign Staff are to be fitted in such a way to ensure easy folding down without removal of electrical connections and guardrails.
- (l) Grounding of Guard rails to be carried out with bonding strips.
- (m) **Maintenance Management Software.** A Maintenance Management Software package for ship's maintenance, planned machinery maintenance (PPM), Defect record & tracking and maintenance forecast & planning as per CG requirements to be installed and commissioned. The software package should be capable of indicating Maintenance Routines falling due on various equipment fitted onboard and spares requirement, as per OEM promulgated schedule. The software should also be capable of interlinking onboard spares with actual spares requirement and indicating future requirement to meet Minimum stock Level.
- (n) FRP cabinet for securing fire hoses & nozzles.
- (p) Provision of FRP cabinet on upper deck for covering all Electrical points.
- (q) Mast to have rigging arrangement for ceremonial lights flags and navigational shapes. Flag pole at stern with stern light and jack staff with anchor light at bow to be provided. One flag locker to be provided on flag deck. One stowage box of NUC/ anchor lantern to be provided close to mast.
- (r) All weather deck control panels to be of stainless steel/FRP
- (s) Fitment of Inclinometer in Bridge and MCR.
- (t) Safety Equipment like Harness (5 nos.), Safety Goggles (25 nos), Hands free torches (10 nos), Safety Helmets (15 nos) to be provided.
- (u) Ultrasonic pest repellents are to be provided in Pantries, Galley, Dining Halls, Stores and in the vicinity of computer and data bus cables.

SECTION – C **ENGINEERING**

1. **General Requirements.** All machineries/equipment will be installed in accordance with requirements of the owner and class. All machineries/equipment will have low operating expenses and fulfilling following conditions:-

- (a) Reputed make preferred
- (b) Suitable for marine use and also for tropical environments
- (c) Low fuel oil and power consumption
- (d) Easily maintained with low maintenance costs
- (e) Availability of spare parts in India
- (f) Availability of after sales services in India
- (g) Use of indigenous lub oil

2. **Design and Operation.** The type and rating of each machinery and equipment component will be compatible with the service demands. Its size, weight and complexity will be held to a minimum, consistent with reliable and economical operation and maintenance. The principle of reliability will be paramount and no compromise of this principle will be made with any other basic requirement.

3. **Arrangement and Installation.** Machinery arrangements will be in fwd engine room and aft engine room capable of sustaining complete normal operations. In addition to propulsion machinery, F.W. Generator (RO type), DG sets and other auxiliary machineries will also be installed in fwd engine room and aft engine room.

4. Machinery arrangements will provide the best marine protection for all vital machinery and equipment.

5. Losses from piping, machinery and equipment will be minimized or eliminated wherever possible.

6. **Noise & Vibration.** Design of all machinery will be carefully considered with a view of minimizing airborne noise, structure borne noise and vibration thereby improving habitability. **The vibration criteria will be as per ISO 6954: 2000 / Latest version as on date of signing of Contract.** The noise criteria for accommodation, machinery and service spaces should be in accordance with IMO resolution A 468 (XII)/ Latest as on date of signing of contract for this class of ship. **However the acceptable noise level in engine rooms and radio rooms will not exceed 110 db and 65 db respectively.**

7. Flexible pipes will be fitted adjacent to resiliently mounted machinery in the respective oil, water and gas system.

8. **Lifting Gear.** In addition to the special lifting guides and supports furnished by manufacturers of machinery components, the lifting gear necessary for ship maintenance of machinery components will be catered using such equipment as chain hoists, pad eyes, beam clamps and wire ropes.

9. **Operating Instructions.** All starting and stopping procedure of main machinery will be clearly provided next to equipment in English on engraved brass plate. All high pressure vessel will be marked with pressure, test pressure and working pressure and date of testing.
10. **Test and Trials.** Comprehensive acceptance tests and trials will be conducted for all systems and equipment. This will include:-
- (a) Factory Acceptance Trials (FATs) (at manufactures premises) Shipyard will intimate firm schedule of FATs, Model Test and Training scheduled at OEM premises outside India at least 12 weeks in advance and within India at least 04 weeks in advance. The expenditure on boarding, lodging & travel of ICG reps shall be borne by the Buyer.
 - (b) Load Test for machineries/lifting gears, as applicable.
 - (c) Harbor Acceptance Trial.
 - (d) Full power, speed and fuel consumption trials for main engines.
 - (e) Sea Acceptance Trial.
 - (f) Other Trials as required by Class & CG approved Trial protocols.
11. All test equipment, tools and other requirements for the successful completion of the trials will be provided by shipyard.
12. All relevant documents and tests and trial protocols will be provided. All test and trial protocol will be subjected to the owner and /or class approval, as applicable.
13. **Instruments.** Instruments will be accessible for reading, maintenance and replacement. Instruments used for operation and monitoring of the main propulsion machinery will be mounted on station convenient to the operator.
14. **Thermometers.** Thermometers will be located to facilitate ease of temperature observation so that accidental breakage will be kept to a minimum.
15. **Pressure gauges.** Pressure gauges (preferably digital pressure gauge) will be installed as required for safe operation and control of systems, machinery and equipment.

Machinery

16. **Main Propulsion System.** Three Main marine diesel engines (type approved & IMO tier-II compliant) to meet power requirement with low fuel consumption, high TBO will be provided. The diesel engines will comply ISO-3046 rating for tropical conditions. The diesel engines will be air started, turbocharged, intercooled, direct injection type capable of being started, operated, control and stopped from remote / local position. The diesel engines will adhere to controlling limits of NOx and SOx laid out in Annexure VI of MARPOL 73/78 - Regulation for the prevention of air pollution from ships and NOx technical code as amended and applicable at the time of delivery of the vessel. Each engine will be complete with engine driven pumps for fresh water, sea water, fuel oil and lubricating oil. Engines being considered will have the provision of charging/ running on indigenously blended lube oils. Engines shall be flexibly mounted on their bed plates, which are duly welded on the longitudinal bottom girders to the hull of the vessel. In order to ensure independent availability of propulsion system during power outage, the main-engine driven sea water pump shall supply cooling water requirements of the entire propulsion train. Main engine to meet designed speed (not less than 33 knots at 92% MCR) at tropical condition.

17. Each engine will be capable of being started and stopped from remote/ local position. i.e MCR/Engine room. Necessary standard accessories for proper engine operation to be also provided as per OEM/class recommendation. The engine will be suitable for exploitation using LSHFHSD fuel without any limitation. Additional fuel filtration requirement, if any, to be catered.

18. The technical specification of Main engine shall be as per OEM standard meeting class notation generally following system to be included.

- (a) Fuel system
- (b) Starting air system
- (c) Lub oil System
- (d) Cooling system
- (e) Combustion and Exhaust system.

19. **Water Jet System/Drive.** Steerable Water Jets with accessories connected with Main Engine through reverse reduction gear boxes. Back flushing arrangement of water jets are to be provided. Material for impeller and impeller shaft for water jets shall be of stainless steel. Shaft locking arrangement will be provided. During trailing, to ensure lubrication, Trailing pump to be provided in Gear Box. Grating shall be provided in inlet duct. The vessel is to be designed and constructed for water jet propulsion, driven by marine diesel engine located around mid-ship.

20. Water jets with all accessories will be provided. There will be one (01) water jet connecting to each main engine/ Gear Box installation via a shaft line generally as per the General Arrangement plan. All components of the water jet units will be made as per the manufacturers standard and will be suitable for marine use.

21. Water jet unit will be arranged for separate control, steering actuators, Nozzles, Electro hydraulic reversing buckets etc. as required. The combination of the movements of the steering nozzles and reversing buckets will provide the vessel with required steering and maneuverability to perform its operational functions. The hydraulic and lubrication system of the water jet installation will be driven by a hydraulic pump/ lub oil pump of the required capacity mounted on the PTO on the respective main engine/ gear box/ as per OEM recommendation.

22. The system will also incorporate an electrically driven emergency back-up pump of limited capacity to provide standby steering and maneuverability to the water jet unit in the event of failure of the main system. Storage tank for hydraulic oil will be provided in water jet compartment. Sacrificial anodes will be fitted to the water jet units to provide cathodic protection should have minimum life of 03 years. A jet frame will be mounted off the transom to give protection to the water jet units when maneuvering alongside jetties / wharves and other vessels.

23. Emergency operations for all three water jets should be positioned at jet compartment as per OEM recommendation. Mechanical/ Electrical bucket steering/ reversing indicator to be provided in jet compartment as per OEM recommendation for emergency operation.

Gearbox

24. Three in number class/type approved marine reverse- reduction gear box with hydraulic clutches, rigid gear box mount, on gearbox sensors and wiring; connecting parts for oil extraction and oil cooler to be provided. Reduction ratio of the gear boxes will be finalised during detailed design.

25. The gear boxes shall have following features:

- (a) Lightweight metal housing
- (b) Trailing pump

26. **Flexible Coupling.** The flexible coupling will be provided between each engine and reduction gear box to prevent excessive Torsional vibrations. The coupling will ensure good alignment between the engine and gear box in normal service. In case of slight misalignment (within limits) due to abnormal conditions, this coupling ensures satisfactory operation within manufacturers limit.

27. **Remote Control System.** Remote control system for propulsion machinery will be part of machinery and be able to operate from MCR and Wheelhouse. The control system for the propulsion package may be obtained from the engine manufacturer. Local emergency starting and stopping facilities will be provided on the engines. The control systems will be designed so that the local manual emergency controls will not be rendered inoperable by a failure of the remote control systems. Starting and stopping of the main engine will be provided from Local, MCR and Wheel house. An emergency stop control will be provided in the MCR and Bridge.

28. **Control Station.** Control station will be as follows:-

- (a) Bridge
- (b) Machinery Control Room (MCR). MCR will be provided with a noise proof toughened glass arrangement for monitoring main machinery of Main engine room.

29. **Functions of Control Stations.** The main machinery including Pumps (propulsion/ General Service) will be capable of full remote operation from Bridge and MCR and have emergency arrangements for operation from the MCR and locally. Essential machinery condition displays will be provided in the Bridge and MCR.

30. **Local.** An independent manual control equipped with necessary instrumentation will operate the machinery in the event of failure of a particular control. Engine Order Telegraph (EOT) between Wheel House, MCR and Local Control Position will be provided.

31. **Electrical Power Generation Machinery.** The vessel will be provided with three DG sets (415 V AC 3 ph, 50 Hz, 0.8 pf) and capable of being paralleled with each other. Each generator will be capable of meeting the requirement of power during entering / leaving harbor, normal cruising. The prime movers for the DAs will be Diesel Engines, type approved.

32. **Emergency DG Set.** One emergency diesel driven generator (Battery started) of adequate capacity (as per class approved load chart and i.a.w. Class rules) will be provided to feed selected communication equipment, navigational equipment, emergency lights, battery charging system etc during failure of main AC power supply as per class requirements. The emergency generator will supply electrical power using emergency switch board and distribution boards (DBs).

33. **Auxiliary Machinery.** The type and rating of each auxiliary machinery and equipment components will be compatible with its service demands. Its size, weight and complexity will be held to a minimum consistent with reliable and economical operation and maintenance.

34. Auxiliary machinery will be selected on the basis of minimum total weight of components plus fuel required to meet the specified endurance at the specified power. The machinery plant will operate in a satisfactory manner, over its entire operating range without exceeding the noise and vibration level.

35. Machinery, its components and piping will be arranged and installed to permit ready accessibility for operation, inspection, maintenance and removal ashore for repair of machinery other than major machinery.

36. Removal of interference such as piping, floor plates, gratings, and ventilation ducts, to accommodate maintenance will be kept to a minimum.

37. Instruments of machinery that are necessary for proper operation and control will be furnished as per manufacturers recommendations.

38. **Fuel Oil Purifier.** Two in number Fuel Oil Purifier (Self-cleaning) of total installed capacity of approx. 2.5 KL/Hr will be provided as per OEMs recommendation. Purifier shall be provided for transfer of purified / centrifuged oil from F.O storage tank to fuel oil ready use tank. Level switches will be provided on fuel oil ready use tank for cut of /auto stop of centrifuge / purifier to prevent RU tank over flow.

39. **Pumps.** Pumps will be sized to serve connected system, machinery, or equipment, during all specified service conditions. Pumps are to be adequately rated to serve connected system, machinery, or equipment, for all specified service conditions. Following are to be catered in the system design:-

- (a) All pumps are to have mechanical seals.
- (b) Easy removal and access for onboard maintenance is to be ensured.
- (c) The quantity of pumps and capacity will have to be supported by calculations and redundancy aspects in consultation with CG.
- (d) Control & Monitoring of pumps is to be available through IMCS.

40. All pumps will be with mechanical seal. Minimum material specifications for pumps are mentioned below. However alternate equivalent/ higher material grade will also be considered.

(a) **Pumps for Fresh water- Centrifugal Type**

Casing : Gunmetal to BS 1400LG4C/ Al Bronze
CI to IS 210Gr. 2 or GG 25
Shaft : Stainless steel
Impeller : Al. Bronze to BS 1400 AB2/Gun Metal

(b) **Pumps for F.O & L.O.- Screw/Gear Type Pumps**

Casing : Cast iron to IS 210 Gr. 2 or GG 25
Fusion quality weld steel to IS 2062
Shaft : Nickel steel

(c) **Pumps for Salt Water- Centrifugal Type**

Casing : Gunmetal to BS 1400LG4C/ Al Bronze
Shaft : Stainless steel to AISI316
Impeller : Al. Bronze to BS 1400 AB2

41. **Bilge/Fire/GS Pump.** One (1) no Bilge / GS and one (1) no. Fire / GS pump each of minimum capacity of 40 m³/hr at 40MWC will be provided meeting class and SOLAS requirement. These pumps shall not be co-located to allow 100% redundancy.

42. **Marine Rotary Pumps.** Five semi rotary hand pumps of adequate capacity will be provided for pumping out bilge and lub oil. Details of the pumps are as follows:-

- (a) 03 Nos. for bilge system - Size 40NB, 91 LPM at 20 MWC
- (b) 02 Nos for lub oil - Size 25 NB, 41 LPM at 20 MWC.

43. **F.O. Transfer Pump.** Two (2) nos F.O. Transfer Pump (motor driven horizontal gear pump) of adequate capacity at minimum 30 meters head will be provided.

44. **Submersible Pump.** Two nos. portable submersible salvage pumps of 20 TPH capacity at 15 mtrs head shall be provided.

45. One portable motor driven pump for transfer of lub oil of 1 HP capacity suitable with operation with power supply of 230 V, 1 ph, 50 Hz capable of transfer of oil from drums to the ship's storage tanks is to be provided. Sufficient suction and discharge hoses to be supplied along with the pump.

46. One in portable motor driven gear pump (cap 02 TPH) with power supply of 230 V, 1 ph, 50Hz capable for drying out bilges (occasionally) to be provided with sufficient suction and discharge hoses.

47. **Air Compressors.** Two (2) in nos. electrical driven air cooled **HP** air compressors of 30 m³/hr at 30 bar with 2 nos vertical air receivers of approx 500 Ltr capacity as per class requirement will be provided for starting main engines and other general purpose.

48. **Fresh Water Tank.** 12 ton capacity fresh water tanks (with inter-tank transfer facility, in case of 02 tanks) will be provided. Provision to embark / dis-embark fresh water from/to shore will be provided.

49. **Fresh Water Generator.** Two (2) no. fresh water generator of 5 ton/ day capacity each (for redundancy), working on Reverse Osmosis principle will be provided to produce fresh water for domestic purpose, drinking and maintenance. The product line of plant will be connected to fresh water storage tank. UV sterilizer to be provided for domestic fresh water system.

50. **Ventilation and Air Conditioning.** The ship is to be fully air-conditioned for extreme tropical condition. Laid down temperature requirements for various compartments such as Magazine, equipment spaces, operation room, cabin etc. are to be provided. Adequate redundancy in A/C capacity is to be provided with 02 plants wherein any plant shall be capable of meeting 100% load. AC plants should be of non CFC/ environmental friendly refrigerant. Central Air conditioning for extreme tropical conditions in all living and working spaces (will be able to take full loads) including Galley, MCR and ammunition store will be provided. The system will be Class approved including heat load calculations and air distribution system, as applicable. Forced Ventilation and Exhaust arrangement for other spaces will be provided. Ventilation and air conditioning system will be designed for ventilation, the temperature and humidity control of the living and working compartments, and for the removal of stale air from the sanitary room and galley. The AC system will also cater for 30 mm gun with provision of isolating flap. Spare refrigerant for one time full charging of AC plant to be provided in cylinder.

51. The air conditioning plant (Class approved), will be installed with 100% redundancy for all major sub system of the plant and shall consists of the following:-

- (a) 02 nos. Compressor (One working & One standby)
- (b) 02 nos. Condenser (One working & One standby)
- (c) 02 nos. External mounted sea water cooling pump of adequate capacity (One working & One standby)
- (d) 01 no. Control panel with switches and control instruments
- (e) 02 nos. receivers (One working & One standby)

52. The ATU unit consists of the following:-

- (a) 01 no. Mixing damper
- (b) 01 no. Filter unit with washable filter mats
- (c) 01 no. Evaporator unit direct expansion types
- (d) 01 no. Centrifugal fan, motor driven, suitable capacity
- (e) 01 no. Distribution unit for air pipes connection.

53. The crankcase of the compressor to be fitted with heater, piping of the refrigerant be copper, valves of cast bronze. Provision for emergency S.W. cooling from fire main with suitable flow regulating and measurement arrangement to be provided. Non-CFC/environmental, indigenously available friendly refrigerant to be used in the AC Plant. The compressor shall be adequate to provide air conditioning to meet following condition:

- (a) Ambient temperature : 40 deg C (Dry bulb); 30 deg C (wet bulb), Sea water temp: 32 Deg C, Air Humidity 70%(upper limit).
- (b) Internal effective temp: Living compartment : 23 Deg C with DBT 26 Deg C WBT 19.5 Deg C, MSO, MCR & WH: 22 Deg C. at 70% RH.
- (c) Vibration eliminator and oil separator will be provided in A/C plant.
- (d) Ammunition store will be maintained at a temp. not exceeding 35°C.

54. Forced Ventilation and mechanical exhaust arrangement in other spaces. The running status of ATU be available in IMCS for effective monitoring from MCR. Further, Return air duct to be provided for large compartment.

55. **Ventilation**. Ventilating fans in machinery compartment will be provided as per heat load calculation. The engine room and steering compartment shall be provided with axial flow supply of sufficient capacity and exhaust. The temperature of engine room shall not exceed approx. 55 deg C when main engines are running at MCR rating. Air change requirement for various compartment to be catered as per class rules. All ventilation/exhaust opening to be provided with handles for easy lifting. All engine room ventilators shall have flap to isolate the compartment from atmospheric air in case of fire in the engine room.

56. **Integrated Machinery Control System (IMCS)**

(a) The vessel will be provided with a Class approved Integrated Machinery Control System to provide control and monitoring of all the ship's machinery and systems mainly to enable unattended operation in machinery spaces during normal sailing and in harbor . One MFD will be fitted in the bridge for IMCS and two in MCR. The fire monitoring and bilge level monitoring systems will be integrated with the IMCS. The IMCS provided will be flexible, scalable and easy to configure. It will have a two level architecture with a supervisory level and a data acquisition and control level. Dual redundant data – bus for data communication routed to optimum survivability will be provided. The system will meet IMO and classification requirement.

(b) **Purpose**. The purpose of this system is to provide control and monitoring of all the ship's machinery and systems, mainly to enable unattended operation in machinery spaces during normal sailing and in harbour. Following will be catered :-

- (i) Propulsion machinery
- (ii) Automatic Power Generation and Distribution System
- (iii) Auxiliary Machinery and System including flood warning/ fire alarm
- (iv) Steering Gear System
- (v) Tank Content System

57. **Workshop Equipment**. One no. each of the following portable equipment will be provided onboard :-

- (a) Workshop tools for Engineering and Electrical as listed in **Annexure III to Appendix 'A'**.
- (b) Drilling machine with accessories (Approx 500W with professional tool kit).
- (c) Grinding machine with accessories (Approx 1000 W Disc Dia 100mm).
- (d) Electric welding machine (Portable) with accessories (Arc welding machine 230-250V, 50-60Hz single phase).

58. **Piping Systems**. All piping systems will be installed in accordance with best marine practices to the requirement of class or the owner of supplier / manufacturers of equipment associated with the particular system.

59. All pipes will be of appropriate size for the purpose intended effectively, and properly supported or braced to withstand any vibrations and stresses. Piping will be fastened /welded to the ship structure and pipes bolted to the hangers by pipe clips. Suitable packing materials will be used in way of the clips.

60. Special attention will be paid to the cleaning of the piping system prior to commissioning. The piping will be arranged so that it is easily removed and also accessible for maintenance. Suitable flange connections and Y- strainers to be catered for ease of maintenance.

61. Expansion joints will be fitted, wherever necessary to prevent damage due to thermal expansion, working of the joint or any other movements of structure. Piping to machinery will be fitted with approved flexible connections, located as close as possible to the machinery.

62. Fuel oil, lub oil pipes will be clear of engine exhaust and electrical equipment. No flanges or joints will be fitted over electrical equipment and no pipes joint will be fitted on top of the main switchboard. Piping in accommodation spaces will be generally behind linings. Where temperature of fluids or gases passing through the pipes or significantly different from ambient temperature, suitable heat insulation or lagging will be installed.

63. All system piping will be painted according to Indian Coast Guard Standard colour coding system to facilitate the identification.

64. Soil pipes will be arranged such that they do not run through the galley or dining halls, unless it is impossible to avoid doing so.

65. At critical locations and where required, sight glasses, temperature gauges and pressure gauges will be installed.

66. **Piping Material.** The Specifications of system piping material will be as below:-

Ser	System	Pipe Material	Flange/End connection	Valve construction
(a)	Sea water piping (for all equipment Fire main)	90/10 Cu Ni to BS 2871 Part 2	Composite flange (GM/MS)/90/10 Cu Ni to BS 2871/ Pipe Flared Joints	GM to BS 1400LG4C
(b)	Lub oil fuel oil	Seamless steel pipe to ASTM A 106 Gr B	Steel to IS 2062 Slip on flange	-DO-
(c)	Bilge Ballast	Galvanized ERW steel to IS1239/Seamless steel to ASTM A106GR B or equivalent/90/10 Cu-Ni to BS2871 Part II	Steel to IS2062 Slip on/ composite flange(GM/GI) / Pipe Flared Joints	-DO-
(d)	Fresh water domestic system	Seamless copper to BS 2871 Part 2. Seam less steel grade SS 316L pipes (For weather deck pipes only)	GM to BS 1400LG4C/ Pipe Flared Joints	-DO-
(e)	Scupper and sanitary service	Seamless steel pipe to ASTM A 106 Gr. B or equivalent	Steel to IS 2062 Slip on flange or equivalent	-DO-
(f)	Compressed air system	Seamless steel to ASTM A-106Gr.B/ Seamless copper to BS2871Part2.	Forged carbon steel weld neck/steel to IS2062 / flared joints	GM to BS 1400LG4C Forged Steel to ASTM-A-105 or cast steel to ASTM A-216
(g)	Starting air system for main engine	SS to AISI 304	SS 304/ Erme to coupling.	-DO-
(h)	Air vent	All pipe galvanized steel except for oil tanks (ERW to IS 1239 seamless steel to ASTM A 106 Gr. B)	Steel to IS 2062 Slip on flange or equivalent	Housing : steel Float: PVC Screen: Brass
(j)	Sounding (all tanks)	-DO-	-DO-	GM to BS 1400LG4C

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(k)	Overflow including tanks forming a part of hull	-DO-	-DO-	-
(l)	Hydraulic system	Precision steel/SS to AISI 304L	Forged steel/MS to IS 2062/SS 304	SS
(m)	Steering Gear	SS to AISI 304L	SS304	SS
(n)	FW cooling system	Seamless steel pipe to ASTM A 106 Gr. B	Steel to IS 2062 Slip on flange or equivalent	G.M. to BS 1400LG4C
(p)	Exhaust system	SS to AISI 304/MS to ERW IS1239	MS to IS 226	-
(q)	Vacuum toilet system	Seamless steel pipe to ASTM A 106 Gr. B	Steel to IS 2062 Slip on flange (Galv.)	GM to BS 1400G4C

67. **Cooling System.** Independent cooling system/ sea tubes for each propulsion machinery, D.G. sets, SNV pumps of AC system, RO Plants and GS pumps will be provided. The sea water will be passed through dual strainers with changeover arrangement for Propulsion machinery, DG sets and AC Plants. Alternatively, Main Propulsion Engines can be provided with individual sea chests having common suction manifold (cross connected) with two simplex strainers to ensure sufficient SW flow to the Engines.

68. The cooling system for main and auxiliary engines will be as per engine manufacturer's standard. Each engine will be entirely self-contained which include the following :-

- (a) Engine driven SW pump, Engine driven FW pump, Heat Exchanger, Expansion FW thermostatic valve etc. as per class/ OEM requirement.
- (b) The Engine coolant system will be treated with suitable inhibitor as per manufacturer's standard.

69. Provision to deliver cooling water from the fireman to Main Engine (in consultation with OEM), Diesel Alternator, Educators and AC system will be catered. Emergency cooling for gear box also will be provided as per OEM recommendation. Both Fire & GS pump and Bilge & GS pump will be capable of supplying the cooling water to one engine at a time at partial load operation as per OEM recommendation. In case of D.G. Set, requisite cooling water will be available at full load.

70. **Cooling System for Auxiliaries.** The cooling system for the auxiliaries will be provided as per the equipment manufacturer's recommendation.

71. **Bilge System.** Bilge system will comply with class requirement. The normal bilge suction system incorporating the necessary valves, strainer boxes, valve manifold and fixed Eductors to service machinery spaces bilge will be provided. A Bilge detection and warning system will also be catered with sensors located at all compartments/cofferdams at bilge level, would be interfaced with ship's IMCS and will be capable of sounding alarm in silent hours/ with and without IMCS switched on. Each Eductor will be connected to fire main by a short branch pipe with an isolating valve and to independent discharge overboard, above water line, through an SDNR valve. A suction branch will be fitted with a non-return valve close to the eductor and a mud box/strainer of approved type at its lowest point. Pumping out arrangement for Forepeak to be provided. Provision for temporary fitment of portable eductor in all machinery spaces, water jet compartment and forepeak compartment. One 15TPH portable educator with accessories to be provided in addition to the educator mentioned under the list of Damage control items in Guideline specification.

72. **Shower and Bilge System.** Two (One operating and the second standby) Shower and Bilge pumps (Min capacity 2 m³/ hr, 05 mWC, each) will be provided for pumping out water from the grey water tank, automatically. The main pump will commence pumping out on sensing level of grey water in the tank. An alarm system should be catered to alert the crew in case the level increase is beyond acceptable limits. Further, the Grey water pumping out system should also be interconnected to the ship's bilge pumping out system, a facility to be used in case of failure of both Shower and Bilge pumps.

73. **Fuel Service System.** Fuel oil is transferred from fuel oil storage tank through Fuel Oil purifier to each fuel oil service tank. Fuel Oil service tank is equipped with a level transmitter and a low level alarm. System should be capable to transfer (between tanks) and embark/ disembark fuel in harbour. Two motor driven fuel oil transfer pumps (min capacity 6m³/ hr each) will be provided. Fuel sampling valves will be placed sufficiently lower in position for drawing samples. One duplex fuel filter to be installed between FO service tank and each Main Engine. Provision for remote start/ stop of FOT pumps to be provided. Cut outs to be provided to prevent tank over flow.

74. **Intake and Exhaust System.** Main engine and Generator Engines will aspirate from Engine room's air supply. Each main propulsion diesel engine and main Diesel Generator set engine exhaust will be led overboard above the water line through shipside. In order to reduce heat radiation from the exhaust leads, the exhaust piping will be sea water cooled. The exhaust pipe will have an auto closing mechanism for preventing ingress of sea water with a facility for manual override. The Exhaust pipe will be routed high enough in such a way that there is no possibility of sea water ingress upto the Engine. Non water cooled parts of the exhaust piping (bends, flanges etc) should be insulated and covered with commercial metallic cloth and GI sheets. In case the exhaust is led outside from ship-sides, efforts will be made that the arrangement does not soil painted hull (Ship-side).

75. **Compressed Air System.** Compressed air system will be supplying compressed air to Main engine starting, auxiliary services viz, air whistle, weed clearance for underwater valves, cleaning devices etc. One no. low pressure air supply connection approx. 5 bar will be provided on quarter deck. Air receivers (Adequate number/ capacities) will be erected vertically and provided with auto drain facility.

76. **Domestic Water System.** A fresh water Hydrophore system of adequate capacity will be provided to cater to the needs of domestic water consumption such as galley, wash places, toilets, showers and dining room. Two motor driven fresh water pumps with (min) 2.5 m³/hr (40 MWC) capacity each will be provided. Fresh water connections for cleaning weather decks will be provided at appropriate locations.

77. **Overflow.** Overflow will be considered for all tanks into which liquid is delivered under pressure, except that overflow pipes will not be installed for:-

- (a) Tanks where relief valves are incorporated in the filling system or on the tank itself.
- (b) Tanks having air vent which can be used as overflow.

78. **Air Vent.** Air vent will be installed for all tanks having filling or suction.

79. **Sounding.** Sounding provisions will be provided for all tanks. Sounding system will be of sounding pipe and level gauge or tank content gauges. A type approved level sensing and alarm system will be catered. All Tank sounding level will be integrated with ship's automation system.

80. Level gauges providing for easy sighting of level shall be provided for service tanks.

81. Tank content gauges shall be provided for F.O./ FO service/ Lub Oil tanks and FW storage tanks.

82. **Scupper and Discharge System.** The Scupper and discharge system will be provided to meet the classification rule requirement. The waste water discharge from wash basins, showers, galleys, other domestic equipment and deck scuppers will be connected to set of overboard discharge pipes and led directly overboard through storm valves.

83. Water seals, drain plugs and vents will be provided in the system.

84. **Damage Control, Fire Fighting and General Purpose Item.** Damage Control and Fire Fighting System will be provided to meet Buyer's as well as classification Society's requirement. Fire main system throughout the ship (isolation facility compartment wise) along with sprinkler for magazine, Fixed Fire Fighting system for machinery spaces and Wet-chemical fire fighting system for galley as per classification society rules to be provided as follows:-

(a) **Fire Main System.** A sea water fire main will be provided to meet hydrant distribution requirements. The system will be sized to provide water for major fire. The fire main will have international shore connection on each side of the vessel. The system design should provide for isolation section wise for facilitating repairs. Fire main system service shall be served by Fire/GS Pump and Bilge/GS pump. Provision of isolating firemain from various compartment shall be provided to comply with class requirement.

(b) **Fixed Fire Fighting System.** Latest fire suppression system viz. NOVEC system will be provided considering the environment, safety, speedy action, storage space and ease of maintenance of system. The system should cater for machinery spaces (Including MCR) as per classification rules will be provided. Further, separate bottles for each target compartment with appropriate gas quantity will be catered for fighting fire in multiple compartments simultaneously (the class

rules exempting separate cylinders for separate compartments will not be considered). The system will have dual shot capability / fighting fire in multiple compartments simultaneously by provision of cross connections meeting the concentration of gas as per OEM requirement for emergency operation. Fire detection and alarm system will be provided as per class. A separate battery charging system shall be provided.

(c) A Fire, Smoke and Flood Alarm System to be provided. 24 V DC maintenance free lead acid batteries may be included for fire/ flood detection and firefighting system control panel. The Fire/Flood-detection/Warning system is equipped with audio visual alarms and automatic system generated voice announcement (with facility to announce the location where the damage has happened). The Fire/Flood-detection/Warning system to be integrated with main broadcast/general alarm system.

85. Damage Control, Fire fighting and General Purpose items will be provided as per list placed at **Annexure – IV to Appendix ‘A’**. All firefighting items will be including racks, lockers securing arrangement etc. will be provided. All escape route markings (luminescent) /NBCD Markings will be photo luminescent type.

86. **General Requirements.**

- (a) Fitment of digital flow meter and digital pressure gauge for shaft seal water cooling pressure in MCR and incorporating in MCS along with alarm.
- (b) Provision of fresh water level indicator in engine mounted expansion tanks.
- (c) Materiel for pipes, valves etc shall be in accordance with classification society rules All underwater valves (type approved) and sea water system valves shall be provided with gunmetal to BS 1400 LG 4C with high nitrile soft seating. All valves, pipe flanges should be located outside panel area for easy maintenance.
- (d) Provision of monitoring inboard shaft bearing temperature in MCR/ IMCS.
- (e) The hull plate below mouths to be strengthened by 10 mm plate doublers.
- (f) RU lockers in all machinery compartments for cleaning and maintenance material to be provided and also at suitable location for stocking up of POL for OBM to be provided.
- (g) FATs of all major machinery to be conducted at OEM premises and witnessed by ICG reps.
- (h) One sonic industrial imager to locate air, gas and vacuum leaks in system to be provided.
- (j) Ship's fuel intake and outlet with one international hose connection.
- (k) All equipment and machinery selected shall use indigenously blended lub oils. Variety of lub oils used should be minimum. All lub oils shall have suitable storage tanks.

- (l) Fitment of digital flow meter and digital pressure gauge for shaft seal water cooling pressure in MCR and incorporating in IMCS along with alarm.
- (m) Provision of fresh water level indicator in engine mounted expansion tanks.
- (n) Fine strainers to be provided in all bathrooms and wash basin drain points to avoid choking.
- (p) Pipe line marking and colour coding
- (q) Piping to be designed so that no system pipe cross with each other. If so, then affected pipe should have break away flanges.
- (r) Chequer plate support to be bolted type and chequer plate should be provided with spring loaded 'H' handles for opening at specified locations, material Aluminium alloy.
- (s) Suction points of Bilge pumps and Oily Bilge Separator are to be at lowermost point in Engine rooms. The hull plates below bilge suction points are to be suitably strengthened to avoid underwater holes due to erosion.
- (t) Provision must be there to isolate individual/group of WCs in case of vacuum failure by means of sectional isolating valves.
- (u) Calibration of tanks for interfacing in MCS/RCS to be done as accurately as possible with actual filling of liquid and considering any 'dead fluid' correction.
- (v) Adequate clearance be provided between machinery compartment chequered plating and running components like shafting to ensure safety of personnel. Also adequate chequered plating be provided to ensure movement of personnel for operation and maintenance of equipment.
- (w) Thermal and refrigerant insulation for machinery, piping and systems as applicable.
- (x) The material specifications wherever indicated in the Guideline Specifications (**Appendix 'A'**) can be proposed for upgradation by the Seller and can be accepted by the Buyer at Contract execution stage based on justifications.

SECTION – D

ELECTRICAL

1. **General.** The vessel will have supplies of 415 Volts (3 phase 50 Hz AC), 230 Volts (Single phase 50 Hz AC) regulated to + 0.5% and 24 V DC (Transformer Rectifiers as per requirement). Design should cater for 10% of future growth margin of power. In addition followings to be catered:-

(a) Rating of electric equipment in machinery space is based on an ambient temperature of 55^o C and other spaces on an ambient temperature of 45^o C.

(b) Suitable labeling is to be provided for all equipment. Necessary identification tallies will be provided for electrical equipment, cables, terminals, connectors, plugs, etc. Voltage & frequency variations and voltage drops will not exceed the values specified by the Classification Society.

(c) ACBs, MCCBs, MCBs, fuses, over current and under voltage relays, Thermistors etc. will be provided for normal functioning and protection of electrical and electronics equipment/units/devices, as applicable.

(d) Necessary brass Tally Plates will be fitted as per marine practice and relevant specifications.

(e) Electrical equipment will be suitable for use in marine environment and will be provided with suitable enclosures according to their locations in the vessel. Systems/equipment selected for the vessel will meet the requirements of vibrations prevalent to marine conditions. Wherever required, necessary vibration mounts will be provided for equipment/units/control panels.

(f) All electric equipment will be so placed or protected as to minimize mechanical damage from water, steam, oil and excessive heat as far as practicable.

(g) System configuration will be designed and submitted in the form of schematic drawings and installation wiring diagrams to classification society for their approval.

(h) Power supply to be catered for illumination inside compartments and also around shipside.

(j) Junction boxes in all areas including mast platform should be accessible for maintenance (only PVC JB's on spaces exposed to weather).

(k) Anodised/ Laminated circuit diagrams will be provided alongwith the various electrical systems panels.

(l) DG set will cater 10% future growth margin of power.

(m) Adequate lighting will be provided for proper illumination around shipside.

(n) Power supplies as per manufactures requirement (415V/230V AC and 24V DC, as applicable.) will be provided for the operation of 30MM and 12.7MM gun with associated fire control systems.

- (p) Bilge lighting to be provided.
- (q) All equipment, machinery, Distribution Boards (DBs), starter panels, etc., should be provided with Anti Vibration Mounts (AVMs) as per marine requirement.
- (r) Battery charging facilities along with mega pulse battery life enhancer
- (s) Adequate ventilation and lighting with adequate extra lighting for operational compartment such as machinery compartments, MCR, Bridge, etc.
- (t) Starter panel for submersible pump to be provided as follows:-
 - (i) Minimum 02 weather proof Starter panels on weather deck (Foxle and Quarter-deck).
 - (ii) Minimum 05 Starter panels below decks to cover all underwater compartments.
- (u) All weather deck electrical fittings, except control panels switches and sockets to be made of naval brass/ gun metal, to avoid oxidation.
- (v) Batteries to be positioned in a suitable place with adequate ventilation.
- (w) Protective guards to be provided around HF Antenna.
- (x) Dedicated earthing strips for provision of earthing to be run around critical compartments like MSO, Bridge etc to avoid EMI.
- (y) Portable emergency lights of reputed make at MSB/MCR, MSO, Bridge, alleyways and 02 additional to be provided.
- (z) All weather deck compartment doors to be provided with door switches to maintain darken ship discipline.
- (aa) All cabling to be EBXL type only.
- (ab) Non skid rubber mats to be provided for Bridge, MCR/MSB, MSO, EDG compartment and other important locations with electric/ electronic panels.
- (ac) For installation of Fiber Optic Gyro an adequate vibration isolation and an environment to prevent over heating of Gyro to be catered.

2. **Generators**

- (a) Suitably rated three Diesel Alternators (DA) of equal capacity to meet electrical load satisfactorily under ships various operating conditions are to be provided. Each generator must be sufficient to meet the requirement of power during entering/ leaving harbour and during cruising.

(b) Load sharing of the DAs shall be done using an Automatic Power Management System (APMS). The APMS is to be suitably interfaced with IMCS. The generators should be suitable for unattended parallel operation. All engineering requirements of auto starting of the DAs as required are to be provided. Manual override system to be available in case of failure. Operation of 'Emergency stop' and placing of generators on standby for APMS shall be available in MCR (preferably hard wired). The electrical system, machinery and associated equipment shall confirm to classification society rules alongwith adequate redundancy in Switchboard.

(c) The diesel engine power is to be adequate for driving the generator set in extreme tropical conditions. The DA prime-movers should meet latest IMO/MARPOL international norms on exhaust emissions in force. Indigenous product support must be available. The diesel engines should be electrically/ pneumatically started and meet emission norms in vogue at the time of delivery of the vessel. Each DG set should be capable of starting from total blackout conditions. Battery backup for governor/control panels of DAs is to be provided for 30 min duration.

(d) One Emergency Diesel Generator (EDG) of adequate capacity to be provided near Bridge area. The Generator should automatically start and take load in case of total power failure. The EDG should be standalone, air cooled and provided as per Classification rules. The EDG should have its independent switchboard from where supply is distributed to meet all emergency requirements.

3. **Power from Shore Supply.** Two number 415V AC, 250 A water tight (IP-56), bulkhead mounted, Shore Supply Connection Box (SSCB) (one each on Port & Stbd) to meet the requirements of harbour loads shall be provided. SSCB will contain the following devices:-

- (a) Molded Case Circuit Breakers
- (b) Phase Sequence Indicator/ meter
- (c) Ammeter and Voltmeter with Selector Switch
- (d) Supply-on indications
- (e) Power factor meter
- (f) KWH Meter
- (g) Phase sequence changeover breaker
- (h) Over volt/ under voltage protection system to avoid damages due to voltage fluctuations in shore supply

4. Shore supply cable roller (02 Nos.) with 100 Mtrs shore supply cable (03 core, Marine Grade, Electron beam cross linked type) of adequate capacity for stowing of cable to be provided near shore supply box panels.

5. **Power Distribution System.** The vessel will have a power distribution system consisting of apparatus necessary to provide power to all electric & electronic equipment and machinery.

(a) The power distribution system shall be designed to meet Buyer's as well as Classification Society's requirement. It will be ensured that all consumers are fed required voltage and frequency from the nearest possible location.

(b) The following distribution system will be provided:

(i) 415V, 50Hz, 3 phase

(ii) 230V, 50Hz, 3 phase

(iii) 230V, 50Hz, 1 phase

(iv) 24V DC

(c) All important consumers as per class requirements and minimum essential system will have alternate source of supply through manual changeover switches. In addition essential loads of Nav-aids and communication sets will also be provided power.

(d) Emergency supplies will be arranged for selected internal and external communication equipment, navigation light, emergency lights, one steering motor, one submersible pump socket with preferential trip and battery charging system from emergency generator and for equipment as per class rule.

6. **Main Switch Board (MSB).** One number MSB designed for control and distribution of 415V, 3Ph, 50Hz, AC supply from three generators and two shore supply connection boxes will be permanently connected to the MSB by adequate sizes of cables. MSB with ring main and bus bar coupler meeting class requirements Breakers of microprocessor based trip and overload. One in no emergency switch board is also to be provided for distribution of power from emergency DA. MSB to be co-located with MCR. Suitable illumination to be provided for Main Switch Board.

(a) Switchboard will be free standing, dead front, with hinged door, drip proof, totally enclosed, cubicle type, fabricated from 12/14 SWG aluminium sheet and suitable for deck mounting. The bottom shall be covered by expanded metal sheets to prevent entry of rodents. Cable entry will be provided either from the bottom or from the top. Lifting lugs will be provided on top centre.

(b) All instruments and controls shall be provided on the hinged doors. Stoppers for retaining hinged doors in open position will be provided.

(c) The door covers will be provided with neoprene rubber gaskets all around to make it dust & vermin proof. The rear face of the switchboard will have removable type drip proof covers. Suitable number of ventilation louvers will be provided for heat dissipation. A horizontal insulated handrail will be provided in such a way that it stands out 150mm from the face of switchboards. Sufficient number of shock absorbers will be provided at the bottom & top back side of the switchboards.

(d) The bus bars will be of electrolytic tinned copper of 98% conductivity having sufficient current carrying capacity and adequately rated for the thermal, mechanical & electromagnetic conditions likely to be experienced in case of short circuits. The maximum temperature rise will be kept in mind for selection of insulation materials. Nuts, bolts, pins, terminal studs, washers etc., will be treated so as to inhibit corrosion.

(e) Generators will be protected by means of Air Circuit Breakers and Moulded Case Circuit Breakers. Solid state over-current & reverse power protection relay will be provided for generator protection in the MSB.

(f) The generator circuit breaker and shore power supply breakers will be incorporated with interlock device to prevent simultaneous connection of generator power and shore power to the MSB.

(g) The generator circuit breaker and shore power supply breakers will be incorporated with interlock device to prevent simultaneous connection of generator power and shore power to the MSB.

(h) Generator sections, distribution sections, synchronizing panel, etc. will be suitably arranged in switchboards.

(j) The main switchboard will have the following main components in addition to other requisites as per design/ class requirements:-

- (i) Circuit Breakers — MCCBs
- (ii) Generator Guards, Bus bars, Switches
- (iii) Instrumentation
- (iv) Fuses
- (v) Relays
- (vi) Indicating lamps
- (vii) EFI for Insulation testing and Indication
- (viii) Synchronizing Panel
- (ix) Overload and Reverse Power relay, etc.
- (x) Ammeter and voltmeter with selector switch
- (xi) Phase sequence meter

(k) Emergency generator will be connected to separate bus bar section forming part of MSB or a separate emergency control panel may be provided.

7. **Impressed Current Cathodic Protection.** Class approved ICCP system shall be provided. Automatic Impressed Current Cathodic Protection system shall be installed to reduce corrosion on the underwater hull and appendages. The system will be activated in accordance with manufacturer's instruction and maintained as soon as practicable after the ship is waterborne. Until activated, temporary cathodic protection is provided for the ship using adequate hanging anodes. Anodes shall have life of minimum 02 years.

8. **ICAF.** Class approved Impressed Current Anti Fouling system for sea water inlet ducts including AC system shall be provided with provision to replace anodes in floating condition. Anodes shall have life of minimum 02 years with ability to renew in-situ in afloat condition.
9. **AC 415V Distribution Board.** Sufficient number of distribution boards to be installed for power equipment located at appropriate positions. All systems will be three (3) phase, three (3) wire system and all circuits will be protected by the MCBs / Switch fuses / fuses of adequate ratings.
10. **230V Distribution Boards.** Sufficient number of 230V distribution boards to be installed. The 230V distribution boards will have MCBs for outgoing feeder protection.
11. **DC 24V Distribution Boards.** Sufficient number of distribution boards will be provided for 24V DC Distribution System. 24V DC will be available through battery charger cum transformer rectifier with set of batteries floating. Distribution Boards will incorporate MCBs for protection of outgoing feeders.
12. **Transformers.** Adequate number of transformers of suitable capacity to be connected in delta/delta to give an output of 230V, 3Ph, 50Hz AC and one transformer will be spare. All transformers will be of air cooled type with separate primary and secondary windings and enclosure of IP-23. All transformers shall be class approved.
13. **Batteries & Service Facilities.** 24V DC VRLA maintenance free, fire retardant, type approved for marine service shall be used for the following services: -
- (a) DG Set Starting / Controls, Main Engine Control and Monitoring.
 - (b) Emergency Lighting, Navigation Lights, Ships Automation System.
 - (c) Internal & External Communication Equipment & Navigation Equipment.
 - (d) Fire and Flood detection system control panels.
14. Capacity of batteries is to be finalized as per load requirements. Batteries shall be housed in suitable polymer/ FRP boxes and placed in a suitable place with adequate ventilation. Batteries to be provided with charging facilities and mega pulse battery life enhancer.
15. **Electric Cables / Runs.** All electric cables used for the building of the vessel shall be of marine quality copper cables having insulation & sheathing material approved by concerned classification society.
16. Twisted pair cables will be used for Intercom & Telephone Circuits. Cable run is to be located as far as possible away from spaces exposed to excessive heat, steam, exhaust gas.
17. Cables shall be run on Painted cable trays mounted on bulkheads/ deckheads. Bulkhead/ Deckhead MCT glands will be used wherever cables have to pass from one bulkhead/ deckhead to the other. For single cables, bulkhead or deckhead tubes may be used. Cable tray in weather deck should be of FRP / aluminum Material and should be provided with covers. 10% growth in cabling will be catered in the MCT glands.

18. An elaborate earthing scheme for the total ship will be developed for earthing of cables/equipment housing by shortest possible path. The earth connectors will be of copper strips.

19. Cable lugs terminals will be installed on each conductor for connection to motors/other equipment. Soldering of cable to terminals will be done wherever recommended by equipment manufacturer.

20. **Electrical Designation and Marking.** All power, lighting, electronic communication, weapon, other electric equipment and cables will be designated or marked in English numerals as per standard practice. For identification of each core, marked ferrules will be provided at both termination ends. Wherever applicable colour coded cables will be used. All permanently installed cables will be tagged as far as practicable to each point of connection.

21. **Motors.** The motors, in general will be selected so as to meet the relevant class rules. Enclosures of the motor will be of IP-56 grade in the weather/exposed deck areas and of IP-44 grade for the machinery spaces/inside spaces. The motors will have class 'F' insulation. The rating of various motors will conform to relevant class standards and as per load requirements of various auxiliaries. All motors weighing 20 Kgs. and above will have lifting eye bolts. Weather deck motors will have anti condensation heaters.

22. **Starters & Controllers.** The starters & controllers will be enclosed type and suitable for marine use. Starters for all motors less than 10HP will have DOL type starter and star/delta starter will be provided for motors of 10HP and above. Group starter panels will be provided wherever applicable. Starters will have the following components:-

- (a) Push Buttons for Start/Stop
- (b) Running Indication Lamps
- (c) Overload Relay
- (d) Single Phasing Protection forming part of the Main contactor
- (e) Facility for Remote Start/Stop, if required
- (f) Suitable Terminals and Wiring, etc.

23. **Lighting System & Low Power Outlets.** To meet the various requirements of illumination and to provide adequate illumination level and density, a complete lighting system will be installed. 240V, 1Ph, 50Hz, AC supply will be used for general lighting and 24V DC will be used for emergency lighting. Lighting circuit, in general, will be fed separately for the machinery room and accommodation spaces. Also, in machinery spaces and other important spaces where complete failure of lighting is not permitted, lighting will be achieved from two different circuits.

24. **General Lighting.** The ship shall be provided with LED general lighting arrangement (Marine type). It includes:-

- (a) IP-56, minimum 12 W LED type surface mounted cast aluminium weather deck light fitting.
- (b) IP-56 pendent (minimum 10 W) or Surface type (minimum 2x10W) LED type light fittings in machinery spaces.

(c) Non water-tight (IP-20) flush type (minimum 20 W) LED type fittings for accommodation.

(d) Non-water tight (IP-44) surface type minimum 20 W LED type light fittings for stores, galley and non panelled compartments above water line and all Mirror lights (minimum 11 W) at various locations.

(e) Decorative type light fittings will be provided for CO's cabins, Ward Room, Officer's cabins and sailor's dining spaces.

(f) For weather deck illumination, water tight (IP-56) floodlights (minimum 60 W LED flood light) will be provided in addition to normal weather deck LED lights of weather proof fittings. 05 Nos lead lamp with 20 m cable will be provided.

(g) Conventional/incandescent light fitting for MSO to avoid EMI.

25. For areas/compartments like magazine, paint store etc. where weapons, ammunition, etc. are to be stored, explosion proof fittings meeting magazine regulations will be provided.

26. For spot brightness that cannot be obtained by general illumination, chart table light, table lamps, and instrument illumination light shall be provided. A low wattage white light along with plug socket will be provided as bunk light in every bunk. Mirror lights, and desk lights, will also be provided. All weather deck lights will be controlled from wheel house.

27. Provision for darken ship (red lights) to be provided and selector switch to be located in wheel house. All weather deck compartment doors to be provided with door switches to maintain darken ship discipline.

28. **Emergency Lighting.** 24V DC operated emergency light fittings of approx. 20W/10W LED Light will be installed in machinery spaces, passageways, stairways, exits, accommodation, etc. In the event of failure of the ship's AC lighting, 24V DC emergency lights will come on automatically.

29. **Switches/ Switch Sockets.** All switches used for ship's lighting and low power supply will be of double pole type. Cast aluminum type Switches/Sockets of non-watertight/watertight type will be used depending on their location.

30. Adequate number of power outlet points will be provided throughout the ship in various compartments & spaces for use of portable equipment. Commercial make switches/switch sockets will be used to match requirements of living spaces.

31. **Navigation Lights & Morse Light.** Navigational lights as given below and meeting COLREG, 1972 shall be fitted.

<u>S. No</u>	<u>Light</u>	<u>Range</u>	<u>QTY</u>
(a)	LED Type Mast head Light, White 225°, operating on 230V AC and 24V DC supply	6 NM	1 No.
(b)	LED Type Side Light, Starboard Green 112.5°, operating on 230V AC and 24V DC supply	3 NM	1 No.

(c)	LED Type Side Light, Port Red 112 .5°, operating on 230V AC and 24V DC supply	3 NM	1 No.
(d)	LED Type Stern Light White 135°, operating on 230V AC and 24V DC supply	3 NM	1 No.
(e)	LED Type Anchor Light, White 360°, operating on 230V AC and 24V DC supply	3 NM	1 No.
(f)	LED Type Towing Light , White 135°, operating on 230V AC and 24V DC supply	3 NM	1 No.
(g)	LED Type Towing Light Yellow 135° , operating on 230V AC and 24V DC supply	3 NM	1 No.
(h)	LED Type All Round Light(NUC) Red 360° , operating on 230V AC and 24V DC supply	3 NM	2 Nos.
(j)	LED Type All Round Light(NUC), White 360° operating on 230V AC and 24V DC supply	3 NM	1 No.
(k)	LED Type Mast head Aviation Obstruction Light, Red operating on 230V AC/ 24V DC supply	3 NM	2 Nos.
(l)	Mast head Red Flashing Light - Flickering signal light – Red (120 flashes / min), operating on 230V AC supply with lamp.	--	1 No.
(m)	Brass Cast -Morse Signalling Light with lamp, operating on 230V AC 1Ph. 50Hz supply.	--	1 No.
(n)	Water Tight (IP-56) Morse Key, 230 V AC, 5A Made of Brass.	--	2 Nos.

32. Jack staff light at foxtle and ensign staff light at quarter deck to be provided. The location of all these lights will be as per requirements of "International Regulations for Preventing Collisions at Sea, 1972" (IRPCS)/IMO regulations. Any other navigation light to meet latest rule requirements will also be fitted on board.

33. **Navigation Light Control Panel.** One no type approved Programmable Navigation Light Control Panel with LED display touch screen panel shall be installed in the wheelhouse and equipped with audible and visual alarm. The alarm shall be activated in case of power failure, emergency or lamp fail with facility of automatic change over system from main light to spare light facility in case of failure. The panel shall control 230V AC and 24V DC navigation lights.

34. **TVRO System.** Gyro Stabilised Dish Antenna System capable of KU Band Satellite Reception to be provided. This system will comprise of a dome type antenna, Universal Quad KU band LNB, 6 numbers KU band Satellite Receiver, modulators, splitters, tap offs, sockets, etc. This dish antenna shall be connected to all TV sets onboard. Provision of transmission of all channels simultaneously should be there for selection of individual channel by each TV user. Multi switch/ Head-end arrangement to be provided for TV sets.

35. **Galley Equipment.** Following Galley Equipment to be provided:-
- (a) One 10 KW Cooking Range with two Hot Plates and Baking Oven.
 - (b) Two Electric Rice Cookers (Industrial - 01 no. of 4.4 litres capacity and 01 no. of 3.5 litres capacity).
 - (c) One Hot Water Boiler 15 Litre, 3.5 KW
 - (d) One Deep Freezer (250 Litre) - Vertical type.
 - (e) Two Refrigerators - Capacity 300 litres each.
 - (f) One Food Processor (capacity min 3.2 Ltrs).
 - (g) One Garbage Disposal unit grinder of capacity 5 Kg/charge or 3 Kg/min.
 - (h) One Idli Grinder 5 Ltrs capacity.
 - (j) One Combi-Steamer (Min 06 litres capacity).
 - (k) One Deep Fryer (min 6 Ltrs) and Two Air Fryers (min 4.1 Ltrs).
 - (l) Heavy Duty Mixer Grinder (02 Nos) (Min 4 Ltrs).
 - (m) One Micro Oven (Min 28 Ltrs capacity).
 - (n) One Vegetable Washing and Cutting Machine.
36. Safety indicator outside galley to be installed to indicate all appliances are switched off during night or when galley is locked. Single isolation switch for galley power supply will be provided outside galley.
37. **Cabin Fans.** Light weight fire retardant and corrosion resistant Adequate no. of Bulkhead mounted type cabin fans will be provided in all accommodation spaces, Dining halls, Wheelhouse, Machinery control room, radio room, and Offices, etc.
38. **Alarm Monitoring System.** The following alarm systems will be provided.
- (a) Audio Visual Alarm Annunciation & Shut Down System for Main Engines, DG Sets, Steering Gear to be provided.
 - (b) General Alarm System having Push on the Bridge and Bells throughout the ship.
 - (c) Call Bell System linking the Bridge and ECR with Machinery Spaces.
 - (d) A Fire, Smoke and Flood Alarm System to be provided. 24 V DC maintenance free lead acid batteries may be included for fire/ flood detection and firefighting system control panel. Further, in addition to audio alarm(audible at Foxle, quarterdeck, accommodation spaces, bridge and machinery control room), visual alarm may also be included for fire/ flood detection system. Flood warning system/ fire alarm system to be integrated with Main broadcast with voice module with facility to announce the location where the damage has happened. System also to be interfaced with IMCS.
 - (e) Audio visual alarm is to be catered while opening of Magazine compartment at Bridge and pistol locker in Wardroom.

- (f) Provision of MOB alarm panel at Wheel house and quarter deck will be provided.
- (g) Check fire bell will be provided in all HMG, LMG firing post, 12.7mm SRCGs and 30mm gun post. Control panel will be at wheel house.
39. **Test Panel.** 1 no. Test Panel with plugs for 415V, 230V & 24V DC will be provided at a suitable location.
40. **Office Equipment**
- (a) Eleven PCs of latest version (8 core processor 12 generation, or latest), Intel original motherboard, 16 GB DDR3 RAM with adequate expandability, 01 TB Hard disk, LED/TFT Digital Colour Monitor, Cordless mouse and keyboard, 02 DVD drive with one DVD writer, minimum 06 USB port, 10/100/1000 onboard integrated Network port, UPS (0.8 KVA minimum), Speakers and preloaded licensed software (minimum Microsoft Windows 10 professional with media or latest operating system, Microsoft Office 7 with Hindi version or latest, Anti-Virus Software - 03 years validity) etc with appropriate computer table and securing arrangements.
- (b) LAN connection with accessories including one high capacity Server (minimum Intel Xenon Dual core processor or latest), and preloaded licensed software (minimum Windows Server 2008 Enterprise Edition or latest) with heavy duty UPS (minimum 1.5 KVA). All eleven computers to be connected through LAN with CAT6+ cabling.
- (c) 03 Laser jet colour printers, 01 modem, 01 Multi function device, 02 Scanners, etc. to be provided.
- (d) Heavy duty photocopier with LAN connectivity - One
- (e) Digital Video camera with telephoto lens and cables for connecting to PCs (Min specs of 4K resolution, Screen size 3 inches, Zoom lens 20X, optical sensor 6MP. Photo sensor size 3½., Wifi-with standard accessories) - One
- (f) DSLR camera with all accessories - One
(Min specs of optical sensor resolution 32.4 MP, Screen display 3 inch, High-speed continuous shooting up to 10 fps, easy connectivity via Wifi)
- (g) Laptop (Latest Version) - One
(min i5; 12th Gen Processor; min 8GB RAM; min 512 GB SSD; 14" Display with integrated graphics card)
- (h) Paper shredding machine - Two
- (j) Digital Cordless phone
(Individual base unit speaker phone and cordless unit with charger) - Four set

SECTION-E
NAVIGATION & AID

1. **Radar and Nav Aids**

<u>Sr</u>	<u>Equipment</u>	<u>Qty / Set</u>
(a)	Solid State Radars (X band 100 W) for Navigation surveillance with ARPA facility to be provided. Radars to be integrated with other Navigation equipment	Two
(b)	Fibre Optic/ RLG / HRG Gyro	One
(c)	Conventional Gyro with quick settling	One
(d)	Echo Sounder with dual frequency (50 KHz and 200 KHz)	One
(e)	EM Log	One
(f)	Magnetic Compass with 06 spare magnetic correctors	One
(g)	DGPS (02), IRNSS (01)	Three
(h)	Auto Pilot including steering console with analog gyro repeater	One
(j)	Marine version Night Vision Binoculars generation three with minimum 5X magnification (Gen-III)	Two
(k)	Marine version Night vision Goggles generation three with head strap and helmet mount arrangement (Gen-III)	Two
(l)	Marine version Binoculars (7x50) with compass and range finder	Four
(m)	Marine version High resolution binoculars 28x110 or 25x100, water proof with all accessories & fittings	Two
(n)	Sextants, Distance meter, Douglas protector, Station pointer	One each
(p)	Star Globe, Range finder, Battenburg, Astro Calculator	One each
(q)	Hand Held GPS (latest model)/ IRNSS Receiver	Two each
(r)	Gyro repeaters (i) Analogue bearing repeaters (Pelorus) on both bridge wings each with telescopic azimuth (bearing) sights and one bearing repeater on bridge top. (ii) Digital repeater in bridge to be bulkhead mounted and one digital repeater in MCR. (iii) One Analogue and one digital steering repeater in waterjet compartment	One set as per qty indicated
(s)	Chart Table with Dimmer light and blinds/screen all around	One
(t)	Parallel Rulers (captain field)	Four
(u)	Dividers and Compass	Four each
(v)	Navigational Triangles	Two
(w)	Air Horn and Electric Whistle as per class	One each
(x)	Satellite Automatic Identification System(Sat-AIS)	One

(y)	Chronometer	Two
(z)	Clocks (GMT) & IST (Digital Light emitting)	Two each
(aa)	Long Range Acoustic Hailing Device	One
(ab)	Voyage Data Recorder	One
(ac)	ECDIS in accordance with Annex 24 MSC Resolution 232(82) adopted on 05 Dec 06 with paid version of chart software for atleast 03 years	One
(ad)	Integrated Bridge System (IBS) should be provided with minimum 03 MFDs integrating ECDIS with ARPA Radars, DGPS, EM LOG, Echo Sounder, Gyro, Auto Pilot Track Control, Satellite Automatic Identification System (Sat-AIS), Voyage Data Recorder(VDR) etc	01 set of complete IBS
(ae)	Telescopic Binoculars with minimum 25X magnification with fixed mounting in bridge wing for long range visual surveillance	02

2. **CCTV System.** A latest version marine CCTV system **with day/night cameras** consisting of a minimum **12** cameras as detailed below shall be installed for monitoring and recording various activities and evolutions onboard for 30 days. All the cameras shall have day/night capability, auto focus, zoom, pan and tilt functions. Individual selection of cameras shall be arranged on all monitors connected to the actual control station with recording facilities (storage capacity for minimum 30 days). Provision for digital recording shall be provided on the Main/Master control station. The break up details of the cameras with location is as mentioned below:-

(a) Minimum Two weather proof camera station with 67 IP rating or above and 1/4" CCD colour camera station with in built Telemetry receivers, Zoom lens, auto focus, wipe and wash, 360 deg pan and 180 deg tilt, Zoom- 18 x, focal length 4-7.38 mm at 0.1 lux and iris facility shall be provided in weather deck to cover the Ship's length.

(b) Minimum Three explosion proof Dome type 1/4" colour camera stations built in Telemetry receivers, Zoom lens, auto focus, 360 deg pan and 180 deg tilt, Zoom- 18 x, focal length 4-7.38mm at 0.1 lux and iris facility shall be provided in Machinery spaces (min 02 nos.) and Waterjet Compt. (min 01 no.).

(c) Minimum Five Dome type indoor camera station of suitable IP protection 1/4' HAD CCD colour camera station with inbuilt telemetry receivers, Zoom lens, auto focus, 0-360 deg pan and 180 deg tilt, Zoom- 18 x, focal length 4-7.38mm at 0.1 lux and iris facility in Bridge, MCR, other important unmanned locations, Stores and alleyways.

(d) **Monitoring Facility.** Two 26" LED in CO Cabin & Bridge with joystick. Three 17" LED in MCR/MSB, DCHQ & Ward Room with joystick.

3. **Action Information Organisation.** Electronic Chart Display and Information System (ECDIS) and plotter with C-maps support should have vector charts (S-57) with Electronic Navigation System (ENS) and Automatic Identification System (AIS) capabilities. Charts for Indian Coastal areas to be supplied.

4. **Meteorological Arrangements.** Following Meteorological arrangements is to be provided:-

- | | | |
|-----|-------------------------------------------------------------------------|---------|
| (a) | Barometer | - One |
| (b) | Barograph | - One |
| (c) | Hand held anemometer | - One |
| (d) | Anemometer (digital) to indicate true/relative wind speed and direction | - One |
| (e) | Wet & Dry bulb thermometer. | - Three |

5. **Window Wiper.** Pantograph window wiper shall be provided with water spray system for all bridge windows. Bridge windows to have fresh water connection for cleaning. Windows to have suitable blinds for protection from sunlight.

SECTION-F
COMMUNICATION

1. **Wireless**

- (a) Compact GMDSS Console to have following: -
- (i) Minimum 500 W MF/HF TX/RX with DSC and NBDP (Narrow Band Direct Printing) capable of - 02
 - (aa) Receiving High speed data broadcast
 - (ab) Battery charging system for the GMDSS console
 - (ac) The set should have CW and ALE facility in addition to GMDSS Compliant.
 - (ii) 25W VHF TX/RX with DSC - 02
 - (iii) INMARSAT 'C' with EGC receiver - 01
 - (iv) Navtex Receiver with printer - 01
- (b) Mil Grade Communication System
- (i) Software Defined Radio (SDR) in 02 V/UHF and 01 HF configuration [SDR-TAC(ICG) with DCT & accessories] - 02 (M/s BEL)
 - (ii) HF/VLF Rx EK 896 (New version VLF Rx) (M/s BEL Eqpt) with high speed data modem and MSK attachment - 02
 - (iii) IBA PC for EK-896 (M/s Datasol) (with UPS & Printer) - 02
 - (iv) Portable HF SDR Tx/Rx or equivalent (**BFE**) - 02
 - (v) Portable V/UHF SDR Tx/Rx or equivalent (**BFE**) - 02
 - (vi) Portable hands free VHF set with voiceducer - 08
with waterproof leather carrying case and spare battery
- (c) Survival Craft Equipment
- (i) EPIRB 406 MHz - 01
 - (ii) SART 9 GHz (01 for each life raft & Boats and 01 extra) - 05
 - (iii) Walkie Talkie GMDSS type with emergency battery - 05
(01 for each life raft & Boats and 01 extra)
- (d) Satellite Communication System
- (i) Mobile Satellite Services Terminal MK-II - 01
(M/s Avantel Softtech Ltd, Hyderabad) (**BNE**)
 - (ii) Ku band satellite Communication Terminal (**BFE**) - 01
 - (iii) INMARSAT FBB Terminal (01 Set) supporting following applications:
 - (aa) E mail and web mail
 - (ab) Real time electronic charts and weather updates.
 - (ac) Remote Internet and Internet access.

- (ad) Secure communication.
- (ae) Large file transfer
- (af) Video conferencing.
- (ag) Store and forward video.
- (ah) SMS and instant messaging

(e) Crypto PC (for Crypto work) with printer & security device (enhanced finger printing ID Biometric kit. Crypto Software in ICG scope.

(f) Provisions for one multi channel voice recorder for recording HF/VHF conversation from MSO/Bridge, broadcast, Nav and Machinery intercoms and for recording helo conversation shall be provided. It shall consist of 9/9" colour visual display unit, keyboard, modern, remote diagnostics modem 01 KVA UPS.

(g) Multi channel recording facility in MSO for recording conversation between ships, aircraft at different channel simultaneously. The system to be interfaced with HFV/UHF communication systems

(h) As far as possible common aerial working may be adopted to reduce EMI/EMC problems with respect to radio sets

2. **Visual Signalling**

- (a) Search Light with Luminous intensity of 110,0000 lux, - 01
Remote operated minimum range 3 NM
- (b) 15" Signaling Projector on each bridge wing with Xenon lamp - 02
- (c) Hand operated ALDIS Lamp on Mains & with Spare battery - 01
These Aldis Lanterns will have integral 24V battery and to be able to operate from Mains Voltage of 230V, 1Ph, 50Hz AC.
- (d) Standard International & Naval Signaling Flags & Pennants - 02 Set
- (e) Hand Signaling Flags (Semaphore flags) - 02 Set
- (f) Dressing Line - 02 Set
- (g) Safe for Secret Books (CBO/MSO/BRIDGE) with locking system - 03
- (h) National & CG Flags (Size 2 BD) - 04 Each
- (j) Emergency Aerial (For VHF and HF) - 01 Each
- (k) Mast Head Flashing Light with morse key - 02
- (l) Eyeleted bag(Canvas) - 03

3. **Emergency Arrangements.** To meet Class and GMDSS requirement.

4. **Internal Communication**

(a) **Main Broadcast/ SRE/ Intercom.** Main broadcast/SRE to be provided for general broadcast and crew entertainment along with high gain receiver. **One 32" Smart LED TV and latest configuration Blu Ray player each to be provided in SRE compartment and integrated with the SRE system.** In addition, following intercoms as per details as indicated against are to be catered for. The speakers and amplifiers of adequate capacity are to be provided at each place: -

<u>Sl. No.</u>	<u>Intercom</u>	<u>Position to be covered</u>	<u>Microphones to be installed at</u>
(i)	Main Broadcast	(a) Covers full ship (Speakers in weather deck should be weather proof.)	I. Bridge & Bridge Top II. All gangway positions III. MCR/ MSB IV. Captain's cabin V. Bridge Wings VI. Ward Room
(ii)	Armament	(a) Bridge (b) Gun Locations (c) Magazines (Speakers in weather deck should be weather proof.)	All locations i.e. as indicated in position – Headphones with throat microphones
(iii)	Navigation	(a) Bridge (b) MCR/ MSB (c) Both Bridge Wings (d) Waterjet compartment (e) Foxle & QD (f) Bridge Top (Speakers in weather deck should be weather proof.)	PTT microphone. Headphone with throat microphone. Headphone with microphone.
(iv)	Machinery	Bridge MCR/ MSB FWD Engine Room Aft Engine Room Waterjet compartment (Speakers in Engine rooms to be distributed so as to be audible at all locations during machinery operations)	PTT microphone. Headphone with throat microphones.

(b) **Auto Telephone Exchange**

(i) This system shall provide a means of communication between stations in the vessel and between the vessel and shore system. This C-DOT Automatic digital system shall comprise of 32 lines with sufficient telephone instruments. Automatic Exchange compatible for interface with shore telephone and various telephone sets. The automatic exchange shall have a paging interface with MB/SRE System.

(ii) 03 shore line telephone connection boxes shall be installed and interfaced with the auto telephone exchange.

(iii) The telephone sets shall be of desk type or bulkhead mounted type depending on the location and interconnect the Wheelhouse, MSO, CO's cabin, officer's compartments, crew's compartment, machinery compartment, MCR, Workshops, Store, Galley, pantry, etc. Telephones in machinery compartment shall be provided with audio/visual alarm to draw attention of personnel when call is received. Telephones in weather deck and machinery compartments are to be of weatherproof (IP 56) vibration resistant type. Cordless telephones (04) are to be provided in wardroom, CO Cabin and Bridge.

(iv) Auto telephone system shall operate on 230V AC (main) and 24V DC (emergency) fitted Battery with auto changeover to 24V DC on failure of 230V AC with 04 Hrs 24 V DC independent battery back up/ UPS back up.

(c) **Sound Powered Telephone**. (with battery backup) between the following positions:-

(i) Bridge, MCR/ MSB, CO's cabin, MSO

(ii) Bridge, MCR/ MSB & Machinery Spaces (Aft E/R, Fwd E/R & Waterjet compartment)

(d) **Wireless Internal Communication System**. Wireless RF Based Internal Communication system between following locations be provided besides Main broadcast with Amplifier, Microphone and Speakers:-

(i) Foxtle

(ii) Bridge

(iii) Bridge Top

(iv) Machinery Control Room/ MSB

(v) Aft Engine Room

(vi) Fwd Engine Room

(vii) Qtr deck

(viii) Waterjet Compartment

5. **Miscellaneous**

(a) Portable Loud Hailer (battery operated). - One

(b) Loud hailer with trainable speaker (100W) - One

(c) PA System (any reputed make) with 250 Watt amplifier, 03 corded mikes, 02 cordless mikes, 02 mike stand, 01 Collar microphone, 01 table top sleek boom microphone, 02 tower speakers (100 watt minimum) with 100 mtrs cable each.

SECTION – G

GUNNERY

1. Gun Armament

(a) One 30mm Gun (approximate weight 3000 kgs and Recoil force 5000 kgf) to be fitted on foxtle with FCS (Gun and FCS CG supply). Installation of Gun, Fire Control System (FCS), Gyro, Monitor, CDU Rack as well as laying of all connecting cables shall be done by the Yard. Weight of the FCS is approximately 400 kgs and the ship's deck where the FCS to be installed to be accordingly strengthened. The gun gyro to be centrally aligned while installation. Bi-metallic inserts if required for installation of gun/accessories to be catered. The gun mounting has a dia of about 2.7 meters and a barrel length 2.5 meters from the mounting (safe all-round clearance of 5.5 meters from centre of gun to be catered). Power supply requirement for the gun is 415 V 3 Phase 50 Hz 32 Amps. Power supply for FCS is 230 V 1 Phase 50 Hz 2 KW.

(b) Two 12.7mm Stabilised Remote Control Gun (SRCG), approx weight 400 kgs to be fitted. Installation of gun pedestal, gun Fire Control System, Gyro, monitor, CDU rack as well laying of all connecting cables shall be done by the Yard (Gun and its accessories CG supply). The gun gyro to be centrally aligned while installation. The bridge wing deck where the Gun would be installed is to be accordingly strengthened. Yard to cater for 415V/230V AC and 24V DC power supplies, as applicable.

2. Small Arms & Ammunition. Stowage space for the following Coast Guard supply small arms and ammunition:-

<u>Sr</u>	<u>Arms</u>	<u>Qty</u>
(a)	INSAS 5.56/SLR	02
(b)	7.62 mm LMG	01
(c)	9 mm/5.56 mm Carbine	03
(d)	Vary's Signal Pistol	01
(e)	7.62 mm Line Throwing rifles	02
(f)	Pistol 9 mm	02
(g)	51 mm Rocket launcher	02
(h)	<u>Ammunition Magazine to hold following</u>	
(j)	<u>Arms</u>	<u>Ammn Rds</u>
(k)	Rounds 30mm	1500
(l)	INSAS 5.56/SLR	4000
(m)	7.62 mm LMG	1800

(n)	9 mm/5.56 mm Carbine	1000
(p)	Vary's Signal Pistol	60
(q)	7.62 mm Line Throwing rifles	40
(r)	Pistol 9 mm	1000
(s)	51 mm Rocket launcher	10
(t)	12.7 mm	2000

3. **Supporting Facilities**

(a) Webbing and boarding/ landing party equipment and their stowage for six personnel as per **Annexure V to Appendix A**.

(b) One Pistol cupboard with light (dimensions 25cms length, 25cms height & 18cms width) to be located in Ward room to stow two pistols and one Vary's signal pistol.

(c) Bullet Proof Jacket for 06 men (06 Nos) as specified in guideline specifications with adequate stowage space to be provided. The Bullet Proof Jackets should be modular, adaptable for multiple threat levels and provide protection for vital areas of the body. It should be comfortable to wear and not restrict the individual from performing his duties and should be capable of being donned/ removed by the wearer without need of external assistance. Ballistic reevaluation of the Bullet Proof Jacket will be carried out at Terminal Ballistic Research Laboratory (TBRL), Chandigarh or any other approved agency and final acceptance by representative from DGQA and Coast Guard. Additional jackets to be catered for ballistic/ destructive testing. Specification/Characteristic features of bullet proof jackets and helmets are enclosed at **Annexure VI & VII to Appendix 'A'** respectively.

4. **Demolition Gears/items**. Stowage space for the following Coast Guard supply stores to be catered:-

<u>Item</u>	<u>Qty</u>
Locker to hold following demolition gear	
(a) 25 Lbs. demolition charge	24
(b) Hand grenades 7 Sec delay	24
(c) Signal Distress day and Night	24
(d) Detonator locker to hold associated detonators	24
(e) Associated fuses	24

SECTION-H
ENVIRONMENTAL & ECOLOGICAL REQUIREMENTS

1. **Sewage Disposal.** Light weight Electro catalytic type STP catering for 110% of the complement and vacuum toilet system both meeting latest IMO regulations to be considered. In case of malfunctioning of unit, provision for emergency direct discharge through storm valves to be provided. Location of STP plant breather pipe to be away from supply fans and ATU suction to avoid circulation of foul smell inside the ship. STP to have bypass provision for pumping out sewage in the event of equipment failure. The STP compartment is to be fitted with H₂S sensor and dedicated air supply and exhaust to be provided for the compartment above 150 mm from deck. An audio visual alarm is to be catered for at the entrance of the compartment and the alarm is also to be interfaced with ship's general alarm system. Additional hand held class approved H₂S sensor (02 nos.) also to be provided. The STP compartment shall be provided with adequate ventilation system i.a.w NCD 3930.
2. **Oily Water Separator (OBWS).** One in number Oil/Water Separator will be provided as per MARPOL Regulations, Annex I (Min capacity 0.5 m³/hr at 15 PPM) to purify bilge water oil contamination and discharge overboard satisfying latest MEPC requirements along with monitoring and control system. System will be incorporated with suitable tanks, motor driven pumps for feeding the system, tanks and discharging collected dirty oil to shore based collection facility, oil content monitor indicator, alarm etc.
3. Ship shall comply with all IMO standards and meeting Rules for Environmental protection

SECTION-J

PROJECT MONITORING

1. Project Monitoring Facilities will be established and managed on a turn-key basis. The seller shall setup PMS facility within one month of signing of the contract. A milestone schedule and PERT/ CPM chart for the construction of each vessel, shall be prepared by shipyard in consultation with Coast Guard Headquarters. This will form the basis for monitoring and reviewing of the progress of work.

2. **Project Monitoring (PM) Setup.** Project Monitoring Office is to be set up at CGHQ, CGRPT/CGOT and Shipbuilder which should be interconnected and has to be capable of online web based project monitoring, tracking drawing approvals and maintaining online record of all approved drawing including soft copies of approved drawing, provide online alerts on pending approvals, record, retrieval of correspondence/ clarification both at CGHQ and CGRPT/CGOT. The set-up be capable of generating status report by project Manager to assess the actual status of work, monitoring of project cost including record and tracking of payments made and projected quarter wise cash outflow for the project duration, undertaking project analysis and trouble-shooting etc. Entire correspondence shall be uploaded on the PMS for easy tracking and retrieval. The facilities would include following :-

(a) **Operational Support.** The set-up of the Project Monitoring Facilities will be provided on a Turnkey basis (Infrastructure, Software, Man Power, consumables etc,) including its general administration and maintenance.

(b) **Software.** Enterprise Project Monitoring facilities to be provided using Commercial off the Shelf (COTS) enterprise software tool.

(c) **Training.** Training for usage of the software tool to be provided.

(d) **Interfacing.** The PMS should be interfaced with Yard ERP/ equivalent to have easy information flow. All facility for functioning and sustenance of the CGRPT/CGOT which includes furnishing & its maintenance, stationary, communication, electricity conservancy, transport, tools/ equivalent for inspection, computer and associated accessories, software and other requirement shall be provided by ship builder. Any other requirement considered for project monitoring, not covered here, may be mutually agreed between buyer and seller.

(e) **Shipyard Project Manager.** Ship builder is to designate one Project Manager for the project as Point of Contact who shall be responsible for providing information about daily progress of work, documentation, project cost, planned work schedules, deviation from PERT to the ICG PM office daily.

(f) **CG Overseeing Team.** Coast Guard Refit & Production Team (CGRPT)/Coast Guard Overseeing Team (CGOT) would represent ICG as Point of Contact for regular monitoring of the progress at shipyard.

(g) **Ships Standby Crew.** ICG will depute the Ships crew to Shipyard for trials and taking over of ships as per the plan and projection by PM team.

3. Following PM facilities will be provided to CGRPT/CGOT project monitoring team for smooth execution of the project.

- (a) Suitable furnished air-conditioned office space for officer of the rank of DIG (with attached toilet) with separate offices for other officers (01 + 04 officers).
- (b) Suitable furnished air-conditioned office space for Sub-ordinate officers (12 Nos.) and Civilian Staff (04 Nos).
- (c) 01 Conference Room with minimum 20 Seating capacity with set up for presentations and video conferencing facilities.
- (d) Modular furniture as required for sr. (a) (b) and (c) above.
- (e) 01 Computer with printer each to officers at SI(a) with licensed software (with paid broadband connection) (with Central LAN connectivity) + 02 no. Laptops with latest configuration.
- (f) 01 computer with licensed software (with Central LAN connectivity) with printer each for Hull, Engg, Electrical, Budget, Billing and Admin sections.
- (g) 02 nos. Multifunctional high speed Colour LaserJet Printers capable of printing project drawings
- (h) 02 nos. Heavy duty Photocopier (LAN connectivity)
- (j) 01 no. Fax Machine
- (k) 02 nos. Scanner
- (l) 01 50" or above Smart LED TV in CGRPS office with presentation facilities.
- (m) 02 nos. 32" or above smart LED TVs (with paid cable TV connection)
- (n) 01 no. Paper Shredder
- (p) 02 nos. Telephone (direct line with STD and ISD facilities and two mobile connections) with paid monthly charges.
- (q) One DSLR Camera and Video Camera with Detachable lens, CMOS sensor. Lens 28-300 mm. Wifi facility and suitable flash.
- (r) 01 no. AC Staff Car, 02 no. SUVs and 14 seater mini AC bus for SOs/EP
- (s) 02 nos. secretarial staff and 02 nos. housekeeping assistant

4. Following PM facilities will be provided to Standby crew of each ship being positioned for taking over of the vessel prior to scheduled trials till handing over of the Ships.

- (a) Suitable furnished air-conditioned office for four officers including Commanding Officer (with attached toilet) shall be provided.
- (b) Suitable furnished air-conditioned office space for SOs and enrolled personnel (approx. - 15).
- (c) Modular furniture as required for sl (a) & (b) above for smooth office functioning
- (d) 02 nos. Computers with licensed software (with broadband connections)
- (e) 02 nos. Laserjet Printers (B&W, colour one each)

- (f) 01 no. Photocopier
- (g) 01 no. Fax Machine
- (h) 01 no. Scanner
- (j) 02 nos. TV 40" UHD (with cable tv connection)
- (k) 01 no. Paper Shredder
- (l) 01 no. Telephone (direct line with STD) and one mobile connection
- (m) 01 no. Washing Machine Fully automatic (08 Kg or more)
- (n) Transport - 01 SUV for officers and 01 no.14 seater mini bus for SOs/ EP.

5. **In-living Accommodation for Standby Crew.** Suitable fully furnished air-conditioned accommodation with attached bath for officers, suitable accommodation for Subordinate officers and dormitory type accommodation for Enrolled Personnel with galley facilities shall be provided. Necessary utensils, crockery, furniture, furnishing/ linen and music system with 32" UHD LED TV (with cable TV/DTH connection) shall be provided accordingly. The accommodation of 1/3rd of stand-by crew may be considered for 04 months from the schedule of trials till handing over of the ship. The accommodation for the balance crew may be considered for 02 months from the schedule of trials till handing over of the ship. Accommodation & requisite facilities would also be provided during GRDD period of ship.

6. **Galley & other facilities for CGRPT Staff.** The facilities of galley and in-living accommodation will also be extended to CGRPT, if construction activity is located away from the place where CGRPT is located.

7. **Visits of MoD Officials and CGHQ for Project Monitoring.** Suitable transport will be provided during visit of MoD officials and CGHQ reps. Necessary arrangements for on-site inspections also to be undertaken.

8. **Tests and Trials Team.** Suitable transport for the test & trials team to carry out various inspections, tests and for witnessing trials shall also be provided, as and when required.

9. **Duration & other aspects.** The above mentioned monitoring facilities are to be provided within one month of signing of the contract till three months after completion of the guarantee liability of all the vessels, as indicated above. Maintenance, re-fillings and upkeep of office set up, accommodation and equipment throughout the period of provisioning will be the builder's responsibility.

SECTION-K

MAINTENANCE & TRAINING

1. The on board spares (OBS) for the ship borne equipment/ machineries will be supplied along with the equipment itself by Shipyard. Shipyard will forward OEM recommended OBS list with technical offers. CG may exercise option to add or delete the item(s)/ quantity in the OEM recommended list to ensure sufficiency for three years (Including 01-year warranty period + 02 Years). MRL-OBS shall be recommended based on the likely consumption rate of the spares and on the exploitation pattern of the equipment. The same should be based on statistical consumption pattern and software for OBS inventory be provided as ship's maintenance management system as per maintenance schedule for periodic generation of planned work (Para 124(m) of Section – Hull refers). In case the vessel has been built earlier or equipment already in use, the spare parts requirement for the associated equipment for the vessel shall be based on statistical consumption pattern, rather than only being based on the MRLS. Bidder quoting lesser MRL-OBS in terms of range and depth will have to make good deficiency at their cost without any financial responsibility or liability to the Buyer within 30 day of intimation by the buyer to render equipment operational. Buyer would also have the option to amend the MRL-OBS proposed by the bidder during the Technical Negotiation of individual equipment to ensure its sufficiency, based on its past experience of exploitation of same or similar equipment. The seller would either 'Buy Back' the spares rendered surplus or exchange them on cost-to-cost basis with the spares as required by the Buyer.
2. B&D spares sufficient for 5 years are to be supplied in three lots within delivery period of first and last ship. List and quotations are to be finalised at the time of TNC/PNC with equipment supplier. Item list along with price list to be forwarded for CGHQ approval. Consignee for dispatch will be CGSD (Chennai).
3. Hard documents to be provided suitably grouped, (section wise H, E, L and Navigation & Communication) indexed and in moisture proof bound folders. Three sets of documentation for ships to be provided in CD-ROM and in printed hard copies as per guiding specification.
4. Software upgrade for all machinery and equipment shall be catered without cost implications by OEMs for up to 5 years from completion of guarantee period of last ship of the Class.
5. The training programe for ship's staff will include operator's training and first line of maintenance including trouble shooting. The training program for support staff will include second line of maintenance, undertaking overhaul/ routine maintenance of critical components of the machinery/ equipment. The expenditure on boarding, lodging & travel of ICG reps for equipment training at OEM premises shall be borne by the Buyer. The respective equipment/ system wise training curriculum to be finalized in consultation with ICG. Training will be required to be conducted for ship's staff and support staff of ICG as detailed below :-

<u>Sl</u>	<u>Course</u>	<u>No. of Ship's staff & support staff</u>	<u>Remarks</u>
(a)	Onboard Maintenance and operation of Machinery & Equipment	Complete Crew	Onboard Ship/ Yard premises for 03 weeks
(b)	Main Engine Maintenance Training	03 + 01	At OEM's premises for 02 weeks
(c)	Main Engine Controls Maintenance Training	03 + 01	At OEM's premises for 02 weeks
(d)	Training on IMCS	03 + 01	At OEM's premises for 02 weeks
(e)	Training on Integrated Bridge System	03 + 01	At OEM's premises for 02 weeks
(f)	Water-jet Maintenance Training	03+01	At OEM's premises for 02 weeks

SECTION - L

MISCELLANEOUS

1. **Ground Support.** Following mechanical vehicles per ship are to be provided for carrying out operational duties. All vehicles to be provided with “Coast Guard emblem and Coast Guard imprint”:-
 - (a) One Four Wheeler (SUV)(Latest EV model)
 - (b) Two Motor Cycle (135 CC or more)(EV model)
 - (c) 02 Geared Cycles
2. 01 AC Porta cabin (cargo container) of size 20X8X8.5 (Ft) with partition to be used as jetty office and shelves/ racks for keeping items/ material in lay apart store at shore location to be provided.
3. **Habitability.** The latest ship design concepts, with respect to ergonomics/ functional aspects and crew comfort as per class notation shall be adopted. Sound insulation shall be provided to all accommodation, work spaces etc. Modern modular accommodation spaces shall be provided in the ship. The design for the habitability of the ship shall meet the requirements regarding lighting, noise and vibration. Layout of bed/bunks shall be catered so as to minimize discomfort due to ship's roll/pitch.
4. **Library/books.** 50 in nos. reading books to be provided for the bookshelves catered at dining halls/cabins. Additionally, 02 in nos. reading tablet (Kindle type) to be provided with at least 03 years annual subscription.

(Refers to Para 118 of Section-B to Appendix 'A')

DIVING GEAR EQUIPMENT AND ACCESSORIES

S. No.	DESCRIPTION	SPEC	QTY/ SHIP
1.	<p>BASCCA Twin Cylinder Diving Set complete with following accessories:-</p> <p>(a) Two 80 Cu ft. Cylinders</p> <p>(b) One J-DBL Manifold</p> <p>(c) Two 7.25" dia Tank Boots</p> <p>(d) One DBL Back Pack</p> <p>(e) One Regecon Atlas 1st and 2nd Stage Regulator Regecon</p> <p>(f) One Metric Pressure Gauge</p> <p>(g) One Tri-Vista Mask</p> <p>(h) One Set Tool Kit</p>	Details during SOTR stage	02 sets
2.	Hard wire Divers under water Communication System (DUCS)	-do-	02 sets
3.	<p>Accessories :-</p> <p>(a) Reversible shorty wet suit</p> <p>(b) Turbo flex graphite fins</p> <p>(c) 130 ft. poly lifeline</p> <p>(d) Weight belt</p> <p>(e) 2 lbs. Vinyl covered weight</p> <p>(f) diver's nose clip</p> <p>(g) Udt u/w stop watch</p> <p>(h) 7" blade, red knife/ sheath</p> <p>(j) Blue overall</p> <p>(k) Mask swim</p> <p>(l) Gloves</p> <p>(m) Diver shoes</p> <p>(n) Spherical Float</p> <p>(p) Underwater Torch/Headlamp</p> <p>(q) Depth gauge wrist mounted</p> <p>(r) Sinkers 28 kg</p> <p>(s) Diver Ladder</p> <p>(t) Snorkel Tube</p> <p>(u) Shark Repellent</p> <p>(v) Underwater Digital Still Camera with video Recording facility</p> <p>(w) Underwater Communication Set (for 4 People)</p> <p>(x) Underwater flood light</p> <p>(y) Buddy line</p> <p>(z) Reversible shorty wet suit (Half)</p>	-do-	02 Sets

4.	Electric Started Diesel Driven Charging Compressor	Charging rate – 3-4 cfm Weight - 70 kg Maximum Overall limiting dimensions - L 90 cm x B 55 cm x H 55 cm.	01 no.
5.	Repair Kit (a) For dbl tank manifold (b) For 2nd stage regulator (c) For 1st stage regulator		01 set

COPY NO. 5

TOOLS FOR SHIP'S HUSBANDRY

Following chipping scaling and painting tools along with stowage are to be provided for ship hull Husbandry:-

<u>S.No.</u>	<u>Description</u>	<u>Qty</u>
1.	Aluminium step ladder & extending ladder	01 Each
2.	Mop handle & holder	10 Each
3.	Brush cleaning (Poly Propylene)	10 Nos.
4.	Brush cleaning (silicone)	10 Nos.
5.	Paint rollers & handle	20 Each
6.	Grease gun	10 Nos.
7.	Portable spray painting gun	02 Nos.
8.	Bosch 5" angle grinder	02 Nos.
9.	Bosch 7" angle grinder	02 Nos.
10.	Bosch Cup wire brush 90 mm HSS	10 Nos.
11.	Bosch cup wire brush 60 mm HSS	10 Nos.
12.	Hammer drill (2 KG) GBH 2-2 HDSE with a spade pointed and flat chisels	02 Nos.
13.	Ultrasonic thickness measuring machine hand held (B-1 Model)	02 Nos.
14.	Portable drilling machine (with drill bit set)	01 No.
15.	POP riveting machine (star model)	02 Nos.
16.	Vacuum cleaner domestic	02 Nos.
17.	Portable Emergency light, battery operated	04 Nos.
18.	<u>Set of Tools.</u>	
	(a) Open end spanner set	02 sets
	(b) Ring spanner set	02 sets
	(c) Screw driver set	02 Sets

	(d) Pliers	02 Nos
	(e) Adjustable spanner (small, medium & large size)	01 each
	(f) Screw drivers (heavy duty)	02 Nos.
19.	Chain block (1 and 0.5 Ton capacity each)	01 each
20.	Sling wire rope and shackle (1 & 0.5 Ton) 2/4 legged	01 set
21.	Marine Heavy duty jet spray Deck Washing Machine with hose of minimum 30 mtrs length	01 No.

COPY NO. 5

(Refers to Para 57(a) of Section-C to Appendix 'A')

WORKSHOP TOOLS: ENGINEERING

Following electrical tools/ instruments are to be provided:-

S.No.	DESCRIPTION	QTY/ SHIP
1.	Straight edge 500 mm length one side tapered	1 No.
2.	Steel square 200 mm	1 No.
3.	Feeler gauge 0.01 - 1.0 mm	1 No.
4.	Caliper, outside and inside 200 mm	1 Each
5.	Divider 200 mm	1 No.
6.	Steel rule 300 mm	1 No.
7.	Measuring tape 20 mtr. length (cloth)	1 No.
8.	Measuring tape steel, for tank sounding of 20 mtrs.	2 Nos
9.	Measuring tape steel 1.3mtrs	2 Nos
10.	Measuring tape Cloth. 10mtrs	2 Nos
11.	Wedges, 150 mm	2 Nos
12.	Die and Tap (with handle) , M 8 M10, M12 , M16, M20, M24	1 Each
13.	Socket spanner set, up to 36 mm size.	2 Sets.
14.	Spanner single end open up to size 36 mm	2 Sets
15.	Spanner double end open up to size 36 mm	2 Sets
16.	Spanner double end ring upto size 36 mm	2 Sets
17.	Adjustable spanner 150 mm, 200 mm 300 mm	1 Each
18.	Pipe wrench 350 mm, 500 mm	1 Each
19.	Flier 150 mm	1 No.
20.	Flier long nose	1 No.

21.	Screw driver sizes, 4", 6", 8"& 12"	4 Each
22.	Philips screw driver sizes 4 ", 6", 8" &12"	2 Each
23.	Files - Half round 8" (1st out), Round 8" (1st out) Flat 8" with handle, (smooth and rough)	1 Each
24.	Wire brush (for cleaning files)	4 No.
25.	Hammer (Ball pan) 2.5 lb.	2 No.
26.	Hammer (wooden).	2 Nos.
27.	Oil funnel, large 8" and small 4"	1 No. Each
28.	Oil can 150 ml.	1 No.
29.	Eye bolt M 12	2 Nos
30.	Punch (round outing)	1 No.
31.	Chisel flat 150 mm, 200 mm	1 Each
32.	Hacksaw frame with 12 blades 12"	1 No.
33.	150 mm parallel jaw bench vice	1 No.
34.	10 mm portable electric hand drill	1 set
35.	Drill bit 3mm - 10 mm for sr. no. 34.	1 Set
36.	Hole saw 5mm-25mm	1 Set
37.	Torque wrench 0-500 NM	1 No
38.	Venire Vernier Caliper	1 No
39.	Grease gun	1 No
40.	Hole punch	2 Nos
41.	Center punch	2 Nos
42.	Oil measuring Jar 1 Litre and 2 Litres	1 No Each
43.	Allen key 1-10 mm	2 Sets
44.	Circlip remover	1 No
45.	Cleaning tray	1 No

46.	Bearing puller three legs 12'	1 No
47.	Bearing puller three legs 8"	1 No
48.	Wooden saw 8" and 12"	1 No
49.	A/C gas charging Manifold With gauges	1 No
50.	Flaring tool kit	1 No
51.	Safety helmets	15 Nos.
52.	Safety Shoes (Non Skid)	12 Nos.
53.	Ear Defenders	12 Nos.
54.	Portable Lub Oil Transfer pump with hose set (Capacity 2 HP)	1 No

WORKSHOP TOOLS: ELECTRICAL

Following electrical tools/ instruments are to be provided: -

S.No.	DESCRIPTION	QTY / SHIP
1.	Screw driver 4", 6" & 10"	2 Nos. Each
2.	Philips screw driver ", 6"& 8"	2 Nos. Each
3.	Multi meter analog type with carrying case heads.	1 Set
4.	Test pen, (500V)	5 Nos.
5	Soldering iron set 65 W [Temperature/ Heat controlled)	3 Nos.
6.	Long nose plier insulated 220 mm	4 Nos.
7.	Plier insulated large size 220 mm	4 Nos.
8.	Cable stripper	3 Nos.
9.	Cable cutter	3 Nos.
10.	Battery hydrometer	3 Nos.
11.	Tong tester (Digital type)	1 No.

12.	Allen key set (1.5mm to 10mm)	2 Sets
13.	Battery operated torch & Beam Focusing Torch	2 Nos. Each
14.	Digital multi meter	2 No.
15.	Battery cell voltage tester	1 No.
16.	Crimping tool (1 - Suitable for shore supply cable & 1 - for less than 5 mm dia cable)	2 Nos.
17.	Continuity tester	2 Nos
18.	Spanner open & ring type from 8 mm to 30 mm	2 Sets Each
19.	Extension Board with 20m cable each (5/15 Amps) sockets	4 Sets
20.	Bearing Extractor three leg (size 4" & 8")	1 No. Each
21.	Motor Checker	2 Nos.
22.	Portable Electric drill (With set of bits)	1 Set
23.	Cable lugs (Various sizes)	5 Pkts each
24.	Hand gloves insulated	3 Sets
25.	Tweezers	3 Nos.
26.	Box spanner(8 mm to 20 mm)	2 Sets
27.	Hammer (medium size)	1 No
28.	External zinc reference electrode with cable 20 mtr	2 Nos.
29.	Screw driver heavy duty	2 Nos.
30.	Fuse extractor	3 Nos.
31.	Watch maker screw driver set	2 Sets
32.	Hot air blower (Capacity 300/500 watt.)	1 No.
33.	Megger (Insulation tester) - Analog & Digital	1 Each
34.	Soldering station	2 Nos.
35.	De-soldering gun	2 Nos.

Annexure IV

(Refers to Para 85 of Section-C and Para 25 (a)(VII) of Section-A to Appendix 'A')

DAMAGE CONTROL AND FIRE FIGHTING ITEMS**FIRE FIGHTING ITEMS**

SL.	DESCRIPTION	PART NO.	SPECIFICATION	DENOM	QTY
1	Coat for Fire Proximity Suit Large	NSN8415-720472099	NA	No	1
2	Trouser for Fire Proximity Suit Large	NSN8415-720472101		No	1
3	Aluminized Boot Size 8 (Medium)	NSN8430-720472670		PR	1
4	Gloves for Fire proximity Suit Large	NSN8415-720472103	JSS 4210 2612013	PR	1
5	Aluminized Hood with Visor	NSN8415-720472105		NO	1
6	Dividing Breaching	N4210-003053	IS:905 (Brass)	NO	2
7	Coupling Double Female	N4210-003054		NO	2
8	Coupling Double Male	N4210-003055	IS:901 (Brass)	NO	2
9	Extinguisher Fire CO ₂ 2Kg(Squeeze Grip Type)	N4210-P009445	EG/4707/03/NBCD	NO	15
10	9KG DCP Extinguisher	N4210-00043	JSS 4210 06 2012 (Rev-i)	NO	5
11	9 Liter AFFF Extinguisher	NSN 421072046 6924	EG/4707/03/NBCD	NO	20
12	Foam Liquid AFFF 20 Ltr plastic container	N4210-000800/K/4210	IS:4989 2006 (Rev-3)/ISS/4210 80:2011	NO	4
13	Fire Coat (Medium) for Fire Fighter Suit	N8415-002577	EG/4789/01/1 ES/NBCD	NO	4
14	Fire Coat (Small) for Fire Fighter Suit	N8415-002576	(Rev I) as promulgated vide (HQ MoD (N)/ DME letter	NO	2
15	Trouser (Medium) for Fire Fighter	N8415-002578	EG/474201/NBCG dated 15 Apr 11	NO	4
16	Trouser (Small) for Fire Fighter	N8415-002579		NO	2
17	Rubber Boots for Fire Fighter Size (9)	N8430 001178		PR	4

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18	Rubber Boots for Fire Fighter Size (8)	N8430 001177		PR	2
19	Gloves for Fire fighter	N8415- 002580		PR	6
20	Anti flash Hood for Fire Fighter	N8415 002585		PR	6
21	Helmet With Head Lamp for FF And DC	N8415- 002738		NO	6
22	FB 5 (X) Foam Making Branch Pipe with Pick Up Assly	N4210- 000689	EG/1707/09/ NBCD IS:209/	NO	2
23	Hose Impermeable with Instantaneous Coupling 70 MmX15 Mtr	N4210- 000689		NO	5
24	Hose Impermeable with Instantaneous Coupling 70 MmX30Mtr	N4210- 000685	IS:636 Type "B" coupling to IS:903 (Material LTB 2 of IS:318)	NO	2
25	Nozzle Jet/Spray	4210 P009410	DQAN DPG DQAN/44190 to 14491	NO	4
26	Nozzle Spray/Jet	4210 000508	DQAN 3022	NO	4
27	Portable Engine Driven 20 TPH Fire Pump	-	(Pump head- 8 M, Delivery head – 30 M) Weight – 40 Kg not exceeding 60X45X60cm	NO	1
28	Thermal Imaging Camera Model Argus 4 Lit/ Talisman Elite Lite B	N4210 P0009358	Argus Mi TIC F1	NO	1
29	Battery AA Alkaline 1.5 V LR-6	4210- P0009543	COTS item	NO	8
30	Anti-flash Hood	8445- 000302	IND/NAVY/TC/4287 (B)	NO	40
31	Anti-flash Gloves	8445- 00058	IND/NAVY/TC/4287 3(d)	PR	40
32	6 Kg DCP Extinguisher	No243- R020177	IS:15683	NO	5
33	CO ₂ Cartridge 60 gm	N4210- P063171/42 10-00:203	IS:4947	NO	5
34	CO ₂ Cartridge 180 gm	-	-	NO	5
35	CO ₂ Cartridge 120 gm	4210- 0001203	IS 4947	NO	5

DAMAGE CONTROL ITEMS

<u>Sl. No.</u>	<u>DESCRIPTION</u>	<u>PART NO.</u>	<u>SPECIFICATION</u>	<u>DENOM</u>	<u>QTY</u>
36	Band Multi Purpose for 100MM-200MM DIA pipes	N4320-001076	DOAN DRG. NO.13802'a' TO 13805'a'	NO	2
37	Band Multipurpose for 20MM - 50MM DIA pipes	N4320-001074	DQAN DRG. NO.13795'a' TO 13797 'a'	NO	2
38	Band Multi Purpose for 50MM-100MM DIA pipes	N4320-001075	DQAN DRG. NO.13798'a' TO 13801 'a'	NO	2
39	DC Patrol Bag	N8105 001173	DQAN DRG NO 13798"a"	NO	2
40	Flax Canvas (VARIETY NO.1)	N8310-400477	IS: 9293	MTR	5
41	Caulking Shipwright's Common	N5120-000404	DSP(N) 2016	NO	2
42	Cement Rapid Hardening	N8040-000093	EG/4742/01/NBC D dated 28 Mar 13	KG	40
43	Circular Stopper Plate Complete With Fittings	N4510-P009467	DQAN DRG DQAN.14674 (a)	NO	2
44	Clamps (EMM) 230 X 190 MM for use with 150 MM shore	N4510P-009447	DQAN DRG NO.DQAN/14673	NO	4
45	Portable Eductor 15 TPH along with accessories	N4320-004189	DOS (E)/NBCD/CNAL/145 (a)	NO	1
46	Plug Sq Tapered Soft Wood 100MM X 38MM X 25MM	N5510-001249	NHQ/NCD/1305 05	NO	5
47	Plug Sq Tapered Soft Wood 150MM X 50MM X 38MM	N5510-001246	NHQ/NCD/1305-07	NO	5
48	Plug Sq Tapered Soft Wood 150MM X 75MM X 50MM	N5510-001246	NHQ/NCD/1305-10	NO	5
49	Plug Sq Tapered Soft Wood 75MM X	N5510-001247	NHQ/NCD/1305-09	NO	5

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	20MM X 12MM				
50	Splinter Box 160X60X127 MM	-	-	NO	2
51	Plug SQ tapered soft wood 75MM X 25MM X 18MM	N5510-001242	NHQ/NCD/ 1305-04	NO	5
52	Plug Tapered Soft Wood 150MM X 50MM X 25MM	N5510-001243	NHQ/NCD/ 1305-06	NO	5
53	Plug Tapered Soft Wood 200MM X 100MM X 75MM	N5510-001244	NHQ/NCD/ 1305-03	NO	5
54	Plug Tapered Soft Wood 300M X 150MM X 100MM	N5510-001244	NHQ/NCD/ 1305-11	NO	5
55	Plug Tapered Soft Wood 75MM X 25MM X 12MM	N5510-001245	NHQ/NCD/ 1305-01	NO	5
56	sheet rubber type 'a' grade 1, thickness 3MM, SIZE 1M X 1M	N7220-00318	IS : 638 TYPE 'A' GRADE 1	NO	5
57	Shore Steel Adjustable Telescopic 0.4 M X 0.6 M	N2090- P009480	DME/NBCD/010 3(a)	NO	1
58	Shore Steel Adjustable Telescopic 1.0 M X 1.7 M	N2090- P009481	DME/NBCD/010 6(a)	NO	1
59	Shore Steel Adjustable Telescopic 1.5 M X 2.5 M	N2090- P009482	DME/NBCD/011 2(a)	NO	1
60	Splinter Box BOX 305 X 305 X 127MM	N8115- P009461	DQAN/13850	NO	2
61	Staple Steel Clampround 150MM	N5315- 000875	DRGNO. DQAN/1385	NO	2
62	Stopper with 3 grips	N5510- P009483	DME/NBCD/ 010 4	NO	2
63	Timber Planking T/G 75 X 225 X 3000 MM	N5510- 001232	IS : 2 & NHQ/ NCD 1307-01	NO	2
64	Timber Shore Soft	N5510-	IS : 2 & NHQ/	NO	2

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	Wood Him Season 100X100X3000MM	001234	NCD-1307- 01		
65	Wedge soft wood 100X25X25MM THICK	N5510- 000526	NHQ/NCD/130 6- 04	NO	5
66	Wedge soft wood 125X50X25MM THICK	N5510- 000527	NHQ/NCD/130 6- 04	NO	5
67	Wedge soft wood 150X75X25MM THICK	N5510- 000528	NHQ/NCD/130 6- 01	NO	5
68	Wedge soft wood 250X90X50MM	N5510- 000529	NHQ/NCD/130 6- 02	NO	5
69	Hardwood wedge	N5510- 001251	NHQ/NME/ CNAL 244	NO	10
70	Wooden mallet medium	N5120- 424701	IS:2922	NO	2
71	Splinter Box 250X250X 127 MM			NO	2
72	Portable Pump Submersible Motor Driven 20 TPH	EM 3010B- M120NM- 415V,440V	EG/4757/02/NBC D/20 TPH MD SUB	NO	2
73	Wire rope steel galvanized for sizing 2.57 mm	-	-	KG	2
74	Fireman's Axe With Insulated Steel Handle	N4210- 003052	IS:926 TYPE-B	NO	2
75	Compressed Air Breathing Apparatus CABA/BASCCA	NSN4240- 7204613446	NB/0695/CNAL/3 00 BRA BASSCA DT 12 AUG 16	NO	4
76	Flat Cold Chisel 22X200 H Button Head	N5110- P009411	IS:402	NO	2
77	Firmer Chisel Short Plain 50 mm	N5110- P0009411	IS:1930	NO	2
78	Round Crow Bar with Chisel and Claw ends 1070 mm Length 29 mm Dia	N5120- 000991	IS:704	NO	1
79	Emergency Life Support Apparatus (ELSA)	N4240- P0009400	DQAN/GS/QAP. 01 & amendment 1 letter 687449/DQAN/G S dt 11 Sep 98	NO	35
80	File 300 mm Bastard Rough Flat, Width 25	N5110- 0076569	IS:1913	NO	1

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	mm with Handle				
81	Flood Light Rechargeable and Water Proof	N6230-001003	EE.03/8926 dt 13 JAN 2000	NO	3
82	Non adjustable Flat Hacksaw Frame D-250-IS:5169	N5110-007568	IS:5169	NO	2
83	Hand Hacksaw Blade A250 X12.5X0.63X1.0 IS2594 HS	N5110-007565	IS:2594	NO	10
84	Double Face Sledge Hammer 1500 IS:841 (With Handle)	N5120-424735	IS:841	NO	2
85	Nail 63 mm Chequered Head	N5315-000660	IS:723	KG	1
86	Oakum White	N5330	IND/IC/2211(C)I S:3650	KG	1
87	Combination Side Cutting Plier Insulated	N5120 P0009437	IS:5098 GRADE-3	NO	1
88	Cross Cut Saw Grade 3 length 500 mm	N11007577	IS:5098 GRADE-3	NO	1
89	Scissors Type 2,230	N5110-002526	IS:989	NO	2
90	Engineer's Screw Driver 1.6 X10X 200 mm PR	N5120-000051	IS:844 TABLF-3	NO	2
91	Set of Spanners Sizes- D10/11,D13/14,D16/17,D19/24	N5120-424736	IS:2028	SET	1
92	Spanner Adjustable 200 mm	N5120-424737	IS:6149 TYPE A GRADE 1	NO	5
93	Spanner Wheel 305mm AF	5120-002025	DPIN/882(a)	NO	3
94	Tape Measuring 15 Meters In Metallic Case	N5210-005221	IS:1269	NO	2
95	Commando Torch (04 Cell)	N0584-P006143	IS:3083	NO	10
96	Battery Dry 1.5 V	N6135-001418	IS:9128,R20	NO	30
97	Telephone Field With Cable Twin Core, 30 Mtr	N5805-P009443	ITI CODE NDLL 11806 and EID,L 5301 Pt 1965 MK 3	NO&MTR	2
98	VHF Set Hand Held			NO	2
99	Helmet Fire Fighting With Integrated			NO	2

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	Communication Set				
100	Mail Double Point (Spiked Head)	N0265-4233225		KG	1
101	Smoke Extraction Fan	N421-P009651		NO	1
102	Jubilee clip 30mm, 50mm, 100 as per is 4765 size type 'a'			NO	5EACH
103	Life Line			NO	4
104	Aram badges	-		NO	24
105	Portable Drilling Machine	JSS 5310-06:93	0033100	NO	1
106	Drill Bits Set (3 mm to 12 mm)	-	HCS	SET	1
107	Pyrotechnic light stick 8"	-		NO	10
108	Pipe Wrench	-	35-55 mm	NO	1
109	Tullu Pump 1 HP	-		NO	1
110	Portable Grinder	-	230V,300W	NO	1
111	Wedges Hard Wood 250X150X40mm	5110P009498		NO	10
112	Wedges Hard Wood 150X75X25 mm	5110P009498		NO	10
113	M Seal or equivalent	-		KG	2
114	Tape Insulating 25 mm	-		NO	3
115	Fiberglass Cloth 0.5 mm Thick 1m Width	N0461-R0127S13		MTR	10

Annexure V

(Refers to Para 120 of Section-B to Appendix 'A')

LIST OF WEBBING EQUIPMENT FOR BOARDING/ LANDING PARTY

SI No	Item	Qty	Remarks
1	Hand Held GPS	01 No	
2	Laser Dazzler	06 Nos	
3	Base Unit (Tx/Rx) for hand free communication	06 Nos	
4	Multiutility Knife/Blade With wire Cutter	06 Nos	
5	Light weight man portable back pack	06 Nos	
6	Torch Water Proof	06 Nos	
7	Telescopic Inspection Mirror	06 Nos	
8	Telescopic Baton	06 Nos	
9	self locking hand cuffs pairs	06 Nos	
10.	Pepper spray	06 Nos	
11	Ammunition pack	06 Nos	
12	Pistol pouch for stowing 09 MM Pistol	06 Nos	
13	Tear gas Spray	06 Nos	
14	Chemical Light Stick	06 Nos	
15	Bullet Proof jacket with flotation capability	06 Nos	
16	Bullet Proof Helmet with visor & Hands Free Communication facility	06 Nos	
17	Black flame resistant single piece double chain boarding uniform with multiutility pocket	06 Nos	
18	Anti fragmentation protective eye glasses	06 Nos	
19	Non skid light weight marine boot	06 Nos	
20	Light weight utility waist belt with pouches for kit items	06 Nos	
20	Elbow protection pad	06 Nos	
21	Knee protection cap	06 Nos	
22	Shine protection pad	06 Nos	
23	Hand protection gloves	06 Nos	

**CHARACTERISTICS AND FEATURES OF LIGHT WEIGHT BUOYANT
BULLET PROOF JACKETS FOR INDIAN COAST GUARD**

1. **Background.** Lightweight Buoyant Bullet Proof Jackets (BPJs), for use by The Indian Coast Guard personnel, deployed for security duties at sea and ashore. The BPJs shall be used in hot and humid climate areas or at sea and in close proximity to water.

2. **Characteristics.**

General: General operational characteristics of the BPJ will include the following:-

- (a) Should be modular, adaptable for multiple the threat levels and provide protection to vital areas of the body.
- (b) Should be comfortable to wear and not restrict the individual from performing his duties.
- (c) Should be water proof and positively buoyant to keep the wearer, with the BPJ donned, afloat in water.
- (d) Should offer sufficient ruggedness to withstand rough handling in operational environment.
- (e) Should be capable of being donned / removed by the wearer without need of external assistance.
- (f) Design should make BPJ use conducive in hot and humid climate.

3. **Design:** The composition of the bullet proof shall include the following:-

- (a) Outer Carrier
- (b) Detachable Collar – Neck pad
- (c) Detachable Groin pad
- (d) Soft Armor Panel (SAP) with integrated trauma pads in the front, rear, sides as well as in the groin pad and collar/neck pad.
- (e) Hard Armor Panel (HAP) inserts for chest and back.

4. **Scalability of Configuration.** The BPJ will be scalable in the following three configurations:-

(a) **Basic:** This shall include the jacket, collar/neck pad and groin pad with Soft Armor Panels (SAP) and trauma pads.

(b) **Upgrade I:** In addition to the basic configuration at sub para (a) above, Upgrade I shall include one Hard Amour Panel insert in the front.

(c) **Upgrade II:** In addition to the Upgrade I configuration at sub para (b) above, this shall include Hard Armor Panel insert in the rear.

5. **Weight and Size.** The BPJ will be provided in two different sizes (Medium and Large), conforming to Indian physique, as follows:-

Sl.	Size	Chest Size	SAP (min area)	HAP (min dimension per plate)	Weight (Upgrade II version not to exceed with both HAP placed on the Jackets)
(a)	Medium	95cm – 105cm	5000 sq. cm	25 cm x 30 cm	6.0 Kg
(b)	Large	106cm – 115cm	5000 sq. cm	25 cm x 30 cm	6.3 Kg

6. **Ballistic Protection.** The protection levels required of the BPJ are as follows:-

(a) **Soft Armor Panel:** The SAP will withstand six rounds of 9mm x 19 mm parabellum from 9 mm SAF carbine (Indian) MP5 at 5 m, when fired in single shot and impacting at a minimum shot to edge distance and minimum inter shot distance of at least 51 mm.

(b) **Hard Armor Panel + Soft Armor Panel:** Each HAP together with corresponding SAP, will withstand six rounds of ammunition mentioned below, when fired in single shot and impacting at a minimum shot to edge distance of at least 51mm and minimum inter shot distance of 51 mm. The ceramic tile will be in single piece and placed till the edges of the HAP :-

(i) 7.62 x 51 mm Indian Ball of 7.62 mm SLR Bolt action at 10 m.

(ii) 7.62 x 39 mm ball (mild steel core) of AK 47 at 10m.

7. **Splinter Catching Ability.** The BPJ will have a 100% splinter catching ability and no bullet must ricochet after striking the HAP.

8. **Trauma Pads.** The trauma pads will be provided for the complete BPJ behind the SAPs, for trauma attenuation and absorption of shocks. The trauma pads shall be provided uniformly up to edges of SAP. Back Face Signature (BFS) will not exceed 44 mm.

9. **Effect of Moisture/ Water.** The ballistic properties of material used for SAP and HAP will not be degraded by moisture, body sweat or on coming in contact with water. Armor will be subject to ballistic test in dry as well as wet condition after soaking in water for 30 min.

10. **Buoyancy & Floatation.** The BPJ in fully ungraded configuration shall be positively buoyant when donned by a wearer of weight not more than 80 kgs, fully kitted with equipment/gear weighing not more than 12 kgs. The BPJ shall keep the wearer afloat, with at least bottom of neck clear off the water, without requiring assistance from the wearer. The BPJ shall be conditioned in sea water before being subjected to floatation trials. Floatation capability shall be ascertained by testing the BPJ on a fully kitted wearer over duration of approximately 4 hours. In addition, manufacturer is to certify capability for floatation for a duration of atleast 24 hours.

11. **Construction.**

(a) **Outer Carrier.**

(i) The jacket will comprise Jacket Fabric Cover of specifications Nylon 6.6 (IS:667); closely woven rip stop; ends/dm $136 \pm 5\%$ (IS:1963); picks/dm $136 \pm 5\%$ (IS:1963); mass/m² 140 g max (IS:7016 Pt I); breaking strength warp (N) (min 1150) and weft (N) (min 900) (IS: 1969); tearing strength warp(N) (min 200) and weft (N) (min 180) (IS:7016 Pt III); elongation at break warp (max 27%) weft (max 27%).

(ii) The fabric of the jacket will be water repellent (spray rating on uncoated face min 80, IS:390, water penetration zero as per IS: 392-1989, hydrostatic head min 100 cms of water as per IS 391-1975), soil resistant, fire resistant/retardant (max 5 sec duration of flame after removal of burner, max 5 sec duration of flame afterglow, IS:11871), matt/ dull surface finish and internal breathable material, comfortable to wear and rugged for use in operational conditions. It will also be treated for protection against UV exposure (min penetration factor 100, IS:3417-1979 reaffirmed 2003).

(iii) Both the inner and outer fabric of the carrier will be pre-shrunk before being stitched.

(iv) The outer fabric shall be of Black color with color fastness to washing (rating 4, IS:764), perspiration (rating 4, IS:971) and light (rating 5, IS:2454). Sample fabric of size 6"x6" in specified color is shall be provided during trials for approval.

(v) It will have a quick removal system with tear fasteners in the shoulders and waist. In addition to enabling quick removal, the system will enable user to carry out sizing adjustments according to the physique to ensure snug fit. The peel and shear strength of the tear fasteners used shall be not less than 125 gm/cm and 750 gm/cm² respectively when tested as per IS:8156-1994.

(vi) The jacket shall have at least three (03) external pockets to house weapon magazines/communication sets.

(vii) The shoulder will have a non slippery rifle stock retention surface.

(viii) The outer carrier shall have a man overboard drag loop/ handle affixed on the back to enable the wearer to be dragged out of water by external pulling by hand.

(ix) A belt of minimum 10 cm width shall be provided to properly secure the BPJ with the body of wearer around the waist and enable weight of the BPJ shall be distributed between shoulders and waist.

(x) The outer carrier shall be machine washable. Required certification is shall be provided by manufacturer.

(xi) The overall length of the BPJ (less groin pad) shall be such that there is no 'ride up' when wearer is seated.

12. **Soft Armor Panel (SAP)**. The SAP shall cover front, back, sides, groin pad and neck. The SAP shall be made of Ultra High Molecular Weight Polyethylene (UHMPE). The manufacturer must specify the number of layers, density of material and weight used for fabricating the SAP. Raw material assurance certificate will be provided from original manufacturer.

13. **Hard Armor Plate (HAP)**. The HAP shall be made of Ultra High Molecular Weight Polyethylene (UHMPE). The ballistic resistance layer in HAP shall exist throughout the plate. The size of each HAP shall be not less than 750 sq cm (minimum dimensions of 25 cm x 30 cm). The jacket design shall enable user to add or remove the HAP as required. The manufacturer must specify the number of layers, density of material and weight used for fabricating the HAP Raw material assurance certificate must be provided from original manufacturer.

14. **Groin Pad**. The BPJ shall have a detachable groin pad for protection of the groin area. The groin pad shall be secured to the vest by means of tear fasteners. When attached to the vest, there shall be no gap between the vest and the groin pad. The design of the groin pad will not impede the movement of the wearer whilst walking or running. It will cover minimum 500 sq cm protected area.

15. **Collar/ Neck Pad**. The BPJ shall have a detachable collar – neck pad (SAP), which shall provide all round protection to the neck covering minimum 500 sq cm with width not exceeding more than 80 mm. At the same time the collar pad will not restrict neck movement of the wearer. The protection will confirm to that of front and back (SAP) and will be certified by the vendor as a fair shot on 80 mm width of the collar is not feasible.

16. **Service Life**. The manufacturer shall provide certification for guaranteed life of BPJ as follows:-

(a) Minimum service life of not less than 10 years for protection material (HAP, SAP and Trauma pads).

(b) Minimum service life of outer carrier, (including the fabric and the stitching) of not less than three years. The manufacturer is to undertake refurbishment of the outer carrier, when required by the ICG, through separately concluded contract.

17. **Maintenance Instructions.** Design of the BPJ will enable easy maintainability. Maintenance instruction shall be printed/labeled in English and Hindi on the inner side of the jacket and will not wear off with rough use.

18. **Climatic Conditions for Use and Storage.** The performance of the BPJ will not be affected by temperature variations from -20 deg C to + 50 deg C and humidity level of 95% at 40 deg C. The BPJ will be capable of being stored at room temperature, without the need for special equipment like air conditioning and de-humidifiers.

19. **User Card.** A User Card/pamphlet will be provided with each BPJ.

20. **AMC.** The manufacturer will undertake refurbishment of the outer carrier, when required by Indian Coast Guard, through separately concluded contract.

21. **Product Support.** The manufacturer shall support the BPJs for a period of at least 10 years. Likely obsolescence of any component/module will be catered for by the firm undertaking AMC, through stocking of adequate spares. The firm shall also recommend / offer suitable substitutes for such components. In addition, up-gradation / modifications to the system resulting in enhancements to system performance will be intimated and offered to the Indian Coast Guard.

Ballistic Evaluation Trials Requirement.

22. The ballistic evaluation trials of the Bullet Proof Jacket shall be undertaken at TBRL Chandigarh or any other approved agencies and the financial implications towards the testing shall be borne by the vendor further the transporting of the sample to TBRL Chandigarh shall also be arranged by Vendor. The SAP shall withstand six rounds of 9mm x 19 mm parabellum fired from 9mm SAF carbine (Indian)/ MP5 at distance of 5 m, to achieve a muzzle velocity 430 ± 20 m/s and the weight of the bullet between 7.4 gm to 8.2 gm, when fired in single shot and impacting at a minimum shot to edge distance of atleast 51 mm and minimum inter shot distance of 51 mm. The trauma shall not exceed 44mm:-

SAP Testing

Sl.	Component	Am muni tion	Weapon	Referen ce Velocity (m/s)	Distance (m)	No. of shots	Acceptance Criteria
(a)	Front	9x19 mm	9mm SAF	430 ± 20	5 m	6 no.	No penetration for 6 fair shots and

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		Parabellum	Carbine (Indian) / MP5				Trauma ≤ 44 mm for all 6 shots
(b)	Back	9x19 mm Parabellum	9mm SAF Carbine (Indian) / MP5	430 ± 20	5 m	6 no.	No penetration for 6 fair shots and Trauma ≤ 44 mm for all 6 shots
(c)	Groin	9x19 mm Parabellum	9mm SAF Carbine (Indian) / MP5	430 ± 20	5 m	6 no.	No penetration for 6 fair shots and Trauma ≤ 44 mm for first shot and no trauma checked for subsequent 2 shots

23. The HAP and corresponding SAP, shall withstand six rounds of 7.62 x 51 mm Indian Ball of 7.62 mm SLR/Bolt action at distance of 10 m to achieve a muzzle velocity 838m/s ± 20 m/s and the weight of the bullet 9.4 gm to 9.6 gm, and 7.62 x 39 mm ball (MS core) of AK 47 at distance of 10m, to achieve a muzzle velocity 715 m/s ± 20 m/s and the weight of the bullet 7.45 gm to 8.05 gm, when fired in single shot and impacting at a minimum shot to edge distance of at least 51 mm and minimum inter shot distance of 51 mm. The trauma should not exceed 44mm:-

Testing of HAP conjunction with SAP.

Sl.	Ammunition	Weapon	Reference Velocity (m/s)	Distance (m)	No. of shots	Acceptance Criteria
(a)	7.62 x 51 mm NATO ball	SLR	838 ± 20	10 m	6 no.	No penetration for 6 fair shots and Trauma ≤ 44 mm for all 6 shots
(b)	7.62 x 39 mm AK-47 (Mild Steel Core)	AK-47	715 ± 20	10 m	6 no.	No penetration for 6 fair shots and Trauma ≤ 44 mm for all 6 shots

24. BPJ will have a 100% splinter catching ability and no bullet must ricochet after striking the HAP.

25. Back Face Signature (BFS) shall not exceed 44 mm.

General Guidelines.

26. Ballistic Evaluation Trials shall be conducted by TBRL, Chandigarh or any other approved testing agencies. The entire proceedings including preparation of equipment, test facilities shall be carried out by authorized reps of TBRL, in presence of the Indian Coast Guard nominated representative. No vendor/rep shall be permitted to witness the trials under any circumstances. The changes if any towards testing of BPJ & BPH shall be on shipyard account.

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27. Test sequence shall be decided by draw of lots.
28. Physical inspection including checking of documents and weight measurements of offered samples will be carried out by TBRL reps, in presence of nominated Coast Guard representative.
29. Results of the trials shall be made available to the vendor/representative at designed place and time indicated by Coast Guard on completion of said trials.

Sample Lot for Trials.

30. Each vendor shall offer adequate numbers of BPJ with complete accessories and Ballistic Helmets at No Cost No Commitment (NC-NC) basis for undertaking the trials as per requirement of TBRL, Chandigarh/ approved testing agency. Each size of BP jackets and Helmets will be used for destructive trials at TBRL Chandigarh or approved testing agency as per procedure, and one Bullet Proof Jacket with complete accessories shall be utilized for conduct of flotation trial. The charges if any towards testing of BPJ and BPH shall be on shipyards account.

31. Samples shall be chosen at random by CGHQ from the lot provided by the vendor for destructive testing and one for flotation trial. If chosen sample does not meet test requirements, no substitutions shall be made and entire group of that vendor shall be considered as not qualified.

Guideline for Ballistic Testing.

32. These details of BPJ shall be considered as the authority for formulation of trials directive. NIJ standard 0101.04 and NIJ standard 0101.06 shall be guiding sources of formulation of trials procedures. Procedures shall be modified as necessary to cater for facilities available with TBRL.

33. Ballistic trials shall be carried out on wet and dry samples separately.

34. **Conditioning.** For samples being tested in wet condition, conditioning shall include immersion of sample in water bath for approximately 30 mins.

35. **Angle of Incidence.** For testing of SAP of the 06 fair shots, 02 shots shall be fired at 30 angle of incidence (tolerance ± 5). In case of HAP and SAP combination testing, all 06 shots shall be fired at 0 angle of incidence (tolerance ± 5). Trials of SAP of groin pads shall be subject to three fair shot test at 0 angle of incidence (tolerance ± 5).

36. **Measurement of Back Face Signature (BFS).** BFS of all shots shall be measured and shall be less than 44 mm for each shot.

37. **Consideration of Fair Shot.** The following shall be considered a fair shot i.e. acceptable shot towards consideration of total number of shots required to be successfully sustained by the Armor sample:-

(a) A bullet that impacts the Armor sample or panel at an angle of incidence no greater than ± 5 from the intended angle of incidence, no closer to the edge of the ballistic panel than 51 mm and no closer to a prior hit than 51 mm at an impact velocity within ± 20 m/s of the required reference test velocity.

(b) A bullet that impacts the armour sample or panel at an angle of incidence no greater than ± 5 deg from the intended angle of incidence, no closer to the edge of the ballistic panel than 51 mm and no closer to a prior hit than 51 mm at an impact velocity which produces a penetration or an excessive back face signature.

(c) A bullet that impacts the Armor sample or panel at an angle of incidence no greater than ± 5 deg from the intended, no closer to the edge of the ballistic panel than 51 mm and no closer to a prior hit than 51 mm at an impact velocity more than 20 m/s above the required test velocity which does not produce a penetration or an excessive back face signature.

38. **DGQA Evaluation.** These tests shall be conducted under aegis of DGQA in laboratories so nominated by them. The BPJ's shall be evaluated for cloth hardness used in them as per the following trial methodology.

(a) One BPJ of each size per model per vendor along with basic material (4 mtrs of fabric and 5 mtrs of Velcro tape used in manufacturing of BPJ harness) with each BPJ.

(b) QC data pertaining to complete technical characteristics of basic material used in manufacturing of material used in BPJ harness (will essentially be submitted by vendor with trial samples for DGQA evaluation).

(c) Sequence of tests followed by CQA (T&C)/DGQA will be as under.

(i) Dimensional Measurements of Jackets.

(ii) Measurement of total cover area of SAPs.

(iii) Measurement of total cover area of HAPs (front, back, sides, throat and groin).

(iv) Total weight of BPJ after conditioning.

(v) Physical testing of basic materials harness.

(vi) Chemical testing of basic materials of harness.

(d) The tests shall be conducted in accordance with standards laid down by DGQA. There may be some additional testes that may be required to be carried out by testing agency to cater for testing systems/ sub systems that have not been catered for earlier.

(e) In case facilities to conduct tests are not available in DGQA or other Govt. laboratories, tests will be conducted in private accredited laboratories in India and the cost of the same will be borne by the bidder/ supplier.

(f) The item to be used for the tests shall be submitted by the supplier to the testing agency for the testing / trial.

39. **Certificate Acceptance.** Vendor certificate unless asked for in lieu of actual trial shall not be accepted.

Floatation Trials.

40. Floatation trial shall be conducted by nominated trials team at venue decided by Coast Guard.

41. One sample will be provided for floatation trial at venue directed by CGHQ.

42. The sample including neck and groin pad, will be physically examined to confirm no damage to the carrier or Armor components (SAP/HAP) including PVC sealing of the SAP. Sample can be rejected in case of any damage.

43. The accepted sample will be conditioned in sea water for a period of 24 Hours.

44. On completion of conditioning, the BPJ is to be re-examined to confirm no visual damage to any component (with reference to initial observation). Sample shall be disqualified in event of any new damage is noticed. No substitutions shall be permitted and entire group of that vendor shall be considered as not qualified.

45. Users of not more than 80 kg weight and not less than 60 kg shall be nominated to don the BPJ. Variation of weight of individual nominated wearers is not to exceed 5% from mean weight of group. Users shall be kitted with operating equipment weighing not more than 12 kg.

46. Wearer is to adjust fitting of BPJ by means of Velcro straps to ensure BPJ is fitted securely.

47. The wearer is to enter water from height of not more than 1 m. On entering remain inclined from the vertical by more than 10 degrees, in absence of externally applied forces, not including local wind conditions.

48. BPJ is to maintain the wearer in the upright condition afloat and should not remain inclined from the vertical by more than 10 degrees, in absence of externally applied forces, not including local wind conditions.

49. The BPJ is to keep the wearer afloat with the bottom of neck of wearer clear of water.

50. Duration of floatation trial shall be approximately 4 hours during which BPJ should remain snug while maintaining the wearer afloat with base of neck clear of water.

Verification of SAP Dimensions and Weight Requirement.

51. The SAP shall cover front, back, sides, groin and collar areas.
52. Total area under cover will be as follows:-
 - (a) 'L' size – not less than 5500 sq cm
 - (b) 'M' size– not less than 5000 sq cm
53. The weight of the BPJ, inclusive of both HAPs, collar pad, groin pad shall not exceed the following limits:-
 - (a) 'L' size – not more than 6.3 kg
 - (b) 'M' size – not more than 6.0 kg

Testing Methodology / Procedure.

54. The test shall be carried out by TBRL Chandigarh/ any other Govt./ private accredited agency.
55. Vendors shall submit a tracing (drawn to scale) indicating exact dimensions and shape of the SAP distributed over the BPJ, separately for Medium and Large sizes, along with the BPJ samples, when latter are called for by the Buyer.
56. Tracings/drawings submitted shall be used thereafter by trials team for confirmation of measurements of supplied samples during NC-NC trials as well as by DQA(N) during supply, post award of contract.

Note. The above procedures of Ballistic Evaluation, Flootation and Weight/ Dimension verification shall be parts of the overall Field Evaluation Trials which shall include other user tests as necessary to ascertain any/all aspects elaborated in the preceding operational description. The commercial bids of the vendor shall be opened subject to clearance of Ballistic evaluation at TBRL Chandigarh and flotation trials at nominated premises by buyer for the successful bidders.

CHARACTERISTICS AND FEATURES OF BALLISTIC HELMETS FOR
INDIAN COAST GUARD

Background

1. The Indian Coast Guard requires Ballistic Helmets, for use by Coast Guard personnel, deployed for security duties at sea and ashore. The Ballistic Helmets shall be used in hot and humid climate areas or at sea and in close proximity to water.

General Requirements

2. Details of Normal Ballistic Helmets are as follows:-

(a) Weight & Size of the Ballistic Helmets:-

Sl. No	Components	Head Size(cm)	Maximum Weight
(i)	Medium Size	52-57 Cm	1.3 Kgs
(ii)	Large Size	57-62 Cm	1.4 Kgs

(b) The Ballistic Helmets shall be manufactured in such a way to accommodate the hands free communication unit to be attached to Motorola GP-338 communication set.

3. **In Service / Self Life.** In Service life / Self life for Ballistic Helmets shall not be less than 10 years in Indian Tropical conditions. The seller shall guaranty the shelf life as stated above.

4. **Technical Characteristics:**

(a) **Physical Characteristics.** The Helmet will be light weight and ergonomic.

(b) **Operational Characteristics.** The Helmet shall not impair normal hearing of the individual.

(c) **Protection:** The complete helmet shall provide protection against 9mm KF ammunition (one shot each from front, rear and the two sides of the helmet) fired by Indian 9 mm Carbine from a distance of 20 mtrs, which will not degrade after helmet in immersed in water for minimum two hours.

(d) **Design.**

(i) Helmet shall adequately cover neck and ears, facilitate use of handset of communication radio, shall not hinder aiming during firing and enable unhindered use of in service optical devices and personal spectacles.

(ii) It will be provided with suitable adjustable straps/ fasteners with multi point support, chin cup and inner harness, rugged and harmless to skin, for securing the helmet and comfortable to wear in Indian Summers. The harness shall be of washable material. It will be possible to wear adjust and remove the helmet with easy with gloved hands.

(iii) Minimum gap between the harness and inner surface of helmet shall be 16mm and shall ensure air circulation. The maximum deformation shall not be more than 13 mm.

(iv) The surface shall be Black in colour. Any metal parts if used will be quoted or laminated with insulating material.

(e) **Accessories.** It will be provided with reversal cloth cover of disruptive and desert pattern suitable arrangement for securing it.

5. **Physical Characteristics (Size & Weight).** The size of the Helmet (to fit the head sizes given below) and weight (without communication equipment) shall be as under):-

- (a) Medium size - 52 to 57 cms (Weight Maximum 1.3 Kgs)
- (b) Large size - 57 to 62 cms (Weight Maximum 1.4 Kgs).

6. **Service Life.** Minimum 10 years.

7. **Makings of Size.** The size shall be printed / labeled on the inner side of the helmet and will not wear off with rough use.

8. **Trial Methodology General.** The trial shall be conducted under the aegis of DGQA and the ballistic trials shall be undertaken at TBRL Chandigarh.

9. **Ballistic Testing Procedure for Bullet Proof Helmet.** The Helmet shall be tested in both dry and wet conditions.

(a) **Wet Testing.** The Bullet Proof Helmet shall be soaked in water for 2 Hours prior to the ballistic testing.

Sl.	Ammunition	Weapon	Reference Velocity (m/s)	Distance (m)	No. of shots	Acceptance Criteria
(i)	9 mm KF ammunition	9 mm Carbine	397 ± 20	20 m	1 shot each at	No penetration Trauma ≤ 13

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					Front Rear Left & Right	mm Testing will be done with entire harnessing system intact.
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10. Each vendor shall provide Quantity 04 nos. Ballistic Helmets with complete accessories. The breakdown of 04 Helmets are as under:-

Sl. No.	Type	Medium	Large
(a)	Ballistic Helmet	02	02

11. These Helmets shall be transported to TBRL Chandigarh for trials by the vendor and the financial implication towards the trial shall be borne by the vendor.

Technical Trial: (DGQA Tests)

12. These tests shall be conducted under aegis of DGQA in laboratories so nominated by them. Sequence of tests shall be as under:-

- (a) Dimensional measurements of Ballistic Helmets.
- (b) Total weight of the Ballistics Helmets after conditioning.
- (c) Physical / visual testing of basic material.

13. The tests shall be conducted in accordance with standards laid down by DGQA. There may be some additional tests that may be required to be carried out by DGQA to cater for testing systems / sub systems that have not been catered for earlier.

14. In case facilities to conduct tests are not available in DGQA or other Govt. laboratories, tests shall be conducted in private laboratories in India. Where required supplier shall provide calibrated test equipment along with calibration certificates and the financial implication towards the testing shall be borne by the supplier.

15. The item to be used for the test shall be supplied by the supplier to facilitated the testing by testing agency.

DETAILS OF INDIGENOUS CONTENT (IC)

Ser	Items	To be indicated as a Percentage (%) of Total Base Contract Price (i.e) Total Contract Price less Taxes & Duties	Remarks
(a)	1. Share of Indigenous Costs		Outline details of indicated Serials (aa) to (ag) are to be enclosed in support of IC claim.
	(aa) Planned Share of Cost of Material including Yard material like steel, aluminum etc.		
	(ab) Planned Share of Cost of other Direct and Indirect Expenses including labour on material		
	(ac) Planned Share of Cost of Indigenous equipment		
	(ad) Planned Share of Cost of Share of Other Direct and Indirect Expenses including labour on equipment, including installation, STW and trials etc.		
	(ae) Planned Share of Cost of Overheads on labour, material and equipment including misc overheads.		
	(af) Planned Share of Miscellaneous Costs		
	(ag) Planned Share of Cost of First outfit of Naval stores		
	2. Share of Import Costs		
	(aa) Planned Share of Cost of Import Material including Yard material like steel, aluminum etc. including Custom Duties, Freight/Transportation and insurance for products imported in India.		
	(ab) Planned Share of Cost of other Direct and Indirect Expenses including labour on material.		

Ser	Items	To be indicated as a Percentage (%) of Total Base Contract Price (i.e) <i>Total Contract Price less Taxes & Duties</i>	Remarks
	(ac) Planned Share of Cost of Import equipment including Custom Duties, Freight/Transportation and insurance for products imported in India.		
	(ad) Planned Share of Cost of other Direct Expenses including labour on equipment, including installation, STW and trials etc.		
	(ae) Planned Share of Cost of all license fees, royalties, technical fees and other fees/payments paid out of India.		
	(af) Planned Share of Miscellaneous Costs		
(b)	Share of Basic Cost of FPV (Total of Ser 'a' above)		
(c)	Planned Share of Cost of Onboard Spares(Manufacturers Recommended List of Spares) as per the format at Annexure I to Appendix 'F' .		
(d)	Planned Share of Cost of Special Maintenance Tools and Special Test Equipment and software as per Annexure III to Appendix 'F' .		
(e)	Planned Share of Cost of Cost of Technical Documentation (in English Language) as per Annexure IV to Appendix 'F' .		
(f)	Planned Share of Cost of Training Aggregates as per Annexure V to Appendix 'F'		
(g)	Planned Share of Cost of Training excluding the cost of travel, boarding and lodging separately for operators and maintenance technicians and QA Representative. This should be given under the following two heads (as applicable) (Appendix 'F' refers)		

Ser	Items	To be indicated as a Percentage (%) of Total Base Contract Price (i.e) <i>Total Contract Price less Taxes & Duties</i>	Remarks
	(i) In India (ii) Abroad		
(h)	Planned Share of Cost of Freight and Transit Insurance (as applicable)		
(i)	Planned Share of Cost of Project Monitoring System (as per Annexure III to Appendix 'H'), where applicable		5
(k)	Planned Share of Cost of Handling B & D Spares		
(l)	Grand Share of Total Cost {sl (b) to (k) above}(as per list at Table 1 of Annexure I to Appendix 'F')		This Total share should amount to approximately 100%

COPY NO

UNDERTAKING TO COMPLY WITH INDIGENOUS DESIGN

We, _____ (“Name of Vendor”), do hereby certify, undertake and confirm that:

1. The Design of _____ (“Named Product”), as claimed by us in response to the RFP No _____ dated _____ is owned partly or wholly by us/by an Indian entity.

2. Further, we confirm that the Design of the Named Product, as claimed by us, has not been licensed from a foreign third party except for standard software licences such as, but not limited to OS / Database / _____ (Strikeout / Specify as applicable).

3. The ownership of the Design, as claimed by us, enables us to manufacture, realise, sell, provide Through Life Support, modify and upgrade the Named Product without any encumbrances, except as specified below: (If any form of encumbrances exist on the product or any of its subsystems these should be elaborated here)

4. We further claim that we own the following Intellectual Property (IP) Rights in relation to the design of the Named Product: (Specify any Patents, Registration of Designs, if any, held by the Vendor)

5. We also undertake to permit MoD/MoD appointed Specialists Committee, to inspect/ carry out technical verification at our premises of the applicable documents, such as Design Reports, Drawings, Specifications, Software Documents & Codes, Gerber files, etc, as may be reasonably necessary and required to prove the above claim of ownership of the Design of the Named Product. (Examination on site at company’s premises only. Documents, in any form, are not be sought nor required to be submitted for examination outside the Company’s premises)

6. Failure on our part to prove the ownership of the Design of the Named Product by us/by an Indian entity or submission of any false undertaking or claim as indicated in the response at any post contract stage of the intended procurement may make us liable to forfeiture of the PWBG to the extent of any direct losses or damages suffered by the MoD as a consequence of such false undertaking or failure to prove the ownership of the Design.

COMPLIANCE TABLE**For Fast Patrol Vessels**

Ser No	Requirement as per the RFP	Compliance/ Partial Compliance	Indicate references of Paras/Sub Paras of the Main Technical Document
General Conditions of RFP (Para 2 to 10)			
Part I - General Requirements (Para 1 to 28)			
Part II - Technical Requirements (Para 29 to 49)			
Part III - Commercial Requirements (Para 50 to 56)			
Part IV – Bid Evaluation and Acceptance Criterion (Para 57 to 60)			
Technical Requirements as per Appendix 'A' (Para 29 to 49 of RFP)			
	Essential Parameters 'A'	For compliance to Technical Parameters, the bidder is to furnish an undertaking that he is complying to all Technical Parameters and Terms & Conditions of RFP (<i>clause wise compliance matrix is not required to be furnished</i>). However, <i>the bidder has to clearly bring out non-compliance, if any, in covering letter of Technical bid. 'No Deviation Certificate / Undertaking' to be submitted with T-bid.</i>	
Commercial Parameters as per RFP			
	Commercial clauses of RFP	For compliance to Commercial clauses, the bidder is to furnish an undertaking that he is complying to all commercial Parameters and Terms & Conditions of RFP (<i>clause wise compliance matrix is not required to be furnished</i>). However, <i>the bidder has to clearly bring out non-compliance, if any, in covering letter of Commercial bid.</i>	
	Performance-cum-Warranty Bank Guarantee as per Para 2 of Appendix 'H'		
	Advance Payment Bank Guarantee as per Para 1.4(b) of Appendix 'H'		
	Earnest Money Deposit as per Para 20 of RFP (₹ 5 Crore)		

Note . 1: - An indicative list of document (both Commercial & Technical) to be submitted with Technical bid is indicated at **Appendix 'M'**.

WARRANTY CLAUSE

(To be amended as per requirement and no blanks to be left)

1. The SELLER warrants that the FPVs, the associated equipment and service under this contract conform to technical specifications prescribed and shall perform according to the said Technical Specifications.
2. The SELLER warrants for a period of **12** months from the date of acceptance of the FPVs by the Buyer at the designated Indian Port or as applicable, that the vessel and the associated equipment and service supplied under this contract and each component used in the manufacture thereof shall be free from all types of defects/failures. In case of systems/equipment, which have not completed trials prior delivery, the warranty of that particular system/equipment and service would commence from the day of successful completion of trials. The SELLER will undertake update (if any) software for all equipment upto 5 years from the date of acceptance of the last FPV.
3. If within the period of warranty, the FPVs and (or) stores and (or) spares are reported by the BUYER to have failed to perform as per the specifications, the SELLER shall either replace or rectify the same free of charge, maximum within **15** days of notification of such defect by the BUYER provided that the goods are used and maintained by the BUYER as per instructions contained in the Operating Manual. Warranty of the equipment would be extended by such duration of downtime. Record of the down time would be maintained by user in log book. Spares and all consumables required for warranty repairs shall be provided free of cost by SELLER. All activities including diagnosis, rectification, calibration, transportation etc, required for making equipment serviceable and available would be the SELLER's responsibility. The SELLER also undertakes to diagnose, test, adjust, calibrate and repair/replace the goods/equipment arising due to accidents by neglect or misuse by the operator or damage due to transportation of the goods during the warranty period, at the cost mutually agreed to between the BUYER and the SELLER subject to acceptability by the BUYER. The SELLER shall intimate the assignable cause of the failures.
4. SELLER hereby warrants that necessary service and repair backup during the warranty period, shall be provided by the SELLER and he will ensure that the cumulative downtime period for the FPVs and or the fitted equipment / system equipment does not exceed **45 days** of the warranty period. Thereafter, the Buyer reserves the right to make good the defects at Sellers risk and cost.
5. If the associated equipment and service, spares of FPVs fails frequently and/or, the cumulative down time exceeds **45 days** of the warranty period or a common defect is noticed repeatedly with respect to a particular item/component/sub-component, that complete item/equipment shall be replaced free of cost by the SELLER within **45** days of receipt of the notification from the BUYER duly modified/upgraded through design improvement in all equipment supplied/yet to be supplied and ESP supplied/yet to be supplied. Thereafter, the Buyer reserves the right to make good the defects at Seller risk and cost.

6. SELLER shall associate technical personnel of maintenance agency and QA of BUYER during warranty repair and shall provide complete details of defect, reasons and remedial actions for averting recurrence of such defects.

7. In case the complete delivery of the Engineering Support Package is delayed beyond the period stipulated in this contract, then the **SELLER** undertakes that the warranty period for the goods/stores shall be extended to that extent.

8. The SELLER warrants that the FPVs, the associated equipment and service supplied will conform to the Temperature and Humidity conditions as mentioned at **Appendix 'A' to RFP**.

9. The Seller agrees to provide back to back warranty of equipment/ system or any other item whose specified warranty by the OEM is more than 12 months and shall extend the same warranty to the BUYER at no additional terms and conditions.

10. **Notice of Defects**. The BUYER shall notify the SELLER in writing or by fax/ e-mail confirmed in writing of any defect for which claim is made under this guarantee as promptly as possible after discovery thereof. The BUYER's written notice shall describe the nature and extent of the defect. The last intimation of the defects by fax/e-mail/ letter shall be received by BUYER Rep (CGRPS) from respective ships within one week of the expiry of the guarantee period of the respective Vessel(s). Thereafter no such claim shall be entertained for guarantee defects.

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BUILD STRATEGY

1. This Build Strategy would broadly cover the following aspects: -
 - (a) Project Overview
 - (b) Definition of key milestones based on indicative list of milestones and broad range of timelines specified at Para 46 of RFP.
 - (c) Broad plan for execution of the Project as per delivery schedule indicated at Para 9 of RFP (including production/ finance).
 - (d) Brief Plan for meeting the Indigenous Content (IC) stipulated in the RFP.
 - (e) Standard of Preparation (SoP) of Platform/ equipment/ system.
 - (f) Project organisation structure as applicable.

2. **Project Overview**. The '*Project Overview*' should define, organise and interlink the various project elements which are required to be established/ setup by the in order to manufacture and deliver the contracted product (i.e. Fast Patrol Vessels (FPVs) and services within the RFP specified timeframes.

3. **Program Schedule**. The '*Program Schedule*' should give **estimated start and end dates** for each event with respect to the award of contract (T0) thereby creating a **calendar based schedule**.

4. **Project Organisation Structure**. This section should highlight the Bidder's organisation structure for the project implementation and define the specific organisational elements within this structure that would interact with the buyer during the program execution.

5. The Build Strategy should also clearly specify the below mentioned aspects with adequate documentation for substantiating the bidders claim:-
 - (a) Details of Manpower allocation. Total Manhour envisaged for the project. Separate heads to be given for managerial staff, production linked staff, design staff including the contracted work.
 - (b) Details of available Infrastructure and future infrastructure development plan.
 - (c) Details of location / site for construction. It should indicate the place where the construction is planned including the offloading sites through contractor.
 - (d) Details of land / Yard premises for Fast Patrol Vessels (FPVs) construction. Bidder to seek approval of Buyer prior commencing production of Fast Patrol Vessels (FPVs) at a place other than the one for **which the Shipyard Technical Qualification has been undertaken**.
 - (e) Details of hiring/ offloading being considered for the project.

- (f) Details of latest shipbuilding technology being adopted for construction and delivery of Fast Patrol Vessels (FPVs).
- (g) Broad plan for construction of each Fast Patrol Vessel, indicating the overlapping activities & resource allocation.
- (h) Likely contracts planned during the period of construction of the Fast Patrol Vessels (FPVs) for determination of yard loading during the execution of project.
- (j) MoU/ Agreement / Contract with design agency, if any.

COPY NO. 5

CERTIFICATE: MALICIOUS CODE
(To be rendered on the Company Letter head)

1. This is to certify that the Hardware and the Software being offered, as part of the Contract, does not contain embedded malicious code that would activate procedures to:-

- (a) Inhibit the desired and designed function of the equipment.
- (b) Cause physical damage to the user or equipment during the exploitation.
- (c) Tap information resident or transient in the equipment/networks.

2. The firm will be considered to be in breach of the procurement contract, in case physical damage, loss of information or infringements related to copyright and Intellectual Property Rights (IPRs) are caused due to activation of any such malicious code in embedded software.

(Signed)

Designation/Name/Address of firm
(Authorised to sign with
authorisation letter)

Date:

Place:

REPAIR AND MAINTENANCE PHILOSOPHY

1. The various levels of maintenance and repairs are explained in succeeding Paras.
2. The Operational-Cum-Refit cycle of the Vessel should be as follows: -
 - (a) (02) years operational cycle.
 - (b) The dry-docking interval shall be (02) years.
 - (c) The life cycle of FPVs is as indicated below

<u>Operational Period</u>	<u>Type of Refit</u>	<u>Refit Duration</u>	<u>Life of ship on Commencement of Refit</u>
24 Months	1 st Short Refit	3 Months	24 Months
24 Months	2 nd Short Refit	3 Months	51 Months
18 Months	1 st Normal Refit	4 Months	72 Months
18 Months	3 rd Short Refit	3 Months	94 Months
15 Months	4 th Short Refit	3 Months	112 Months
15 Months	1 st Medium Refit	6 Months	130 Months

3. **Ship Level Repairs/ Maintenance.** The Fast Patrol Vessel (FPV) would be maintained by the crew/operators during the operational cycle, who are required to carry out the ship level repairs. These tasks pertain to minor repairs and replacement of components and minor assemblies that can be carried out on board the Fast Patrol Vessel (FPV) without the use of highly specialised tools or test equipment. On Board Spares (OBS) are utilized for undertaking ship level repairs and maintenance. The requirements of spares and tools are indicated in succeeding Paras.

4. **Yard Level Repairs/ Maintenance.** The repairs, which are beyond the scope of ship's staff, are carried out by trained technicians during periodic refits by -Shipyards/ repair organisations. The bidder is required to provide the quantity & specifications of these spares, Special Maintenance Tools & Test equipment, technical documents, etc., to carry out such repairs as broadly indicated in Paras below. The B&D Spares required by Refit Agencies are inclusive of replenishment of OBS as well as to meet requirements of unit level repairs on board.

Spares

5. **Onboard Spares (OBS)**. The Bidder is required to provide sufficient OBS for all equipment for on board repairs, scheduled servicing & maintenance of all equipment falling due till (02) years of the operation of the Craft after warranty (**Total 03 years**), along with the delivery of the Vessel in conformity to the requirement of spares/ tools/ jigs stipulated in the exploitation/ maintenance document of respective equipment/ system. To this purpose, the Seller is required to provide Manufacturer's Recommended List of On board Spares (MRL- OBS) in format provided at **Annexure I to Appendix 'F'**. The Seller shall satisfy himself of the suitability and sufficiency of the MRL - OBS. The Seller shall establish the range and depth of spares required to support the ship level repair and maintenance for the prescribed period. The Seller shall also be fully liable in respect of the quality and quantity of the recommended spares and must supply any shortfall of spares without any financial responsibility or liability to the Buyer. A certificate of sufficiency for MRL-OBS has to be submitted by the bidder along with the technical bid.

(Note: To be read in conjunction with Para 37 of Part II of this RFP) ●

6. **Base and Depot (B&D) Spares**. The Seller is to arrange supply of MRLS - B&D spares for five years of exploitation, up to 15% (including levies, taxes, and handling charges) of the Basic Cost of the Vessel. This would be based on the likely consumption rate and exploitation pattern of the equipment. The seller would seek the comprehensive priced part identification list of spares from all sub vendors along with the technical bid of main equipment and forward it to the Buyer. This list would contain price, description, Pattern no. and quantity fitted on each equipment in respect of various parts/ components. This list along with the MRLS- B&D spares for each sub vendor would be submitted for all the machinery/ equipment, while finalising the respective equipment post signing of the main contract and as per timelines decided by Buyer. The format for specifying the MRLS-B&D is placed at **Annexure II to Appendix 'F'**.

7. **Spares Documentation**. A comprehensive Part Identification List (PIL) is to be provided for all equipment and system components in lines of the format enclosed in **Annexure II to Appendix 'F'**. A detailed component list and identification are also required to be provided to facilitate retrieval.

8. **Special Maintenance Tools and Test Equipment and Software**. The general purpose maintenance tools, test equipment and software used for maintenance on board would be supplied as per MRL-OBS route. In case of additional Test Equipment for onboard / shore maintenance, Buyer could indicate this requirement in the RFP upfront. The bidder in such cases would include these additional test equipment in the technical bid with details in the format placed at **Annexure III to Appendix 'F'**. The cost for these is to be included under SI (d) of the price bid format placed at **Appendix 'J'**. The cost column should be left blank in the Technical Bid.

9. **Technical Documentation**. The details of technical literature to be supplied with the system should be listed as per the suggested format at **Annexure IV to Appendix 'F'**. This should be provided with both Technical and price Bids. The cost column should be left blank in the Technical Bid. The overall financial implications for these will be included under SI (e) of the price bid format placed at **Appendix 'J'**. The documentation on shipbuilder's record of parameters pertaining to limits and gauges considered during the construction of Vessel also needs to be provided.

10. **Training Aggregates**. The requirement of training for the Vessel and associated equipment are specified at **Appendix 'A'**. The requirement of Training aggregates for the Vessel(s)/ equipment in terms of simulations, models, training aids and cut section of certain equipment, if required will be specified by the Buyer. These will be costed and submitted to Buyer along with the technical and commercial bid as per **Annexure V to Appendix 'F'**. The cost column is to be left blank in the technical bid. The overall financial implications for these will be included under SI (f) & (g) of the price bid format placed at **Appendix 'J'**.

MANUFACTURER'S RECOMMENDED LIST OF SPARES TOOLS AND SOFTWARE (MRL-OBS)
(To be submitted in accordance with Para 37 of Part II of RFP)

VESSEL/ EQUIPMENT: 14 Fast Patrol Vessels

Ser No	Eqpt Part No./ Model no./ SI No.	Eqpt Description	OEM Name	Vendor Name	Illustrated Spare Part List (ISPL) Reference/ Part No. of	Desc. of Spare	Country of Origin	Unit Price	Seller Order No. & Date	Currency Code	Total Qty	VED* Category	Recommended scale for 14FPVs	Remarks

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Annexure II to Appendix 'F'
(Refers to Para 6 & 7 of Appendix 'F')

MANUFACTURER'S RECOMMENDED LIST OF SPARES (MRL-B&D)
(To be submitted while finalising Equipment post signing of Contract)

VESSEL/ EQUIPMENT: 14 Fast Patrol Vessels

Ser No	Eqpt Part No./ Model no./ SI No.	Eqpt Description	OEM Name	Vendor Name	Illustrated Spare Part List (ISPL) Reference/ Part No. of Spare	Desc of Spare	Country of Origin	Unit Price	Seller Order No. & Date	Currency Code	Total Qty	VED* Category	Recommended scale for 14 FPVs	Remarks

***VED- VITAL / ESSENTIAL/ DESIRABLE** analysis of spares to be carried out by OEM prior to submission to the Buyer.
Original Equipment Manufacturer (OEM): _____ (Complete Address)

Notes: - (Combined for *Annexures I and II to Appendix F*)

1. Data regarding maintenance spares/stores like lubricants, sealing compound, gases should be given separately giving source of supply.
2. Data furnished as OBS and B&D should also include software backups, as applicable.
3. **In 'Remarks' column following information (if applicable) be given:-**
 - (a) If an item has a shelf/operational life it be marked as 'G' and life be indicated.
 - (b) Matching set of components be indicated.

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- (c) Item which can be locally manufactured in India should be marked 'LM'.
- (d) Items which cannot be manufactured in India due to sophisticated design/technology may be marked as 'SI' (Special Item).
- (e) If a component/assembly is common to other similar equipment offered by the OEM earlier, these should be marked 'CM' and name of the equipment be indicated.
4. OBS and B&D spares list should be drawn out of the 'Part List' of the equipment, which should be separately given as part of Technical Manuals.
 5. If the main equipment consists of other equipment, then OBS and B&D spares list should be prepared for them under proper heads. OBS and B&D spares list is to be prepared as per the maintenance concept of the customer.
 6. Items provided along with the equipment as spares should also be included in OBS and B&D list.
 7. Modules/ Shop Replaceable Unit (SRU)/ assemblies should be listed and their components should be included under them so as to relate each item of spare to their module / SRU / assembly.
 8. OBS and B&D list for test equipment should also be provided on the similar format.
 9. **Cost to be indicated in Price bid only.**

LIST OF SMT/ STEs, JIGS, FIXTURE AND INFRASTRUCTURE
(To be submitted with the Technical/Commercial bid)

Name of Vessel/ Equipment: **14 Fast Patrol Vessels**
 Original Equipment Manufacturer (OEM):.....

Ser No	Manufacturer's Part No.	Item Name	Unit Cost	Nos. Required		Brief Purpose	Remarks
				Onboard	Repair by Refit Agency		

Notes.

1. Prepare separate sheet for each type of equipment.
2. Specify in remarks column whether the Special Test Equipment (STE)/ Special Maintenance Tools (SMT) can be used as general purpose equipment on any other kind of equipment.
3. For Ship level repair quantity required should be for repair of one ship set at a time. For Yard level repair/Maintenance, qty should be for repair of sets of equipment fitted onboard the vessel(s) of the contract.
4. If test equipment is commercially available ex-India, the source of supply be specified.
5. Test equipment for calibrating the STEs should be included in the list above.
6. Test equipment which are required to be provided by the customer should also be included in the list above.
7. **Cost to be indicated in Price bid only.**

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TECHNICAL DOCUMENTATION (HARD AND SOFT COPY)
(To be submitted with the Technical/ Commercial bid)

Name of Vessels/ Equipment: **14 Fast Patrol Vessels**

Original Equipment Manufacturer (OEM): _____

Ser No	Technical Literature	Unit Cost	Scale For 14 Fast Patrol Vessel	Total Cost	Remarks
1.	User Handbook / Operator's Manual				
2.	Design Specifications				
3.	<p><u>Technical Manual</u></p> <p>(a) <u>Part I.</u> Tech description, specifications, functioning of various Systems.</p> <p>(b) <u>Part II.</u> Inspection/Maintenance tasks Repair procedures, materials used, fault diagnosis and use of Special Maintenance Tools (SMTs)/ Special Test Eqpt (STEs).</p> <p>(c) <u>Part III.</u></p> <p>(i) Procedure assembly/disassembly, repair up to component level, safety precautions.</p> <p>(ii) Record of Limits and gauge as per OEM for assembly/disassembly</p> <p>(iii) List of tools for a particular job of repair / maintenance</p> <p>(d) <u>Part IV.</u></p> <p>(i) Part list with drawing reference</p> <p>(ii) List of SMTs/ STEs with Test Bench</p>				

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4.	Manufacturer's Recommended List of Spares (MRLS)				
5.	Illustrated Spare Part List (ISPL)				
6.	Technical Manual on STE with drawing reference				
7.	Soft copy on the above Tech literature				
8.	Any other (specify) e.g. Service logs etc.				

Total Cost:

Notes:-

1. In case any additional equipment is used, their tech literature will be included.
2. If certain technical literature is being provided free of cost, it should be indicated in the remarks column.
3. **Cost: To be indicated in Price Bid Only.**

TRAINING AGGREGATES AND TRAINING
(To be submitted with the Technical/ Commercial bid)

Name of Vessel/ Equipment: **14 Fast Patrol Vessels**

OEM:

Ser No	Description of Training Aggregate	Scale for 14 Fast Patrol Vessel	Unit Cost	Total Cost	Remarks

1. Complete Equipment
2. Sectioned Equipment
3. Computer based training package based on interactive multimedia to include Training Aids in terms of IMTPs, CBTs, Presentations, Training Brochures, Charts, Working Models, Scaled Down Models, Blow up Diagrams, etc.:-
 - (a) Full graphics, Animation test and sound.
 - (b) Symptoms-fault correlation (expert system).
4. Training Aids to include:-
 - (a) Charts
 - (b) Slides
 - (c) Training Brochures
 - (d) Training Work models
 - (e) Blow up diagram
 - (f) Soft Copy
 - (g) OEM Videos for training / maintenance / troubling shooting of eqpt/system/weapons/ sensors etc fitted on FPVs.
5. Cost of training **to be indicated in Price bid only.**

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TRIAL METHODOLOGY

The Trial Methodology of 14 FPVs/ equipment fit/ system/ weapons and sensors etc has been elaborated in the GLS (**Appendix 'A'**). Bidders are advised to understand the complete requirement stipulated for the project and accordingly submit the Techno-Commercial Offers.

COPY NO. 5

COMMERCIAL CLAUSES

1. **Payment Terms**

1.1 **TERMS for Delivery**

1.1.1 The delivery of FPVs will be at a navigable port in India with ultimate consignee as Indian Coast Guard. The Delivery Schedule for FPVs shall be as per **Annexure I** to this **Appendix**.

1.2 **Currency of Payment**

1.2.1. The bidders should submit their bids in Indian Rupees.

1.3 **Contract Price and Requirement of Bank Guarantees**

1.3.1 **Total Contract Price.** The Total Contract Price will be the final price negotiated by CNC including taxes and duties applicable at the time of signing of Contract.

1.3.2 **Base Contract Price.** The Base Contract Price will be considered as Total Contract Price excluding taxes and duties applicable at the time of signing of Contract.

1.3.3 **Bank Guarantee(s).** For the purpose of payment of Advances to the Bidder and submission of various Bank Guarantees by the Bidder i.e Advance Payment Bank Guarantee (APBG) , Base Contract price will be considered. For Performance cum Warranty Bank Guarantee (PWBG), Total Contract Price including taxes and duties is to be considered.

1.3.4 All Bank Guarantee(s) requirements viz Advance Payment Bank Guarantee (APBG), Performance-cum-Warranty Bank Guarantee (PWBG), are to be submitted from Public or Private Scheduled Commercial Banks authorised by RBI for Govt transactions.

1.4 **Payment to Indian Bidders**

(a) The payment terms as per the stage payment schedule are given in **Annexure I** to this **Appendix**.

(b) **Advance Payment.** All stages till the delivery of each vessel, where there are no 'Deliverables' would be construed as advance (as defined at **Annexure I** to this **Appendix**). The Seller is required to furnish equivalent Bank Guarantee (BG) for advance payment. The prescribed format of the Advance Payment Bank Guarantee (APBG) is placed at **Annexure II** to this **Appendix**.

(c) The Advance Payment Bank Guarantee (APBG) (if provided for combined 14 FPVs) will be deemed to be proportionately and automatically reduced until full extinction along with and prorate to value of each delivery, as evidenced by corresponding copy of document proving delivery and invoices of goods/services supplied/provided. The seller has the option to furnish separate Bank guarantees for each FPV. For stage payments relevant to advance, payments will be released based upon the Completion certificate for all activities mentioned therein given by Buyer's rep and any other relevant documents as specified in the contract. The date of delivery would be reckoned from the date of release of Advance payment by the Buyer to the Seller (T0), provided the Seller submits the documents mandated by the DAP-2020 and Contract for release of advance by the Buyer within 45 days of signing of contract. In the event of the Seller not submitting the said documents within 45 days of signing of contract, the period between the 45th day and actual submission of documents will be excluded from the actual date of advance payment to arrive at the delivery date. In case, no advance is to be paid, the date for reckoning date of delivery would be the date of signing of contract.

(d) **On Delivery.** The payment will be made after successful delivery and acceptance of each FPV by BUYER on submission of following documents :-

- (i) Ink-signed copy of Seller's bill.
- (ii) Ink-signed copy of Commercial invoice.
- (iii) Inspection Acceptance Certificate demonstrating compliance with the technical specifications of the Seller to be issued by the Buyer. (Stage Completion Certificate)
- (iv) Claim for statutory and other levies to be supported with requisite documents/proof of payment, as applicable.
- (v) Exemption certificate for taxes/duties, if applicable.
- (vi) Warranty Certificate from the Seller.

(e) **Post Delivery.** The Seller will obtain clearance certificate from BUYER and submit any other relevant documents as specified in the contract for last stage payment as per **Annexure I to this Appendix** for claiming this stage payment.

(f) **Mode of Payment.** The payment will be made by CDA (IN/CG), New Delhi or as specified in the contract who will release the payment through cheque / EFT. The payments through Escrow Account is mandatory and the payment will be made by PCDA/CDA who will release the payment through cheque/EFT to an Escrow Account as per modalities of Escrow Agreement signed between BUYER, SELLER and Escrow account operating Bank at the time of signing of Contract. Format of Escrow agreement is placed at **Appendix 'N'**.

(g) **Payment of Taxes and Duties on Completed Vessels.** Payment of taxes, duties and statutory levies on completed FPVs will be made on submission of requisite documentary proof to Paying authority (viz. input tax credit adjustment and/ or remittance chalan). Reimbursement of taxes and duties will be as per rates and amounts indicated in the Commercial Bid/Contract or as per actuals whichever is lower.

(h) **Payment Terms for B&D Spares.** Payment for B&D spares will be as follows :-

Stage	Cost payable and Activity	Time Schedule
I	10% of B&D	Post signing of the Contract and against Advance Bank Guarantee (10% of cost of B&D Spares including total handling charges as quoted in Commercial Bid).
II	90% of B&D Spare Cost	On pro-rata basis on proof of receipt by the consignee_ alongwith 90% of total handling charges on pro-rata basis.

The percentage of advance paid and LD (if any) on B&D spares will be deducted from the relevant stage payment of B&D spares. The percentage and amount of advance to be deducted should be indicated in every stage bill while claiming the payment. The full amount of advance paid will be adjusted in stages.
The Handling charges will be on pro-rata basis of the total value of B&D supplied by the Seller on actuals.

(j) **Payment Terms for Project Monitoring Expenses.** The payment stages will be decided based on mutual deliberation between Buyer and Bidder during CNC (**Annexure III** to this **Appendix** refers).

(k) **Exchange Rate Variation.** Exchange Rate variation shall be applicable. The indigenous & import components as also the various currencies (of the import components) for ERV purposes, must be determined in advance and will be applicable on import orders by Seller only. **The guidelines on protection of Exchange Rate Variation are given at Annexure IV to this Appendix.**

2. **Performance-cum-Warranty Bank Guarantee Clause.** A Performance-cum-Warranty Bank Guarantee (PWBG) of 3 % of value of the Total Contract Price including taxes and duties would be furnished by the Bidder in the form of a Bank Guarantee to sequentially act as Performance Bank guarantee till the delivery and as Warranty Bank Guarantee on delivery . The PWBG shall be submitted by the Bidder within one month of signing of contract and shall be valid for a period, until three months beyond the warranty period, as specified in the RFP. If at any stage, the Performance Guarantee is invoked by the Buyer either in full or in part, the Seller shall make good the shortfall in PWBG within 30 days by an additional Bank Guarantee for equivalent amount. In the event of failure to submit the required Bank Guarantee against invoked Performance Guarantee, equivalent amount will be withheld from the next stage payment till the shortfall in the Bank Guarantee is made good by the Bidder. The prescribed format of the Performance-cum-Warranty Bank Guarantee is placed at **Annexure V to this Appendix**

3. **Liquidated Damages (LD).**

(a) In the event of the Bidder's failure to submit the Documents or/and delay in completion of the project and if the delay is attributable to the Bidder, the Buyer may at his discretion withhold cost of the specific FPV or 1% of the Base Contract Price whichever is higher, until the completion of the contract. In case of delay in completion of the project and if the delay is attributable to the shipyard, Liquidated Damages will be levied after a Grace Period, as amplified below:-

(i) **Grace Period.** Grace period will be calculated at the rate of 5% of the build period (in months), subject to a minimum of one month and a maximum of three months.

(ii) **Liquidated Damages.** Beyond the Grace Period, LD will be levied at the rate of **1/100** of the **delay percentage** {Delay percentage = (Period of Delay wrt the build period, in month) x 100 / (Build Period in month as per contract)} of the Vessel Cost upto a limit of 10%, for every month of delay or part of a month delay (Any extension given by the buyer for delay attributable to buyer or Force Majeure Clause to be factored in delivery period). Vessel cost is as defined at Para 1 of **Annexure I to Appendix 'H'**, excluding cost for BFE and B&D spares.

(iii) Waiving of LD may be done at discretion of Buyer, if it is established by Buyer that reasons for delay is either on account of Buyer or due to Force Majeure.

(b) **Consequence of Not Achieving Specified Speed.** The Contractual speed of the ship shall be 33 Knots at 92 % MCR, based on the measured mile trial runs, with clean hull, in calm (sea state 0-2) and deep water, at fully loaded condition. If the speed with clean hull in deep and calm water is less by more than 1/2 knot of contractual speed, the Vessel Cost (Total of SI (b) to (h) and (m) of **Appendix 'J'**), as adjusted by the escalation clauses of the Ship, shall be reduced by 0.5% for every shortfall in speed of 1/2 knot, or on pro-rata basis for part thereof from the contractual speed. If the speed falls short by more than One knot, the Seller shall take necessary steps to bring the speed to the 33 knot at their own cost and within an indicated time frame.

(c) **Consequence of Delay in Delivery of B&D spares.** In the event of the Seller's failure to have the B&D Spares delivered by the date/dates specified in the contract, the Buyer may, at his discretion withhold any payment until the whole of the Spares have been supplied and the Buyer may also deduct from the seller, liquidated damages to the sum of **1/100** of the **delay percentage** {Delay percentage = (Period of Delay in Delivery in Months) x 100 / (Delivery Period in months as per contract)} of the contract price of the delayed/ undelivered spares mentioned above for every month of delay or part of a month, subject to the maximum value of the Liquidated Damages being not higher than **10%** of the contract price of the value of delayed spares (Any extension given by the buyer for delay attributable to buyer or Force Majeure Clause to be factored in delivery period).

4. **Denial Clause.** In case the delay in delivery is attributable to the seller or a non-force majeure event, the Buyer may protect himself against extra expenditure during the extended period by stipulating a denial clause (over and above levy of LD) in the letter informing the supplier of extension of the delivery period. In the denial clause, any increase in statutory duties and/or upward rise in prices due to the Price Variation Clause (PVC) and/or any adverse fluctuation in foreign exchange are to be borne by the seller during the extended delivery period, while the Buyer reserves his right to get any benefit of downward revisions in statutory duties, PVC and foreign exchange rate. Thus, PVC, other variations and foreign exchange clauses operate only during the original delivery period. The format for extension of delivery period/performance notice under the Denial clause is at **Annexure VI to Appendix 'H'**.

5. **End User Certificate.** The Buyer shall also provide End User Certificate as applicable and wherever feasible, for material and equipment imported for the purpose of construction of the FPVs.

6. **Insurance.** The SELLER is advised to cater for all requisite insurances including BRI (Builders Risk Insurance) within the bid amount.

7. **Delivery Period Extension.** In case of delay in delivery of any deliverables, The Bidder shall submit a consolidated case to the BUYER showing the effect of delays on the project including causes at least 05 months in advance prior to contracted delivery date. The BUYER shall undertake the review and analyse these delays promptly and process the case for Delivery Period (DP) **Extension With/Without LD (as applicable)**. The amendment to the Contract after approval of **Competent Authority** will be undertaken by the BUYER. Such amendments to the Contract shall be mutually signed by both the Parties (i.e. BUYER and Bidder). The approval of the DP Extension will be as per **Annexure VI to Appendix 'H'**.

STAGES OF PAYMENT AND DELIVERY SCHEDULE

1. The vessel Cost (Total of SIs (b) to (h) and (m) of **Appendix 'J'**) will be paid as per following stages on completion of respective stage activity. The vessel cost will not include costs towards Handling of B&D spares, and Project Monitoring System, the payment stages of which have been specified at Para 1.4 (h) & (j) of **Appendix 'H'** respectively.

(a) 15 stages payment with pre-requisites as elaborated below:-

Stage	% of Vessel's Fixed Cost	Activity	Pre-Requisites
I	10%	Post signing of contract (10% of Contract Cost)	On submission of bank guarantee of equal value and performance – cum-Warranty Bank Guarantee as per Para 2 of Appendix 'H'
II	10%	(a) Proof of ordering steel/ Hull Construction (b)Submission of Cardinal date programme /Production PERT	To be certified by owner's rep/overseer. Payment shall be released on submission of Bank Guarantee of equal value.
III	5%	(a) Submission of Drawing Schedule (b) Submission of detailed network of activities including Work Breakdown up to launching of FPV (c) Submission of main hull structural drawing (d) Order for all major pre-launch items finalized and placed	
IV	5%	(a) Completion of 10% physical progress of construction and submission of weight analysis for first ship of series only (b) Submission of equipment installation schedule	
V	5%	(a) Completion of 15% physical progress of construction and submission of weight analysis for first ship of series only (b) Completion of main engines, gear boxes, girders & Seatings/m/c seating as applicable to erecting of 60% hull	

VI	5%	(a) Completion of 25% physical progress of construction and submission of weight analysis for first ship of series only (b) All access holes to be cut and preparation of main seating in m/c compartment (c) Placement of order for majority equipment & systems affecting conduct of basin trials	
VII	5%	(a) Pressure test of built in tanks (b) Manufacture/procurement of W/T doors and hatches (c) Submission of network of balance activities upto delivery alongwith resource allocation	
VIII	10%	(a) Completion of machinery , equipment & fittings with associated system required for reaching pre-launch stage and submission of weight analysis for first ship of the series only (b) Launching of the vessel or equivalent stage of construction reached	
IX	5%	Completion of 40% physical progress of construction and submission of weight analysis for first ship of the series only	
X	5%	Completion of 60% physical progress of construction and submission of weight analysis for first ship of the series only	
XI	5%	Completion of 85% physical progress of construction and submission of weight analysis for first ship of the series only	
XII	10%	Completion of Basin Trials	
XIII	5%	(a) Completion of inclining experiments and submission of weight analysis for first ship of the series only and draft survey for subsequent ships (b) Successful completion of CST (c) Completion of Training	
XIV	5%	(a) Successful completion of FMT. (b) Stowage of all onboard spares. (c) All Documents, drawings, manuals for the ship to be made available to the concerned agencies as per specifications. (d) Completion of first reading of D-448 and acceptance of vessel.	

XV	10%	On completion of 'Shipyard Guarantee Liabilities' and GRDD final reading of D 448 and completion of all defects/ guarantee liabilities/ Guarantee Repairs Dry Docking.	
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Note :-

Payment to be made as per the defined stages and not necessarily to be linked with the sequence. All advance payments are to be secured with Bank guarantees of equivalent amount and the validity of these BGs will be till delivery of the FPV. The Seller shall not be entitled to any payment under this Project, unless the overseer has certified that all work up to that stage for the Fast Patrol Vessel has been satisfactorily completed. The overseer shall, on receipt of notice in writing from the seller, promptly examine the work requiring certification for issuance of payment.

2. **DELIVERY SCHEDULE OF VESSELS.**

2.1. Each FPV is to be delivered to Buyer's representative, afloat at **Shipyards Premises (navigable) at the Seller's cost as per the schedule indicated below.** The onboard spares (OBS), special tools, accessories, and documents/publications shall be delivered along with delivery of the FPV. 'As Fitted'/'As Made' drawings are to be delivered after the delivery of the respective FPV. The consignee for the B&D spares is Coast Guard Store Depot (Chennai).

Delivery Schedule

2.1.1. The delivery of each FPV with all onboard equipment/ systems, onboard spares, documentation, tools and associated test equipment including successful acceptance trials will be as per schedule indicated below. The delivery of the FPVs will be at the Seller's cost. On board spares (OBS), documentations, tools and accessories shall be delivered along with delivery of each FPV. 'As fitted drawings' are to be delivered, within one month of delivery of each FPV to the consignee. No credit will be given for early deliveries. The B&D spares for all FPVs will be delivered within six months after the scheduled delivery of last FPVs to ultimate consignee as indicated by the buyer. The Base and Depot (B&D) Spares for all the Vessels will be delivered in three lots i.e. first lot will be delivered within one year of the delivery of the first FPV, next lot will be delivered by delivery of the tenth FPV and balance lots within six months of the delivery of the last FPVs.

2.1.2. The **ultimate consignees** for the **B&D** spares is CGSD (Chennai). The first FPV is required to be delivered with delivery period of $T_0 + 24$ months and thereafter 03 months for each FPV subsequently at the navigable shipyard location in afloat condition. T_0 to be reckoned as per **Para 1.4(c) of Appendix 'H'**. FPVs are required to be delivered as per the following sequence: -

<u>Ser</u>	<u>Description</u>	<u>Delivery Period</u>	<u>Remarks</u>
(a)	Vessel (No.1)	To + 24 Months	'To' to be reckoned as per Para 1.4 (c) of Appendix 'H' . The Vessel are to be delivered at the navigable shipyard location in afloat condition.
(b)	Vessel (No.2)	To + 27 Months	
(c)	Vessel (No.3)	To + 30 Months	
(d)	Vessel (No.4)	To + 33 Months	
(e)	Vessel (No.5)	To + 36 Months	
(f)	Vessel (No.6)	To + 39 Months	
(g)	Vessel (No.7)	To + 42 Months	
(h)	Vessel (No.8)	To + 45 Months	
(j)	Vessel (No.9)	To + 48 Months	
(k)	Vessel (No.10)	To + 51 Months	
(l)	Vessel (No.11)	To + 54 Months	
(m)	Vessel (No.12)	To + 57 Months	
(n)	Vessel (No.13)	To + 60 Months	
(P)	Vessel (No.14)	To + 63 Months	

COPY NO. 5

BANK GUARANTEE FORMAT FOR ADVANCE

To,

The _____

Ministry of

Government of India

(complete postal address of the beneficiary)

1. "Whereas President of India represented by the _____ Ministry of Defence, Government of India (hereinafter referred to as BUYER) have entered into a Contract No. (No. of Contract), dated _____ (Date of Contract) with M/s _____ (Name of SELLER) (referred to as SELLER) and whereas according to the said Contract the BUYER has undertaken to make an advance payment of Rs. _____ being payment of _____ % of the total value of Rs./US\$/Euro/PS/Yen/AUD/SGD _____ of the said Contract, against issuance of an advance guarantee by a bank."

2. We _____ (indicate the name of the bank) do hereby undertake to pay the amounts due and payable under this guarantee without any demur, merely on a demand from the BUYER intimating that the SELLER is in breach of the Contractual obligations stipulated in the said Contract. Any such demand made on the bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our total liability under this guarantee shall be restricted to an amount not exceeding Rs. /US\$/Euro/PS/Yen/AUD/SGD _____.

3. We undertake to pay to the BUYER any money so demanded notwithstanding any dispute or disputes raised by the SELLER in any suit or proceedings pending before any Court or Tribunal relating thereto our liability under this present being absolute and unequivocal. The payment so made by us under this bond shall be valid discharge of our liability for payment there under and the SELLER shall have no claim against us for making such payment.

4. We, further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Contract and that it shall continue to be enforceable till all the dues of the BUYER under or by virtue of the said Contract have been fully paid and its claims satisfied or discharged or till office / Department / Ministry of _____ certifies that the terms and conditions of the said Contract have been fully and properly carried out by the said SELLER and accordingly discharges this guarantee.

5. We, further agree with the BUYER that the BUYER shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Contract or to extend time of performance by the said SELLER from time to time or to postpone for any time or from time to time any of the powers exercisable by the BUYER against the said SELLER and to forbear or enforce any of the terms and conditions relating to the said Contract and we shall not be relieved from our liability by reason of any such variation, Amendment issued vide MoD ID No. 4(50)/D(Acq)/08 dated 20.06.2016 or extension being granted to the said SELLER or for any forbearance, act or omission on the part of the BUYER or indulgence by the BUYER to the said SELLER or by any such matter or thing whatsoever which under law relating to sureties would, but for this provision, have effect of so relieving us.

VERIFIED

6. The amount of this guarantee will be progressively reduced by (percentage of advance) _____ of total value of each part shipment/services against the stage payment released by the BUYER for that shipment/services made by the SELLER and presentation to us of the payment documents.

7. This guarantee will not be discharged due to the change in the constitution of the bank or the BUYER/SELLER.

8. We, undertake not to revoke this guarantee during the currency except with the previous consent of the BUYER in writing.

9. Notwithstanding anything contained herein above:-

(a) Our liability under this Guarantee shall not exceed Rupees/US\$/Euro/PS/Yen/AUD/SGD _____ (in words) _____.

(b) This Bank Guarantee shall remain valid until _____ (hereinafter the expiry date of this guarantee) the Bank Guarantee will cease to be valid after _____ irrespective whether the Original Guarantee is returned to us or not.

(c) We are liable to pay guaranteed amount or any part thereof under this Bank Guarantee only and only if you serve upon us a written demand or a claim in writing on or before _____ (Expiry Date).

Dated the _____ day of _____ (month and year)

Place :

Signed and delivered by _____ (Name of the bank)

Through its authorised signatory

(Signature with seal)

PROJECT MONITORING SYSTEM

1. **Project Monitoring.** In view of the complex nature of the ship building projects involving multi-disciplinary efforts from a number of agencies, a high level of multi layered, proactive project management mechanism is required to be set up for ensuring the timely completion of the Project. The bidder should submit the costing of PMS for the entire duration of the project which includes Delivery of FPVs, Liquidation of Guarantee Defects and Completion of GRDD, Supply of B&D Spares and Completion of Modifications (if any) as per detailed requirements enumerated in the succeeding paragraphs.

2. The primary features of the Project Management System (PMS) envisaged are as follows: -
 - (a) Enterprise Project Monitoring using Commercial Off the Shelf (COTS) enterprise software tools.

 - (b) On line web based project monitoring, drawing approvals, online alerts, status reports, project analysis, trouble-shooting etc.

 - (c) Turn Key maintenance, administration and project analysis support by the PMS provider.

 - (d) The project monitoring software, hardware etc. will be offloaded to proficient vendors at actual and the responsibility of training will be with the vendor contracted for the same.

3. The exact scope of Project Monitoring System is indicated at **Section J** of **GLS** at **Appendix 'A'**.

GUIDELINES FOR PROTECTION OF EXCHANGE RATE VARIATION IN CONTRACTS

1. Parameters to be kept in view while formulation ERV Clause.

(a) In contracts with Indian Vendors in all categories of capital acquisitions where there is an import content, ERV clause will be provided. However, ERV clause shall not be applicable to contracts in following conditions:-

- (i) The delivery period is less than one year; or
- (ii) The rate of exchange variation is within the band of +/- 2.5%.

(b) ERV clause will be framed according to the specific requirements of the contract. While calling for information at the RFP stage/formulation of ERV clauses in the contracts, the following factors are to be taken into consideration depending upon the requirements of the individual contracts:-

- (i) Year wise and major currency wise import break up is to be indicated.
- (ii) Detailed time schedule for procurement of imported material and their value at the FE rates adopted for the contract is to be furnished by the vendor as per the format given below:-

YEAR	TOTAL COST OF IMPORTED MATERIAL (In rupees)	FE CONTENT-OUT FLOW (equivalent in rupees ₹ in crore)			
		DOLLAR DENOMINATED	EURO DENOMINATED	POUNDS DENOMINATED	OTHER CURRENCIES DENOMINATED (as
Y+0					D
Y+1					
Y+2					
Total					

(iii) ERV clause will not be applicable in case delivery periods for imported content are subsequently to be refixed/extended unless the reasons for delivery period extension are attributable to the buyer.

(iv) For purposes of ensuring uniformity, the Base Exchange Rate on the ERV reckoning date will be adopted for each of the major foreign currencies. The Base Exchange Rate will be the BC Selling Rate of the Parliament Street Branch of State Bank of India, New Delhi. The ERV reckoning date will be the last date of submission of commercial bids as per RFP.

(v) ERV clause in the contract is to clearly indicate that ERV is payable/ refundable depending upon exchange rate as prevalent on the date of transaction with reference to Base Exchange Rate on the ERV reckoning date.

(vi) Other issues which are peculiar to the contract.

(vii) Third Party ERV is not applicable.

2. **Methodology For Claiming ERV**

“The prices finalised in the contract are based on the base exchange rates indicated in the contract. The year-wise amount of foreign exchange component of the imported items as indicated in the contract shall be adjusted for the impact of exchange Rate Variation of the Rupee based on the exchange rate prevailing on the date of each transaction, as notified by the SBI, Parliament Street Branch, New Delhi. The impact of notified Exchange Rate Variation shall be computed on an yearly basis for the outflow as tabulated in Annexure (The table at Para 1(b) (ii) is to be an Annexure to the contract) and shall be paid/refunded before the end of the financial year based on the certification of Finance Head of the concerned Division

3. Paying authority is to undertake a pre-audit of the documents before payment.

4. Documentation for Claiming ERV. The following documents would need to be submitted in support of the claim on account of ERV:-

(a) A bill of ERV claim enclosing worksheet.

(b) Banker's Certificate/debit advice detailing Foreign Exchange paid and Exchange rate as on date of transaction.

(c) Copies of import orders placed on the suppliers.

(d) Invoice of supplier for the relevant import orders.

BANK GUARANTEE FORMAT FOR PERFORMANCE-CUM-WARRANTY

To,

The Principal Director Directorate of Ship Acquisition Coast Guard Headquarters National Stadium Complex New Delhi – 110001

Dear Sir,

1. _____ Wherea
s President of India represented by the _____ Ministry of _____, Government of
India (hereinafter referred to as BUYER) have entered into a Contract No. _____ dated
_____ (hereinafter referred to as the said Contract) with M/s _____ (hereinafter
referred to as the SELLER) for supply of goods as per Contract to the said BUYER and
whereas the SELLER has undertaken to produce a bank guarantee amounting to Rs.
/US\$/Euro/PS/Yen/AUD/SGD _____ which is **3%** of the **Total Contract Price**
(including taxes and duties) to cover 3% of **Total Contract Price (including taxes and**
duties) each for Performance and Warranty in sequence, to secure its obligations towards
Performance-cum- Warranty to the BUYERS.
2. We, the _____ bank hereby expressly, irrevocably and unreservedly
undertake the guarantee as principal obligors on behalf the SELLER that, in the event that
the BUYER declares to us that the amount claimed is due by way of loss or damage caused
to or would be caused or suffered by the BUYER by reason of breach/failure to perform by
the said SELLER of any of the terms and conditions in the Contract related to Performance
and Warranty clauses, we will pay you, on demand and without demur, all and any sum up
to {3% of Total Contract Price (including taxes and duties)}
Rupees/US\$/Euro/PS/Yen/AUD/SGD _____ only at any instance under this
Guarantee. Your written demand shall be conclusive evidence to us that such repayment
is due under the terms of the said Contract. We shall not be entitled to ask you to establish
your claim or claims under this guarantee but will pay the same forthwith without any protest
or demur. We undertake to effect payment upon receipt of such written demand.
3. We shall not be discharged or released from the undertaking and guarantee by any
arrangements, variations made between you and the SELLER, indulgence to the SELLER
by you, or by any alterations in the obligations of the SELLER or by any forbearance
whether as to payment, time performance or otherwise.
4. We further agree that any such demand made by the BUYER on the Bank shall be
conclusive, binding, absolute and unequivocal notwithstanding any difference or dispute or
controversy that may exist or arise between you and the SELLER or any other person.

5. In no case shall the amount of this guarantee be increased.
6. This Performance-cum-Warranty guarantee shall remain valid for a period until three months beyond the warranty period as specified in the Contract i.e. upto ____.
7. Subject to the terms of this Bank Guarantee, the issuing bank hereby irrevocably authorizes the beneficiary to draw the amount of upto Rs. /US\$/Euro/PS/Yen/AUD/SGD _____ {3% of Total Contract Price (including taxes and duties)} for breach/failure to perform by the SELLER of any of the terms and conditions of the Contract related to performance and warranty clause. Partial drawings and multiple drawings under this Bank Guarantee are allowed within the above stated cumulative amount subject to each such drawing not exceeding 3% of the Total Contract Price (including taxes and duties) (Rs. /US\$/Euro/PS/Yen/AUD/SGD _____ only) (Mention BG amount).
8. This guarantee shall be continuing guarantee and shall not be discharged by any change in the constitution of the Bank or in the constitution of M/s _____. We undertake not to revoke this guarantee during the currency except with previous consent of BUYER in writing.
9. Notwithstanding anything contained herein above:
- (a) Our liability under this Guarantee shall not exceed Rs. /US\$/Euro/PS/Yen/AUD/SGD _____ (Rupees/US\$/Euro/PS/Yen/AUD/SGD _____ only (in words).
- (b) This Bank Guarantee shall remain valid until 3 months from the date of expiry of warranty period of the Contract, i.e upto _____ (mention the date) which is 3 months after expiry of the warranty period and the BG shall cease to be valid after _____ irrespective whether the Original Guarantee is returned to us or not.
- (c) We are liable to pay guaranteed amount or any part thereof under this Bank Guarantee only and only if you serve upon us a written demand or a claim in writing on or before _____ (Expiry Date).

Dated the _____ day of _____ (month and year)

Place :

Signed and delivered by _____ (name of the bank)

Through its authorised signatory
(Signature with seal)

**FORMAT FOR EXTENSION OF DELIVERY PERIOD/PERFORMANCE
NOTICE**

Name of the Procuring Entity

Extension of Delivery Period/Performance Notice

To
M/s (name and address of firm)

Sub: Contract Nodated for the supply of.....

Ref: Your letter no.....dated:

Dear Sir,

1. You have failed to deliver {the (fill in qty.) of Stores/the entire quantity of Stores} within the contract delivery period [as last extended up to] (fill in date). In your letter under reply you have asked for [further] extension of time for delivery. In view of the circumstances stated in your said letter, the time for delivery is extended from (fill in date) to (fill in date).

2. Please note that notwithstanding the grant of this extension in terms of Clause (fill in clause number) of the subject contract an amount equivalent to % (..... per cent) of the delivered price of the delayed goods for each week of delay or part thereof (subject to the ceiling as provided in the aforesaid clause) beyond the original contract delivery date/the last unconditionally re-fixed delivery date (as & if applicable), viz., (fill in date) will be recovered from you as liquidated damages. You may now tender the Stores for inspection [balance of the Stores] in terms of this letter. Stores if any already tendered by you for inspection but not inspected will be now inspected accordingly.

3. You are also required to extend the validity period of the performance guarantee for the subject contract from (fill in present validity date) to (fill in required extended date) within 15 (fifteen) days of issue of this amendment letter.

4. The above extension of delivery date will also be subject to the following Denial Clause:-

(a) That no increases in price on account of any statutory increase in or fresh Imposition of customs duty, GST or on account of any other taxes/duty, including custom duty), leviable in respect of the Stores specified in the said contract which takes place after (insert the original delivery date) shall be admissible on such of the said Stores, as are delivered after the said date; and,

(b) That notwithstanding any stipulation in the contract for increase in price on any other ground including foreign exchange rate variation, no such increase which takes place after (insert the reckoning date as per DAP 2020) shall be admissible on such of the said Stores as are delivered after the said date.

(c) But nevertheless, the Buyer shall be entitled to the benefit of any decrease in price on account of reduction in or remission of customs duty, GST or on account of any other Tax or duty or on any other ground as stipulated in the price variation clause or foreign exchange rate variation which takes place after (insert the original delivery date).

5. All other terms and conditions of the contract remain unaltered. This is without any prejudice to Buyer's rights under the terms and conditions of the subject contract.

6. Please intimate your unconditional acceptance of this amendment letter within 10 (ten) days of the issue of this letter failing which the contract will be cancelled at your risk and expense without any further reference to you.

Yours faithfully,
(Authorised Officer)
Duly authorised, for and on
behalf of The President of India

Substitute following first para instead of first para in format above, for issuing a performance notice.

1. You have failed to deliver {the (fill in qty.) of Stores/the entire quantity of Stores} within the contract delivery period [as last extended up to] (fill in date). In spite of the fact that the time of delivery of the goods stipulated in the contract is deemed to be of the essence of the contract, it appears that (fill in the outstanding quantity) are still outstanding even though the date of delivery has expired. Although not bound to do so, the time for delivery is extended from (fill in date) to (fill in date) and you are requested to note that in the event of your failure to deliver the goods within the delivery period as hereby extended, the contract shall be cancelled for the outstanding goods at your risk and cost.

Appendix 'J'

(Refers to Para 16, 38, 51 & 60 of RFP)

EVALUATION CRITERIA AND PRICE BID FORMAT

1. **Evaluation Criteria**. The guidelines for evaluation of Bids will be as follows:-

1.1 . Only those Bids will be evaluated, which are found to be fulfilling all the eligibility and qualifying requirements of the RFP, both technically and commercially. The bidder, whose price is arrived as lowest as per Evaluation criteria given in this **Appendix**, will be declared as L-1 bidder by Buyer.

1.2 **In 'Buy (Indian-IDDM)'**

1.2.1 L-1 bidder will be determined on the basis of quoted cost of all items including taxes and duties payable to Central/State/Local Governments including BNE items sourced from common single source (**Annexure I to Appendix 'J'**).

1.3 In cases where Custom Duty is not exempted, Basic Custom Duty on input material is to be included in the cost of Basic Equipment, Installation/ Commissioning/ Integration, BNE, MRLS, SMT, STE , ESP and any other item listed at Column (ii) of Para 2 below.

1.4 If there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price will prevail and the total price will be corrected. If there is a discrepancy between words and figures, the amount in words will prevail for calculation of price.

2. **Price Bid Format**. The Price Bid Format is given below and Bidders are required to fill this correctly with full details. No column of the Bid format has to be left blank. The clubbing of serials/sub serials to indicate a consolidated cost is not acceptable. All Columns of Price Bid Format are to be filled up with '0', 'positive numerical values' or 'Not Applicable' at every row as applicable. If any column is not applicable and intentionally left blank, the reason for the same has to be clearly indicated in the remarks column. In all cases, other than Buy(Global) cases, Bidders are required to furnish details in percentage (%) of various elements corresponding to below Price Bid in their Technical bids, as per format given at **Annexure VIII to Appendix 'A'**, to determine the IC. The details submitted will be examined by the TEC and verified later with the Price Bid during CNC.

Ser (i)	Items (ii)	Qty (iii)	Unit cost (iv)	Total cost (v)	Remarks (vi)
(a)	1. Total Indigenous Cost (broad details to be enclosed for IC verification)				
	(aa) Material cost including Yard material like steel, aluminum etc.				
	(ab) Other Direct and Indirect Expenses including labour on material				
	(ac) Indigenous equipment cost				
	(ad) Other Direct and Indirect Expenses including labour on equipment, including installation, STW and trials				
	(ae) Overheads on labour, material and equipment including misc. overheads.				
	(af) Miscellaneous Cost (to be specified)				
	(ag) First outfit of Naval stores				
	2. Total Import Cost (broad details to be enclosed for IC verification)				
	(aa) Import Material cost including Yard material like steel, aluminum etc. including Custom Duties, Freight/Transportation and insurance for products imported in India.				
	(ab) Other Direct and Indirect Expenses including labour on material.				
	(ac) Import equipment cost including Custom Duties, Freight/Transportation and insurance for products imported in India.				
	(ad) Other Direct Expenses including labour on equipment, including installation, STW and trials etc.				
	(ae) All license fees, royalties, technical fees and other fees/payments paid out of India.				
	(af) Miscellaneous Cost (to be specified)				

Ser (i)	Items (ii)	Qty (iii)	Unit cost (iv)	Total cost (v)	Remarks (vi)
(b)	Basic Cost of Vessel (Total of Ser 'a' above)				
(c)	Cost of Onboard Spares (Manufacturers Recommended List of Spares) as per the format at Annexure I to Appendix 'F' .				
(d)	Cost of Special Maintenance Tools and Special Test Equipment and software as per Annexure III to Appendix 'F' .				
(e)	Cost of Technical Documentation (in English Language) as per Annexure IV to Appendix 'F' .				
(f)	Cost of Training Aggregates as per Annexure V to Appendix 'F'				
(g)	Cost of Training excluding the cost of travel, boarding and lodging separately for operators and maintenance technicians and QA Representative. This should be given under the following two heads (as applicable) (Appendix 'F' refers)				
	(i) In India				
	(ii) Abroad				
(h)	Freight and Transit Insurance Cost (as applicable)				
(i)	Cost of Project Monitoring System (as per Annexure III to Appendix 'H'), where applicable				
(k)	Cost of Handling B & D Spares				
(l)	Total cost {sl (b) to (k) above				This will be used for determining L1 Vendor.

Ser (i)	Items (ii)		Qty (iii)	Unit cost (iv)	Total cost (v)	Remarks (vi)
(m)	GST		GST Rate			
		On completed vessel				
(n)	<u>Grand Total cost including Taxes</u>					
(p)	Foreign Exchange component of the proposal					

Note: Taxes and Duties. All Indirect Taxes and Duties will be paid at actuals or as indicated in the Commercial bid by the Bidder, whichever is lower. In case of any change in the tax structure rates by BUYER'S Government, only incremental/decremented change will be paid.

3. The guidelines for Technical & Commercial bids is attached as **Annexure II** to **Appendix 'J'**.

**LIST OF BUYER NOMINATED EQUIPMENT TO BE PROCURED FROM
COMMON SINGLE SOURCE**

1. All costs in respect of BNE is also to be included in the Price Bid of Bidders and included for L1 determination.

**Table 1- List of Buyer Nominated Equipment excluded from
determination of L 1**

Ser	Equipment Details	Vendor
<u>Section- A (Indigenous)</u>		
1.	NIL	
2.		
<u>Section- B (Foreign)</u>		
3.	NIL	

**Table 2- List of Buyer Nominated Equipment included for
determination of L1**

Ser	Equipment Details	Vendor
<u>Section- A (Indigenous)</u>		
1.	HD HF-VLF receiver EK-896 or the latest version with associated accessories and IBA PC	BEL, Bengaluru IBA PC by Datasol Pvt Ltd
2.	MSS Mk-II	Avantel Pvt Ltd, Hyderabad
3.	Software Defined Radios (01 HF + 02 V/UHF Configuration)	BEL, Bengaluru
<u>Section-B (Foreign)</u>		
4.	NIL	

Guidelines ~ Technical & Commercial Bid

SI	Details
Technical Bid	
(a)	As pre-bid meeting would be arranged to answer queries of all bidders, it is therefore advisable that all bidders attend pre-bid meeting. Attendance of all bidders will ensure that all queries are answered in a single forum and clarifications, if any, is conveyed to obviate any ambiguity and time delays towards timely bid submission.
(b)	Bidders to confirm clarity on the Scope of Work, quantifications and technical specifications etc. and provide an undertaking that OEMs have been approached (where necessary) and raise queries on during the pre-bid meeting.
(c)	Bidders shall adhere to tender schedule timelines such as bid submission, preparatory activities and Registration and Stamp Duty (RSD).
(d)	All clarifications that are Technical or Scope of Work related is to be sought in writing as per Para 23 & 24 of RFP for pre-bid meeting, to enable suitable clarifications and promulgation to all concerned during the pre-bid meeting.
Commercial Bid	
(a)	Discrepancy in the quantity indicated in the GLS must be brought out for discussions and clarified during the pre-bid meeting.
(b)	No deviation from the indicated format is permitted and no additional column or row may be added to the bid format.
(c)	There shall be no overwriting and the price shall be in a printed format.
(d)	The total number of pages in the commercial bid is to be mentioned on the first page. Each page thereafter is to be numbered. (for example if there are 20 pages in bid, first page to be numbered as 1/20 and last page to be numbered as 20/20.)
(e)	Discount offered if any should be incorporated into unit prices against respective SIs.
(f)	Prices for all SIs are to be indicated in figures. The grand total should be indicated in both figures and words.

STANDARD CONDITIONS OF RFP

LAW

1. The present Contract shall be considered and made in accordance to the laws of Republic of India.

ARBITRATION

(For Indian Private Vendors)

2.1 All disputes or differences arising out of or in connection with the present Contract, including the one connected with the validity of the present Contract or any part thereof, shall be settled by bilateral discussions.

2.2 Any dispute, disagreement or question arising out of or relating to this Contract or relating to construction or performance (except as to any matter the decision or determination whereof is provided for by these conditions), which cannot be settled amicably, shall within sixty (60) days or such longer period as may be mutually agreed upon, from the date on which either party informs the other in writing by a notice that such dispute, disagreement or question exists, will be referred to the Arbitration Tribunal consisting of three arbitrators.

2.3 Within sixty (60) days of the receipt of the said Notice, one arbitrator shall be nominated in writing by SELLER and one arbitrator shall be nominated by BUYER.

2.4 The third arbitrator, shall be nominated by the parties within ninety (90) days of the receipt of the notice mentioned above, failing which the third arbitrator may be nominated under the provision of Indian Arbitration and Conciliation Act, 1996 (as amended from time to time) or by dispute resolution institutions like Indian Council of Arbitration or ICADR, at the request of either party, but the said nomination would be after consultation with both the parties. The arbitrator nominated under this Clause shall not be regarded nor act as an umpire.

2.5 The Arbitration Tribunal shall have its seat in New Delhi or such other place in India as may be decided by the arbitrator.

2.6 The Arbitration Proceedings shall be conducted in India under the Indian Arbitration and Conciliation Act, 1996 (as amended from time to time) and the award of such Arbitration Tribunal shall be enforceable in Indian Courts only.

2.7 The decision of the majority of the arbitrators shall be final and binding on the parties to this contract.

2.8 Each party shall bear its own cost of preparing and presenting its case. The cost of arbitration including the fees and expenses of the third arbitrator shall be shared equally by the SELLER and the BUYER.

2.9 In the event of a vacancy caused in the office of the arbitrators, the party which nominated such arbitrator, shall be entitled to nominate another in his place and the arbitration proceedings shall continue from the stage they were left by the retiring arbitrator.

2.10 In the event of one of the parties failing to nominate its arbitrator within sixty (60) days as above or if any of the parties does not nominate another arbitrator within sixty (60) days of the place of arbitrator falling vacant, then the other party shall be entitled after due notice of at least thirty (30) days to request dispute resolution institutions in India like Indian Council of Arbitration and ICADR to nominate another arbitrator as above.

2.11 If the place of the third arbitrator falls vacant, his substitute shall be nominated according to the provisions herein above stipulated.

2.12 The parties shall continue to perform their respective obligations under this contract during the pendency of the arbitration proceedings except in so far as such obligations are the subject matter of the said arbitration proceedings.

ARBITRATION

(For Central & State PSEs)

3.1 In the event of any dispute or difference relating to the interpretation and application of the provisions of the contracts, such dispute or difference shall be referred by either party for Arbitration to the sole Arbitrator in the Department of Public Enterprises to be nominated by the Secretary to the Government of India in-charge of the Department of Public Enterprises. The Arbitration and Conciliation Act, 1996 (as amended from time to time) shall not be applicable to arbitration under this clause. The award of the Arbitrator shall be binding upon the parties to the dispute, provided, however, any party aggrieved by such award may make a further reference for setting aside or revision of the award to the Law Secretary, Department of Legal Affairs, Ministry of Law & Justice, Government of India. Upon such reference the dispute shall be decided by the Law Secretary or the Special Secretary/Additional Secretary, when so authorised by the Law Secretary, whose decision shall bind the Parties finally and conclusively. The Parties to the dispute will share equally the cost of arbitration as intimated by the Arbitrator.

ARBITRATION

(For Defence PSUs)

4.1 In the event of any dispute or difference relating to the interpretation and application of the provisions of the contracts, such dispute or difference shall be referred by either party to the Arbitrator(s) appointed by Defence Secretary. The award of the Arbitrator(s) shall be binding upon the parties to the dispute.

FORCE MAJEURE

5.1 Should any force majeure circumstances arise, each of the contracting party shall be excused for the non-fulfilment or for the delayed fulfilment of any of its contractual obligations, if the affected party within (days) of its occurrence informs in a written form the other party.

VERIFIED

5.2 Force majeure shall mean fires, floods, natural disasters, or other acts such as war, turmoil, strikes, sabotage, explosions, beyond the control of either party

5.3 Provided the acts of The Government or any state parties of the seller which may affect the discharge of the Seller's obligation under the contract shall not be treated as Force Majeure.

PENALTY FOR USE OF UNDUE INFLUENCE

6.1 The Seller undertakes that he has not given, offered or promised to give, directly or indirectly any gift, consideration, reward, commission, fees brokerage or inducement to any person in service of the Buyer or otherwise in procuring the Contracts or forbearing to do or for having done or for borne to do any act in relation to the obtaining or execution of the Contract or any other Contract with the Government for showing or forbearing to show favour or disfavour to any person in relation to the Contract or any other Contract with the Government. Any breach of the aforesaid undertaking by the seller or any one employed by him or acting on his behalf (whether with or without the knowledge of the seller) or the commission of any offers by the seller or anyone employed by him or acting on his behalf, as defined in Chapter IX of the Indian Penal Code, 1860 or the Prevention of Corruption Act, 1988 or any other Act enacted for the prevention of corruption shall entitle the Buyer to cancel the contract and all or any other contracts with the seller and recover from the seller the amount of any loss arising from such cancellation. A decision of the buyer or his nominee to the effect that a breach of the undertaking had been committed shall be final and binding on the Seller.

6.2 Giving or offering of any gift, bribe or inducement or any attempt at any such act on behalf of the seller towards any officer/employee of the buyer or to any other person in a position to influence any officer/employee of the Buyer for showing any favour in relation to this or any other contract, shall render the Seller to such liability/penalty as the Buyer may deem proper, including but not limited to termination of the contract, imposition of penal damages, forfeiture of the Bank Guarantee and refund of the amounts paid by the Buyer.

INTEGRITY PACT

7.1 Further signing of an integrity Pact' would be considered between government department and the bidder for schemes exceeding **20 Crores**. The Integrity Pact is a binding agreement between the agency and bidders for specific contracts in which the agency promises that it will not accept bribes during the procurement process and bidders promise that they will not offer bribes. Under the IP, the bidders for specific services or contracts agree with the procurement agency or office to carry out the procurement in a specified manner. The essential elements of the IP are as follows:-

- (a) A pact (contract) between the Government of India (Ministry of Defence) (the authority or the "principal") and those companies submitting a tender for this specific activity (the "bidders");

(b) An undertaking by the principal that its officials will not demand or accept any bribes, gifts, etc., with appropriate disciplinary or criminal sanctions in case of violation;

(c) A statement by each bidder that it has not paid and will not pay, any bribes;

(d) An undertaking by each bidder that he shall not pay any amount as gift, reward, fees, commission or consideration to such person, party, firm or institution (including Agents and other as well as family members, etc., of officials), directly or indirectly, in connection with the contract in question. All payments made to the Agent 12 months prior to tender submission would be disclosed at the time of tender submission and thereafter an annual report of payments would be submitted during the procurement process or upon demand of the MoD.

(e) The explicit acceptance by each bidder that the no-bribery commitment and the disclosure obligation as well as the attendant sanctions remain in force for the winning bidder until the contract has been fully executed;

(f) Undertakings on behalf of a bidding company will be made "in the name and on behalf of the company's chief executive officer";

(g) The following set of sanctions shall be enforced for any violation by a bidder of its commitments or undertakings:

(i) Denial or loss of contract;

(ii) Forfeiture of the EMD and Guarantee for Performance-cum-Warranty Bond;

(iii) Payment to the Buyer of any such amount paid as gift, reward, fees or consideration along with interest at the rate of 2% per annum above LIBOR rate.

(iv) Refund of all sums already paid by the Buyer along with interest at the rate of 2% per annum above LIBOR rate.

(v) Recovery of such amount, referred to in (iii) and (iv) above, from other contracts of the Seller with the Government of India.

(vi) At the discretion of the Buyer, the Seller shall be liable for action as per extant policy on Putting on Hold, Suspension and Debarment of Entities.

(h) Bidders are also advised to have a company code of conduct (clearly rejecting the use of bribes and other unethical behaviour) and a compliance program for the implementation of the code of conduct throughout the company.

(j) The draft Pre-Contract Integrity Pact is attached as **Annexure I** to this Appendix. The vendors are required to sign them and submit separately along with the technical and commercial offers. The format for Earnest Money Deposit (EMD) is placed at **Annexure II** to this Appendix.

7.2 In respect of bids from DPSUs, the concerned DPSU shall enter in to a Pre-Contract Integrity Pact, on the same lines with their sub-vendors individually, in case the estimated value of each sub-contract(s) exceed 20 Crore and such subcontract(s) are required to be entered in to by the DPSU with a view to enable DPSU to discharge the obligations arising out of their bid in question in response to this RFP.

AGENTS

8.1 The Seller confirms and declares to the Buyer that the Seller is the original manufacturer of the stores referred to in this contract. The Seller confirms that he has not engaged any person, party, firm or institution as an Agent including his Agents already intimated to MoD; to, influence, manipulate or in any way to recommend to any functionaries of the Govt of India, whether officially or unofficially, to the award of the contract to the Seller, or to indulge in corrupt and unethical practices. The Seller has neither paid, promised nor has the intention to pay to any person, party, firm or institution in respect of any such intervention or manipulation. The Seller agrees that if it is established at any time to the satisfaction of the buyer that the present declaration is in any way incorrect or if at a later stage it is discovered by the Buyer that Seller has engaged any such person, party, firm or institution and paid, promised or has intention to pay any amount, gift, reward, fees, commission or consideration to such person, party, firm or institution, whether before or after the signing of this contract, the Seller will be liable for any or all of the following actions:-

- (a) To pay to the Buyer any such amount paid as gift, reward, fees or consideration along with interest at the rate of 2% per annum above LIBOR rate.
- (b) The Buyer will also have a right to put on hold or cancel the Contract either wholly or in part, without any entitlement or compensation to the Seller who shall in such event be liable to refund all payments made by the Buyer in terms of the Contract along with interest at the rate of 2% per annum above LIBOR rate.
- (c) The Buyer will also have the right to recover any such amount referred in (a) and (b) above from other contracts of the Seller with the Government of India.
- (d) At the discretion of the Buyer, the Seller shall be liable for action as per extant policy on Putting on Hold, Suspension and Debarment of Entities.

8.2 In case it is found to the satisfaction of the BUYER that the SELLER has engaged an Agent, or paid commission or influenced any person to obtain the contract as described in clauses relating to Agents and clauses relating to Penalty for Use of Undue Influence, the SELLER, on demand of the BUYER shall provide necessary information/inspection of the relevant financial documents/ information, including a copy of the contract(s) and details of payment terms between the vendors and Agents engaged by him.

PRE-CONTRACT INTEGRITY PACT

General

1. Whereas the PRESIDENT OF INDIA, represented by Joint Secretary & Acquisition Manager (Army/Air Force/Maritime & Systems)/ Major General & equivalent, Service Headquarters./Coast Guard, Ministry of Defence, Government of India, hereinafter referred to as the Buyer and the first party, proposes to procure (Name of the Equipment), hereinafter referred to as Defence Stores and M/s _____ represented by, _____ Chief Executive Officer (which term, unless expressly indicated by the contract, shall be deemed to include its successors and its assignees), hereinafter referred to as the Bidder/Seller and the second party, is willing to offer/has offered the Defence stores.

2. Whereas the Bidder is a private company/public company/partnership/registered export agency, constituted in accordance with the relevant law in the matter and the Buyer is a Ministry of the Government of India performing its functions on behalf of the President of India.

Objectives

3. Now, therefore, the Buyer and the Bidder agree to enter into this pre-contract agreement, hereinafter referred to as Integrity Pact, to avoid all forms of corruption by following a system that is fair, transparent and free from any influence/unprejudiced dealings prior to, during and subsequent to the currency of the contract to be entered into with a view to:

3.1 Enabling the Buyer to obtain the desired defence stores at a competitive price in conformity with the defined specifications of the Services by avoiding the high cost and the distortionary impact of corruption on public procurement.

3.2 Enabling Bidders to abstain from bribing or any corrupt practice in order to secure the contract by providing assurance to them that their competitors will also refrain from bribing and other corrupt practices and the Buyer will commit to prevent corruption, in any form, by their officials by following transparent procedures.

Commitments of the Buyer

4. The Buyer commits itself to the following:-

4.1 The Buyer undertakes that, no official of the Buyer, connected directly or indirectly with the contract will demand, take a promise for or accept, directly or through intermediaries, any bribe, consideration, gift, reward, favour or any material or immaterial benefit or any other advantage from the Bidder, either for themselves or for any person, organisation or third party related to the contract in exchange for an advantage in the bidding process, bid evaluation, contracting or implementation process related to the Contract.

4.2 The Buyer will, during the pre-contract stage, treat all Bidders alike and will provide to all Bidders the same information and will not provide any such information to any particular Bidder which could afford an advantage to that particular Bidder in comparison to other Bidders.

4.3 All the officials of the Buyer will report to the appropriate Government office any attempted or completed breaches of the above commitments as well as any substantial suspicion of such a breach.

5. In case of any such preceding misconduct on the part of such official(s) is reported by the Bidder to the Buyer with full and verifiable facts and the same is prima facie found to be correct by the Buyer, necessary disciplinary proceedings, or any other action as deemed fit, including criminal proceedings may be initiated by the Buyer and such a person shall be debarred from further dealings related to the contract process. In such a case while an enquiry is being conducted by the Buyer the proceedings under the contract would not be stalled.

Commitments of Bidders

6. The Bidder commits himself to take all measures necessary to prevent corrupt practices, unfair means and illegal activities during any stage of his bid or during any pre-contract or post-contract stage in order to secure the contract or in furtherance to secure it and in particular commits himself to the following:

6.1 The Bidder will not to offer, directly or through intermediaries, any bribe, gift, consideration, reward, favour, any material or immaterial benefit or other advantage, commission, fees, brokerage or inducement to any official of the Buyer, connected directly or indirectly with the bidding process, or to any person, organisation or third party related to the contract in exchange for any advantage in the bidding, evaluation, contracting and implementation of the Contract.

6.2 The Bidder further undertakes that he has not given, offered or promised to give, directly or indirectly any bribe, gift, consideration, reward, favour, any material or immaterial benefit or other advantage, commission, fees, brokerage or inducement to any official of the Buyer or otherwise in procuring the Contract or forbearing to do or having done any act in relation to the obtaining or execution of the Contract or any other Contract with the Government for showing or forbearing to show favour or disfavour to any person in relation to the Contract or any other Contract with the Government.

6.3 The Bidder will not collude with other parties interested in the contract to impair the transparency, fairness and progress of the bidding process, bid evaluation, contracting and implementation of the contract.

6.4 The Bidder will not accept any advantage in exchange for any corrupt practice, unfair means and illegal activities.

6.5 The Bidder further confirms and declares to the Buyer that the Bidder is the original manufacturer/integrator/authorised government sponsored export entity of the Defence stores and has not engaged any individual or firm or company whether Indian or foreign to intercede, facilitate or in any way to recommend to the Buyer or any of its functionaries, whether officially or unofficially to the award of the contract to the Bidder, nor has any amount been paid, promised or intended to be paid to any such individual, firm or company or Agent in respect of any such intercession, facilitation or recommendation.

6.6 The bidder would not enter into conditional contract with any Agents, brokers or any other intermediaries wherein payment is made or penalty is levied, directly or indirectly, on success or failure of the award of the contract. The bidder while presenting the bid, shall disclose any payments he has made during the 12 months prior to tender submission or is committed to or intends to make to officials of the buyer or their family members, Agents, brokers or any other intermediaries in connection with the contract and the details of such services agreed upon for such payments. Within the validity of PCIP, bidder shall disclose to MoD any payments made or has the intention to pay any amount, gift, reward, fees, commission or consideration to such person, party, firm or institution as an annual report during the procurement process.

6.7 The Bidder shall not use improperly, for purposes of competition or personal gain or pass on to others, any information provided by the Buyer as part of the business relationship regarding plans, technical proposals and business details, including information contained in any electronic data carrier. The Bidder also undertakes to exercise due and adequate care lest any such information is divulged.

6.8 The Bidder commits to refrain from giving any complaint directly or through any other manner without supporting it with full and verifiable facts. Complaint will be processed as per **Guidelines for Handling of Complaints** in vogue. In case the complaint is found to be vexatious, frivolous or malicious in nature, it would be construed as a violation of Integrity Pact.

6.9 The Bidder shall not instigate or cause to instigate any third person to commit any of the actions mentioned above.

7. **Previous Transgression**

7.1 The Bidder declares that no previous transgression occurred in the last three years immediately before signing of this Integrity Pact, with any other company in any country in respect of any corrupt practices envisaged hereunder or with any Public Sector Enterprise in India or any Government Department in India.

7.2 If the Bidder makes incorrect statement on this subject, Bidder can be disqualified from the tender process or the contract and if already awarded, can be terminated for such reason.

8. **Bid Security: Earnest Money Deposit**

8.1 Every bidder, while submitting commercial bid, shall submit Bid Security in the form of Earnest Money Deposit (EMD) for an amount of Rs Five Crore only, in favour of the Buyer in Indian Rupees.

(a) EMD is not required from Micro and Small Enterprises (MSEs) as defined in MSE Procurement Policy issued by Department of Micro, Small and Medium Enterprises (MSME) or are registered with the Central Purchase Organisation or the concerned Ministry or Department or Startups as recognised by Department of Industrial Policy & Promotion (DIPP), in accordance with the Ministry of Finance office memorandum bearing No. F.20/2/2014-PPD (Pt.) dated July 25, 2017 (as amended from time to time).

(b) DPSUs will also submit EMD as applicable.

(c) Format of EMD. The Bid Security may be accepted in the following forms, safeguarding the Buyer's interest in all respect:-

(i) Bank Guarantee from any Indian Public or Private Scheduled Commercial Bank notified by RBI or first-class banks of international repute. The format of the Bank Guarantee for Bid Security is provided at **Annexure II to Appendix 'K'**.

(ii) Account Payee Demand Draft, Fixed Deposit Receipt, Banker's Cheque shall be payable in an acceptable form. The Beneficiary Bank Details for furnishing the same are as follows:

(IFSC Code - SBIN0000691)
State Bank of India New Delhi Main Branch
C Block, 11 Parliament Street
New Delhi, Pin: 110001

(d) **Validity of EMD.** The EMD will be valid for eighteen months or till signing of contract, whichever is later. The EMD shall be extended from time to time as required by the Buyer and agreed by the Bidder. No interest shall be payable by the Buyer to the Bidder(s) on the EMD for the period of its currency. For unsuccessful bidders EMD will be returned on declaration of successful bidder(s).

(e) Instances of Forfeiture of EMD,

(i) If the Bidder withdraws or amends, impairs or derogates from the Bid in any respect within the period of validity of this tender.

(ii) If the Bidder having been notified of the acceptance of his tender by the Buyer during the period of its validity.

(aa) If the Bidder fails to furnish the Performance Security for the due performance of the contract.

(ab) Fails or refuses to accept/ execute the contract.

(iii) In case of violation of Pre-Contract Integrity Pact, EMD will be forfeited besides other legal penalties as may be decided by the Ministry of Defence.

8.2 In the case of successful bidder a clause would also be incorporated in the Article pertaining to Performance-cum-Warranty Bond in the Purchase Contract that the provisions of Sanctions for Violation shall be applicable for forfeiture of Performance Bond in case of a decision by the Buyer to forfeit the same without assigning any reason for imposing sanction for violation of this pact.

8.3 The provisions regarding Sanctions for Violation in Integrity Pact include forfeiture of Performance-cum-Warranty Bond in case of a decision by the Buyer to forfeit the same without assigning any reason for imposing sanction for violation of Integrity Pact.

8.4 No interest shall be payable by the Buyer to the Bidder(s) on EMD for the period of its currency.

9 **Company Code of Conduct**

9.1 Bidders are also advised to have a company code of conduct (clearly rejecting the use of bribes and other unethical behaviour) and a compliance program for the implementation of the code of conduct throughout the company.

10 **Sanctions for Violation**

10.1 Any breach of the aforesaid provisions by the Bidder or any one employed by him or acting on his behalf (whether with or without the knowledge of the Bidder) or the commission of any offence by the Bidder or any one employed by him or acting on his behalf, as defined in Chapter IX of the Indian Penal Code, 1860 or the Prevention of Corruption Act 1988 or any other act enacted for the prevention of corruption shall entitle the Buyer to take all or any one of the following actions, wherever required:

(i) To immediately call off the pre-contract negotiations without assigning any reason or giving any compensation to the Bidder. However, the proceedings with the other Bidder(s) would continue.

(ii) The EMD for pre contract period, Performance-cum-Warranty Bond post signing of contract shall stand forfeited either fully or partially, as decided by the Buyer and the Buyer shall not be required to assign any reason therefore.

(iii) To immediately cancel the contract, if already signed, without any compensation to the Bidder.

(iv) To recover all sums already paid by the Buyer, in case of an Indian Bidder with interest thereon at 2% higher than the prevailing Base Rate of SBI and in case of a Bidder from a country other than India with interest thereon at 2% higher than the LIBOR. If any outstanding payment is due to the Bidder from the Buyer in connection with any other contract for any other defence stores, such outstanding payment could also be utilised to recover the aforesaid sum and interest.

(v) To encash the advance bank guarantee and Performance-cum-Warranty Bond if furnished by the Bidder, in order to recover the payments, already made by the Buyer, along with interest.

(vi) To cancel all or any other Contracts with the Bidder.

(vii) To Put on Hold or Suspend or Debar the bidder as per the extant policy.

(viii) To recover all sums paid in violation of this Pact by Bidder(s) to any Agent or broker with a view to securing the contract.

(ix) If the Bidder or any employee of the Bidder or any person acting on behalf of the Bidder, either directly or indirectly, is closely related to any of the officers of the Buyer, or alternatively, if any close relative of an officer of the Buyer has financial interest/stake in the Bidder's firm, the same shall be disclosed by the Bidder at the time of filing of tender. Any failure to disclose the interest involved shall entitle the Buyer to debar the Bidder from the bid process or rescind the contract without payment of any compensation to the

Bidder. The term „ **close relative**’ for this purpose would mean spouse whether residing with the Government servant or not, but not include a spouse separated from the Government servant by a decree or order of a competent court; son or daughter or step son or step daughter and wholly dependent upon Government servant, but does not include a child or step child who is no longer in any way dependent upon the Government servant or of whose custody the Government servant has been deprived of by or under any law; any other person related, whether by blood or marriage, to the Government servant or to the Government servant’s wife or husband and wholly dependent upon Government servant.

(x) The Bidder shall not lend to or borrow any money from or enter into any monetary dealings or transactions, directly or indirectly, with any employee of the Buyer and if he does so, the Buyer shall be entitled forthwith to rescind the contract and all other contracts with the Bidder. The Bidder shall be liable to pay compensation for any loss or damage to the Buyer resulting from such rescission and the Buyer shall be entitled to deduct the amount so payable from the money(s) due to the Bidder.

(xi) In cases where irrevocable Letters of Credit have been received in respect of any contract signed by the Buyer with the Bidder, the same shall not be opened.

10.2 The decision of the Buyer to the effect that a breach of the provisions of this Integrity Pact has been committed by the Bidder shall be final and binding on the Bidder, however, the Bidder can approach the Independent Monitor(s) appointed for the purposes of this Pact.

11 **Fall Clause**

11.1 The Bidder undertakes that he has not supplied/is not supplying the similar products, systems or subsystems at a price lower than that offered in the present bid in respect of any other Ministry/Department of the Government of India and if it is found at any stage that the similar system or sub-system was supplied by the Bidder to any other Ministry/Department of the Government of India at a lower price, then that very price, with due allowance for elapsed time, will be applicable to the present case and the difference in the cost would be refunded by the Bidder to the Buyer, even if the contract has already been concluded.

11.2 The Bidder shall strive to accord the most favoured customer treatment to the Buyer in respect of all matters pertaining to the present case.

12 **Independent Monitors**

12.1 The Buyer has appointed Independent Monitors for this Pact in consultation with the Central Vigilance Commission. The names and addresses of nominated Independent Monitors (at the time of issue of RFP) are as follows (however the vendor must refer to the MoD website at www.mod.nic.in to check for changes to these details):-

- (a) Shri Ravikant, IAS/ Bihar (1984) (Retd)
Apartment No. 502, Tower- 1 M3M Merlin,
Sector – 67, Gurugram- 122001 (Haryana),
Mob: 9953555566, E-mail – 84ravikant@gmail.com
- (b) Dr. Prabhat Kumar, IAS/ UP (1985) (Retd)
C-120, Sector – 39, Noida-201301,
Gautam Budh Nagar (Uttar Pradesh)
Mob: 9810530048, E-mail – prabhatfamily@gmail.com
- (c) Shri Chet Ram, IRS(1985) (Retd)
Flat No. A-203, Building Gemini, Gladys Alwares Marge
Hiranandani Meadows, Off Pokhran Road no. 2,
Thane(W), Maharashtra- 400610
Mob: 9869479987, E-mail – cr_koli@yahoo.com

12.2 All communications to Independent Monitors will be copied to Director (Vigilance). The Designation and Contact details of Director (Vigilance) are as follows:-

Shri KV Ajith
Deputy Secretary(Vigilance)
Room No. 340, B Wing
Sena Bhawan
New Delhi – 110011

12.3 After the Integrity Pact is signed, the Buyer shall provide a copy thereof, along with a brief background of the case to the Independent Monitors, if required by them.

12.4 The Bidder(s), if they deem it necessary, may furnish any information as relevant to their bid to the Independent Monitors.

12.5 If any complaint with regard to violation of the IP is received by the buyer in a procurement case, the buyer shall refer the complaint to the Independent Monitors for their comments/enquiry.

12.6 If the Independent Monitors need to peruse the relevant records of the Buyer in connection with the complaint sent to them by the Buyer, the Buyer shall make arrangement for such perusal of records by the Independent Monitors.

12.7 The report of enquiry, if any, made by the Independent Monitors shall be submitted to the head of the Acquisition Wing of the Ministry of Defence, Government of India for a final and appropriate decision in the matter keeping in view the provision of this Pact.

13 **Examination of Books of Accounts**

In case of any allegation of violation of any provisions of this Integrity Pact or payment of commission, the Buyer or its agencies shall be entitled to examine the Books of Accounts of the Bidder and the Bidder shall provide necessary information of the relevant financial documents in English and shall extend all possible help for the purpose of such examination.

14 **Law and Place of Jurisdiction**

This Pact is subject to Indian Law. The place of performance and jurisdiction is the seat of the Buyer i.e. New Delhi.

15 **Other Legal Actions**

The actions stipulated in this Integrity Pact are without prejudice to any other legal action that may follow in accordance with the provisions of the extant law in force relating to any civil or criminal proceedings.

16 **Validity**

16.1 The validity of this Integrity Pact shall be from date of its signing and extend up to 5 years or the complete execution of the contract to the satisfaction of both the Buyer and the Bidder/Seller, whichever is later.

16.2 Should one or several provisions of this Pact turn out to be invalid; the remainder of this Pact remains valid. In this case, the parties will strive to come to an agreement to their original intentions.

17 The Parties hereby sign this Integrity Pact at on

BUYER

BIDDER

MINISTRY OF DEFENCE,
GOVERNMENT OF INDIA

CHIEF EXECUTIVE OFFICER /

Witness

1. ____
2. ____

Witness

1. ____
2. ____

EMD BANK GUARANTEE FORMAT

Whereas(hereinafter called the "Bidder") has submitted their offer dated..... for the supply of.....(hereinafter called the "Bid") against the Buyer's Request for proposal No.KNOW ALL MEN by these presents that WEofhaving our registered office at are bound unto.....(hereinafter called the "Buyer") in the sum of Rs Five Crore (₹ 5 Crore) for which payment will and truly to be made to the said Buyer, the Bank binds itself, Its successors and assigns by these presents.

Sealed with the Common Seal of the said Bank this.....day of.....20.....

The conditions of obligations are:-

1. If the Bidder withdraws or amends, impairs or derogates from the Bid in any respect within the period of validity of this tender.
2. If the Bidder having been notified of the acceptance of his tender by the Buyer during the period of its validity.
 - (a) If the Bidder fails to furnish the Performance Security for the due performance of the contract.
 - (b) Fails or refuses to accept/execute the contract.
3. If the bidder violates Pre-Contract Integrity Pact.

WE undertake to pay the Buyer up to the above amount upon receipt of its first written demand, without the Buyer having to substantiate its demand, provided that in its demand the Buyer will note that the amount claimed by it is due to it owing to the occurrence of above mentioned conditions, specifying the occurred condition or conditions.

This guarantee will remain in force upto and including 45 days after the period of 18 months/ contract signing whichever is later and any demand in respect thereof should reach the Bank not later than the above date.

(Signature of the authorized officer of the Bank)

Name and designation of the officer

Seal, name & address of the Bank and address of the Branch

Appendix 'L'

(Refers to Para 6, 26, 27 and 60 of RFP)

**SHIPYARD QUALIFICATION PARAMETERS/
CRITERIA FOR VENDOR QUALIFICATION**

1. **SHIPYARD TECHNICAL QUALIFICATION PARAMETERS.** The Shipyard is required to fulfill minimum Technical Qualification for construction of FPVs as per parameters specified in Annexure I to Appendix C, Chapter XII of DAP-2020. Duly filled **FORM-1 (Annexure I to Appendix 'L' of RFP)** indicating compliance to the nine attributes of the eligibility criteria is to be submitted by the Shipyards. Documentary proofs in support of these criteria are to be submitted by the bidding Shipyard. These eligibility conditions would be evaluated by a Committee constituted by CGHQ. Only the eligible Shipyards would be considered for next stage of assessment.

2. **FINANCIAL QUALIFICATION PARAMETERS**

(a) **Financial Parameter Attribute No 1- Long Term Credit Rating.** The Long Term Credit Rating should be **minimum A or equivalent** from RBI approved Credit Rating Agencies at time of bid submission till declaration of L1. The Credit Rating document is to be submitted along with the bids. Latest Credit rating to be submitted by the TEC-qualified entities at the time of CNC. Bidders are recommended to maintain their rating in date for consideration in the procurement process. The credit rating available online of the respective rating agency will be referred by SHQ as and when required.

(b) **Financial Parameter Attribute No 2 - Average Annual Turnover.** The minimum average turnover of the bidder during the best three out of last five Financial Years calculated as per audited balance sheets should be **Rs 44.20 Cr** of outflow required for the Project per year at the time of bid submission. Duly filled **FORM - 2 (Annexure II to Appendix 'L' of RFP)** to be submitted along with the bid.

(c) **Financial Parameter Attribute No 3 - Working Capital.** The Working Capital shall be more than or equivalent to **Rs 55.25 Cr**. The bidder shall demonstrate access to unutilised line of credit/ overdraft facility/ cash credit facility from its consortium of Banks during bid submission vide a letter issued by the Bank or lead Bank of the consortium. Alternatively or complementarily, the Bidder should demonstrate liquid asset in form of cash/ marketable securities in its Balance Sheet. Duly filled **FORM - 3 (Annexure III to Appendix 'L')** to be submitted along with the bid.

Note:-

(i) Credit Rating should only be from RBI approved Credit Rating Agencies.

(ii) Annual Turnover is defined as “Annual Sales volume net of all discounts, taxes and interest earnings etc. excluding extraordinary income”.

(iii) The Audited Balance Sheets, Profit and Loss Account and cash flow statement of Group Companies shall not be considered for evaluation.

(iv) Annual Turnover would be substantiated through:-

(aa) Audited Balance Sheets of the relevant financial years, provided the figures, are stated in the Balance Sheet(s) or

(ab) Specific certificate(s) issued by its Statutory Auditors

(v) In case of a Joint Venture, the JV firm should meet all the above mentioned financial criteria for the project.

(vi) In case of a newly formed Joint Venture (less than 05 year old), the Financial Criteria will be assessed as follows: -

(aa) **Credit Rating**- The lead JV partner should meet the minimum credit rating required for the category.

(ab) **Average Annual Turnover**- Would be based on the turnover of individual JV members in the ratio of their share holding pattern based on the audited balance sheets.

(ac) **Working Capital**- JV firm should meet the Working Capital requirement.

(vii) The envelope containing Shipyard Qualification Parameters shall include 02 separate envelopes for documents pertaining to Shipyard Technical Qualification Parameters (**Para 1, Appendix ‘L’**) and financial qualification parameters (**Para 2, Appendix ‘L’**) as indicated above.

FORM-1

**MINIMUM TECHNICAL QUALIFICATION PARAMETERS FOR CONSTRUCTION OF
FPVs I.A.W. ANNEXURE I TO APPENDIX C, CHAPTER XII OF DAP 2020**

Attribute	Parameter	Requirement	Compliance *
1	Warship Construction License	Mandatory	
2	Building Dock/ Slipway/ Ship Lift Features	Building Dock/Slipway/ Ship Lift for ship more than 3,000T Light Ship Displacement, LOA greater than 40m, and draught lesser than 4m	
3	Water Frontage/ Outfitting & Berthing Facilities with support services	Berth greater than 40m with water depth greater than 3m (at all times)	
4	Lifting Capacity	Capability to lift Minimum 40T on building berth and 20T on outfitting berth with all round reach	
5	Steel Stockyard Capacity	Storage for 1500T steel	
6	Steel Fabrication	CNC machines and automatic/ semi-automatic welding facilities with minimum capacity of 300T fabrication monthly	
7	Steel bending and forming facility	Lesser than 20mm (Firms to indicate in- house/ outsourced capacity).	
8	Exposure to Shipbuilding	Demonstrated capacity in Construction and successful delivery of at least one ship of CAT C or a self- propelled vessel of light ship displacement greater than 500T	
9	Quality Control	Must hold ISO 9001:2015 and OHSAS 18001:2007 or later certification	
<p>* Note - The shipyards are to indicate compliance/Non-compliance in this column substantiated by supporting documents/certificates. Conditional/Vague statements response would make the bid liable for rejection. Validity of all documents will be considered as on date of Bid submission.</p>			

FORM-2

AVERAGE ANNUAL TURNOVER

(Financial Qualification Attribute No. 2)

Subject: Application for Pre-Qualification for Construction of
14 Fast Patrol Vessels Project

(The following table shall be filled in for the Applicant)

Applicant's name: (insert full name):

ANNUAL TURNOVER	
Year (Financial year to be indicated by Applicant)	Amount INR
(indicate Financial year)	(insert amount in INR)
Average Annual Turnover**	

According to the information, explanations and documents provide by the Applicant to us, we certify that the above information is correct to the best of our knowledge and belief.

.....(Signature of the Statutory Auditor)

The Annual Turnover of Group Companies, shall not be considered for evaluation. The Applicants are advised to strictly adhere to this requirement and submit the Balance Sheets, specific certificate issued by its Statutory Auditors or in case the accounts of the Applicant are not required to be statutorily audited, certified in accordance with local legislation, certificate(s) issued by the clients in the name of the Applicant only.

.....(Full Name of the Statutory Auditor)

.....(Name of the Statutory Auditor's Firm)

.....(Complex Address of the Statutory Auditor's Firm)

.....(Telephone/fax numbers, including country and city codes)

.....(Email of Statutory Auditor)

.....(Seal of Statutory Auditor)

Membership No. of the Statutory Auditor

Annual Turnover should be substantiated through

- (i) Audited Balance Sheets of the relevant financial years, provided the figures, are stated in the Balance Sheet(s) or
- (ii) Specific certificate(s) issued by its Statutory Auditors or in case the accounts of the Applicant are not required to be statutorily audited, certified in accordance with local legislation or
- (iii) Certificate(s) issued by the Clients.

**Total INR equivalent for best three out of five FYs divided by 3.

COPY NO. 5

FORM-3

FINANCIAL SITUATION OF THE APPLICANT

(Financial Qualification Attribute No. 3)

Subject: Application for Pre-Qualification for Construction of
14 FPVs Project

(The following table shall be filled in for the Applicant)

Applicant's Name: (insert full name)

1. Financial Data

Type of Financial information (in INR)	Historic information for previous 5 (Five) Years				
	Year 5	Year 4	Year 3	Year 2	Year 1
Statement of Financial Position (Information from Audited Balance Sheet)					
A. Total Assets (TA) (Excluding Deferred Expenditure and Losses)					
B. Total Outside Liabilities (TL) (Long Term Liabilities and Current Liabilities and Provisions)					
C. Revaluation Reserve					
D. Net Worth = A-B-C					
E. Current Assets (CA)					
F. Current Liabilities and Provisions (CL)					
G. Working Capital = E-F					
H. Proposed specific line of credit agreed by commercial Bank and/or govt recognized financial institution for the subject contract	N/A	N/A	N/A	N/A	
J. Total Available Working Capital (G+H) for the subject contract	N/A	N/A	N/A	N/A	
K. Working Capital requirements for current contract commitments	N/A	N/A	N/A	N/A	

L. Source of Finance for current contract commitments	N/A	N/A	N/A	N/A	
M. Working Capital available after meeting the Working Capital requirements for current contract commitments (J+K+L)	N/A	N/A	N/A	N/A	
Financial Soundness					
N. Net Worth					
P. Profit before taxes					
Q. Profit after taxes					

2. **Financial Documents**

(a) The Audited Balance Sheets, Profit and Loss Account and cash flow statement of Group Companies, shall not be considered for evaluation. The Applicants are advised to strictly adhere to this requirement and submit the above statement of the Applicant.

(b) The Applicant shall attach copies of the Audited Balance Sheets or, if not required by the laws of the Applicant's country, other Financial Statements for 5 (five) years preceding the Applicant Due Date, which shall:

- (i) Reflect the financial of the Applicant, and not an affiliated entity;
- (ii) Be statutorily audited or in case the accounts of the Applicant are not required to be statutorily audited, certified in accordance with local legislation;
- (iii) Be complete, including all notes attached thereto;
- (iv) Correspond to accounting periods already completed and audited (no statements for partial periods shall be requested or accepted).

3. **Note:**

(a) Year 1 will be the latest completed financial year, preceding the Applicant Due Date. Year 2 shall be the year immediately preceding Year 1 and so on. For the avoidance of doubt, financial year shall, for the purposes of the Applicant hereunder, mean the accounting year followed by the Applicant in the normal course of its business

(b) If the most recent set of Balance Sheet or the Financial Statement, as the case may be, is for a period earlier than 12 months from the date of application, justification should be provided for the same.

(c) The Working Capital for Year 1 at Serial M will be considered for Evaluation.

**DOCUMENTS TO BE SUBMITTED BY THE BIDDER ALONG WITH THEIR
TECHNO-COMMERCIAL PROPOSALS**

The list of documents which needs to be mandatorily submitted by the Bidders as part of Technical Proposal are placed below. Non-submission of the documents may result in disqualification of the Bidder from the bidding process.

Ser No.	Reference	Document Description
1.	Para 5 of RFP	Declaration by Bidder : Debarment of vendors
2.	Para 18 of RFP	Declaration by Bidder: Government Regulation
3.	Para 19 of RFP	Declaration by Bidder : Patent Rights
4.	Para 21 of RFP	Declaration by Bidder : Fall Clause
5.	Para 30 & 31 of RFP	Technical document covering performance parameters.
6.	Annexure IX to Appendix 'A'	Undertaking to comply with Indigenous Design
7.	Appendix 'B'	Compliance Table/Undertaking for compliance to all Technical and Commercial parameters of RFP
8.	Appendix 'C'	Warranty Clause
9.	Appendix 'E'	CERTIFICATE: Malicious Code
10.	Annexure I & II to Appendix 'F'	Manufacturer's Recommended List of Spares (MRLS)
11.	Annexure III to Appendix 'F'	List of SMT/STEs, Jigs, Fixture and Infrastructure
12.	Annexure IV to Appendix 'F'	Technical Literature
13.	Annexure V to Appendix 'F'	Training Aggregates
14.	Appendix 'J'	Price Bid
15.	Annexure I to Appendix 'K'	Pre-Contract Integrity Pact
16.	Annexure II to Appendix 'K'	EMD
17.	Para 33 of Part II Technical Requirements of RFP(Appendix D)	Build Strategy
18.	Appendix L	Forms 1, 2 & 3 and Documents supporting Shipyard Qualification Parameters
19.	-	Any other document left out in this list to verify the claim submitted by the Bidder

FORMAT OF OPERATING GUIDE LINES AND MODALITIES

TRIPARTITE ESCROW AGREEMENT

FOR CONTRACT NO. : (CONTRACT) _____

DATED : _____

ESCROW AGREEMENT

AMONG

(SHIPYARD)

AND

(BANK)

AND

MINISTRY OF DEFENCE, GOVERNMENT OF INDIA

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ESCROW AGREEMENT

THIS ESCROW AGREEMENT is entered into on this the ____ day of _____.

AMONGST

1. **(Shipyard)**, a company incorporated under the provisions of the Companies Act, 1956 with Corporate Identity Number (CIN) - _____ and having its registered office at _____ (hereinafter referred to as the “**Seller**” which expression shall, unless repugnant to the context or meaning thereof, include its successors and Permitted Assigns;

2. **(Bank)**, a bank within the meaning of the Banking Regulation Act, 1949 and carrying various banking activities, having its registered office at _____ amongst other places _____ (hereinafter referred to as the “**Escrow Bank**”, which expression shall, unless repugnant to the context or meaning thereof, include its successors and substitutes)

3. The **President of India, represented by Joint Secretary and Acquisition Manager (Maritime& Systems), Ministry of Defence, Government of India, South Block, New Delhi, 110001** (hereinafter referred to as the “**Buyer**”, which expression shall, unless repugnant to the context or meaning thereof, include its representative as enumerated in _____, administrators, successors and assigns); and **WHEREAS:**

(a) The Seller is engaged in the business of shipbuilding, _____. The Buyer will enter into a **Contract** _____ **dated** _____ with the Seller (“**14 Fast Patrol Vessels (14FPVs) Agreement**”) for construction of 14Fast Patrol Vessel under the 14Fast Patrol Vessel Project (**the Project**); and

(b) The 14 FPVs Agreement requires the Seller to establish an Escrow Account, *inter alia*, on the terms and conditions stated therein.

Pursuant to the above, the Seller has requested the Escrow Bank to be the escrow bank in relation to the Escrow Account (as defined below) and the Escrow Bank has consented to the same.

NOW THEREFORE in consideration of the premises and of other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereto agree to the terms and conditions upon which the Escrow Account shall be maintained, operated and drawn upon, as follows:

ARTICLE 1
DEFINITIONS AND INTERPRETATION

1.1 Definitions

In this Agreement, the following words and expressions shall, unless repugnant to the context or meaning thereof, have the meaning hereinafter respectively assigned to them:

(a) **“Agreement”** means this Escrow Agreement and any amendment thereto made in accordance with the provisions contained herein.

(b) **“14 Fast Patrol Vessels (14 FPVs) Agreement”** means the Contract referred to in Recital (A) above and shall include all of its Recitals and Schedules and any amendments made thereto in accordance with the provisions contained in this behalf therein.

(c) **“_____”** means **Bank Account No _____**, maintained by the “Seller” with _____ or any other account as duly decided by all the Parties from time to time.

(d) **“Cure Period”** means the period specified in this Agreement for curing any breach or default of any provision of this Agreement by the Seller, and shall commence from the date on which a notice is delivered by the Buyer, as the case may be, to the Seller asking the latter to cure the breach or default specified in such notice.

(e) **“Escrow Account”** means an escrow account with Flexi facilities (i.e. Auto sweep in – sweep out linked term deposit facility) established in terms of and under this Agreement, viz, **Account no. _____** and shall include the Sub-Accounts.

(f) **“Escrow Default”** shall have the meaning ascribed thereto in **Clause 6.1**.

(g) **[LEFT BLANK]**

(h) **“Parties”** means the Parties to this Agreement collectively and **“Party”** shall mean any Party to this Agreement individually.

(j) **“Payment Date”** means, in relation to any payment specified in **Clause 4.1**, the date(s) specified for such payment.

(k) **“Permitted Assigns”** means assigns permitted by the Buyer in writing.

(l) **“Permitted Deposits and Permitted Payments”** means the deposits made in and the payments made from the Escrow Account i.e.:-

(i) All Stage payments as per the terms of the 14 FPVs Agreement received from the Buyer in the Escrow Account.

(ii) All payments to the lenders/banks towards issuance of Bank Guarantees (BG), Letter of credits (LC) and interest related to this Project paid from the Escrow Account.

(iii) All vendor payments towards the purchase of all types of materials and services purchased / availed / used for the Project which are made from the Escrow Account. The Seller has a system of procuring yard materials such as glasses, electrodes, filler wire, fuel hardware, paints etc. centrally. The services such as Labour, staff, transport, administrative facilities, security, material handling equipment, utilities, yard up keep, other common shared cost / expenses, etc. are also procured (to avail benefits of scale & ease of operations) and paid centrally. The apportioned financing cost and common expenses allocated to the Project will be permitted to be drawn from Escrow Account on monthly basis and will be transferred to _____ for further disbursement.

(iv) Reimbursement of payments made by the SELLER for the **14 FPVs Project** from its centralised account in case these payments could not be made from the Escrow Account. The reimbursement of such payments shall be claimed by the SELLER from the Escrow account based on providing necessary proof and approval of Buyer Rep.

(v) Any amounts remaining in the Escrow Account, on completion of the Project, will be transferred to the Seller’s Common Pool Account.

(vi) Any other deposits and payments as may be agreed by the Seller and the Buyer and communicated to the Escrow Bank.

1.2 Interpretation

1.2.1 The words and expressions beginning with capital letters and defined in this Agreement shall have the meaning ascribed thereto herein, and the words and expressions used in this Agreement and not defined herein but defined in the **14 FPVs** Agreement shall, unless repugnant to the context, have the meaning ascribed thereto in the 14 FPVs Agreement.

1.2.2 References to Clauses are, unless stated otherwise, references to Clauses of this Agreement.

1.2.3 The rules of interpretation stated in the **14 FPVs** Agreement shall apply, mutatis mutandis, to this Agreement.

COPY NO. 5

ARTICLE 2
ESCROW ACCOUNT

2.1 Escrow Bank to act as trustee

2.1.1 The Seller hereby appoints the Escrow Bank to act as trustee for the Buyer and the Seller in connection herewith and authorises the Escrow Bank to exercise such rights, powers, authorities and discretion as are specifically delegated to the Escrow Bank by the terms hereof together with all such rights, powers, authorities and discretion as are reasonably incidental hereto, and the Escrow Bank accepts such appointment pursuant to the terms hereof and in consideration of the fee specified in the Fee Letter issued by the Escrow Bank to the Seller which is paid/agreed to be paid by the Seller.

2.1.2 The Seller hereby declares that all rights, title and interest in and to the Escrow Account shall be vested in the Escrow Bank and held in trust for the Buyer, and the Seller, and applied in accordance with the terms of this Agreement. No person other than the Buyer and the Seller shall have any rights hereunder as the beneficiaries of, or as third party beneficiaries under this Agreement.

2.2 Acceptance of Escrow Bank

The Escrow Bank hereby agrees to act as such and to accept all payments and other amounts to be delivered to and held by the Escrow Bank pursuant to the provisions of this Agreement. The Escrow Bank shall hold and safeguard the Escrow Account during the term of this Agreement and shall treat the amount in the Escrow Account as monies deposited by the Buyer and the Seller with the Escrow Bank. In performing its functions and duties under this Agreement, the Escrow Bank shall act in trust for the benefit of, and as agent for, the Buyer the Seller or their nominees, successors or assigns, in accordance with the provisions of this Agreement.

2.3 Establishment and operation of Escrow Account

2.3.1 The Seller has opened an Escrow Account with Escrow Bank, the details of which are as under:-

Account No. _____, **(Bank)** _____.

2.3.2 The Escrow Bank shall maintain the Escrow Account in accordance with the terms of this Agreement and its usual practices and applicable regulations, and pay interest on the balance in the said account from time to time at applicable rates.

2.3.3 The operation of Escrow Account on behalf of the Buyer shall be carried out by his Representative as enumerated in **ARTICLE ____ of 14 FPVs Agreement.**

2.4 Escrow Bank's fee

The Escrow Bank's fees towards maintenance and operation of the Escrow account as mentioned in the aforesaid Fee Letter shall be paid by the Seller as per agreed terms.

2.5 Rights of the Parties

The rights of the Buyer and the Seller in the monies held in the Escrow Account are set forth in their entirety in this Agreement and the Buyer and the Seller shall have no other rights against or to the monies in the Escrow Account.

COPY NO. 5

ARTICLE 3
DEPOSITS INTO ESCROW ACCOUNT

3.1 Deposits by the Buyer

The Buyer agrees and undertakes that, as and when due and payable, it shall deposit into and/or credit the Escrow Account with, monies to be disbursed by the Buyer to the Seller under 14 FPVs Agreement. The Buyer shall not make payments under the 14 FPVs Agreement to the Seller through any other account/s or by any other modes/means.

3.2 Interest on deposits

The Escrow Bank agrees and undertakes that all interest accruing on the balances of the Escrow Account and sub-accounts shall be credited to the Escrow Account. The applicable TDS Certificate will be issued by Escrow Bank in favour of SELLER for the amount deducted towards TDS (if any) on the interest accrued/ credited.

COPY NO. 5

ARTICLE 4
WITHDRAWALS FROM ESCROW ACCOUNT

4.1 Withdrawals during 14 FPVs Contract Period

As per the requirements communicated in writing by the Seller to meet expenses for implementation of the project, the Escrow Bank shall withdraw amounts from the Escrow Account and appropriate them as per instruction of the Seller for implementation of the Project as per the 14 FPVs Agreement. The Seller shall not utilize the proceeds of the Escrow Account for purposes other than those which are specifically permitted hereunder and the 14 FPVs Agreement.

4.2 Withdrawals upon Termination

Upon Termination of the 14 FPVs Agreement, all amounts standing to the credit of the Escrow Account shall, notwithstanding anything in this Agreement, be transferred to Seller's common pool account and duly certified by Escrow Bank.

4.3 Application of insurance proceeds

Notwithstanding anything in this Agreement, the proceeds from all insurance claims, except life and injury, shall be deposited into and/or credited to the Escrow Account and utilised for any necessary repair, reconstruction, reinstatement, replacement, improvement, delivery or installation of the Project.

4.4 The Escrow Bank shall not act on any instructions, which are unclear and/or ambiguous. If any instructions are unclear and/or ambiguous, the Escrow Bank may refer back to the Party issuing the instructions for clarification and may not, in its absolute discretion and without any liability on its part, act upon the instructions until any ambiguity or conflict has been resolved to its satisfaction.

ARTICLE 5
OBLIGATIONS OF THE ESCROW BANK

5.1 Segregation of funds

Monies and other property received by the Escrow Bank under this Agreement shall, until used or applied in accordance with this Agreement, be held by the Escrow Bank in trust for the purposes for which they were received, and shall be segregated from other funds and property of the Escrow Bank.

5.2 Monitoring Escrow Account

Escrow Bank to ensure that the funds are deposited and utilized as per Permitted Deposits and Permitted Payments as defined in this Agreement.

5.3 Submission of Escrow Account Statement

The Escrow Bank shall submit quarterly statement of the Escrow Account to the Buyer giving details of the inflow and outflow of funds from the Escrow Account supported by the Bank statement. The statement will be submitted in the agreed format to Buyer for scrutiny.

5.4 Communications and notices

In discharge of its duties and obligations hereunder, the Escrow Bank:

- (a) may, in the absence of apparent or manifest error/mistake , rely upon any matters of fact or any document which might reasonably be expected to be within the knowledge of the Seller and certified or signed by or on behalf of the Seller and
- (b) may, in the absence any apparent or manifest error or mistake , rely upon the authenticity of any communication or document believed by it to be authentic;

The Escrow Bank shall not, in the absence of gross negligence or fraud on its part, be liable for any injury or loss caused to any other party to this agreement due to the escrow bank acting or discharging its duties hereunder as mentioned above.

5.5 Regulatory approvals

The Escrow Bank shall use its best efforts to procure, and thereafter maintain and comply with, all regulatory approvals required for it to establish and operate the Escrow Account. The Escrow Bank represents and warrants that it is not aware of any reason why such regulatory approvals will not ordinarily be granted to the Escrow Bank.

COPY NO. 5

ARTICLE 6
ESCROW DEFAULT

6.1 Escrow Default

6.1.1 Following events shall constitute an event of default by the Seller ("Escrow Default") unless such event of default has occurred as a result of Force Majeure or any act or omission of the Buyer:

(a) the Seller causes the Escrow Bank to transfer funds to any account of the Seller in breach of the terms of this Agreement and fails to cure such breach by depositing the relevant funds into the Escrow Account in which such transfer should have been made, within a Cure Period of 5 (five) business days; or

(b) the Seller commits or causes any other breach of the provisions of this Agreement and fails to cure the same within a Cure Period of 5 (five) business days.

6.1.2 Upon occurrence of an Escrow Default, the consequences thereof shall be dealt with under and in accordance with the provisions of the 14 FPVs Agreement and this Agreement.

ARTICLE 7
TERMINATION OF ESCROW AGREEMENT

7.1 Duration of the Escrow Agreement

This Agreement shall remain in full force and effect, until the completion of obligation of the parties under the 14 FPVs Agreement, so long as any of its obligations to the Buyer remain to be discharged, unless terminated earlier by consent of all the Parties or otherwise in accordance with the provisions of this Agreement.

7.2 Substitution of Escrow Bank

The Seller may, by not less than 45 (forty five) days prior notice to the Escrow Bank and the Buyer, terminate this Agreement and appoint a new bank, provided that the new escrow bank is acceptable to the Buyer and arrangements are made satisfactory to the Buyer for transfer of amounts deposited in the Escrow Account to a new escrow account established with the successor escrow bank. The termination of this Agreement shall take effect only upon coming into force of an escrow agreement with the substitute escrow bank.

7.3 Closure of Escrow Account

The Escrow Bank shall, at the request of the Seller and the Buyer made on or after the payment by the Seller of all outstanding amounts under the 14 FPVs Agreement including the payments specified in Clause 4.2, and upon confirmation of receipt of such payments, close the Escrow Account and pay any amount standing to the credit thereof to the Seller's _____ Account. Upon closure of the Escrow Account hereunder, the Escrow Agreement shall be deemed to be terminated and discharged.

ARTICLE 8
INDEMNITY

8.1 General indemnity

8.1.1 The Seller will indemnify, defend and hold the Buyer and Escrow Bank harmless against any and all proceedings, actions and third party claims for any loss, damage, cost and expense arising out of any breach by the Seller of any of its obligations under this Agreement or on account of failure of the Seller to comply with Applicable Laws and Applicable Permits.

8.1.2 The Buyer will indemnify, defend and hold the Seller harmless against any and all proceedings, actions and third party claims for any loss, damage, cost and expense arising out of failure of the Buyer to fulfill any of its obligations under this Agreement materially and adversely affecting the performance of the Seller's obligations under the 14 FPVs Agreement or this Agreement other than any loss, damage, cost and expense arising out of acts done in discharge of their lawful functions by the Buyer, its officers, servants and agents.

8.1.3 The Escrow Bank will indemnify, defend and hold the Seller harmless against any and all proceedings, actions and third party claims for any loss, damage, cost and expense arising out of any gross negligence, fraud or willful misconduct on the part of Escrow Bank which would materially and adversely affect the performance of the Seller's obligations under the 14 FPVs Agreement other than any loss, damage, cost and expense, arising out of acts done in discharge of their lawful functions by the Escrow Bank, its officers, servants and agents.

8.2 Notice and contest of claims

In the event that any Party hereto receives a claim from a third party in respect of which it is entitled to the benefit of an indemnity under Clause 8.1 or in respect of which it is entitled to reimbursement ("Indemnified Party"), it shall notify the other Party for indemnifying such claim hereunder ("Indemnifying Party") within 15 (fifteen) days of receipt of the claim and shall not settle or pay the claim without the prior approval of the Indemnifying Party, which approval shall not be unreasonably withheld or delayed. In the event that the Indemnifying Party wishes to contest or dispute the claim, it may conduct the proceedings in the name of the Indemnified Party and shall bear all costs involved in contesting the same. The Indemnified Party shall provide all cooperation and assistance in contesting any claim and shall sign all such writings and documents as the Indemnifying Party may reasonably require.

ARTICLE 9
DISPUTE RESOLUTION

9.1 Governing law and jurisdiction

This Agreement shall be construed and interpreted in accordance with and governed by the laws of India, and the Courts at Delhi shall have jurisdiction over all matters arising out of or relating to this Agreement.

9.2 Dispute resolution

9.2.1 Any dispute, difference or claim arising out of or in connection with this Agreement, which is not resolved amicably, shall be decided finally by reference to arbitration to comprising one nominee of each Party to the dispute, and where the number of such nominees is an even number, the nominees shall elect another person to such. Such arbitration shall be held in accordance with the Rules of Arbitration of the International Centre for Alternative Dispute Resolution, New Delhi ("Rules") or such other rules as may be mutually agreed by the Parties, and shall be subject to the provisions of the Arbitration and Conciliation Act, 1996

9.2.2 The Arbitrators shall issue an award which shall be final and binding on the Parties. The venue of arbitration shall be Delhi and the language of arbitration shall be English.

ARTICLE 10
MISCELLANEOUS PROVISIONS

10.1 Priority of agreements

In the event of any conflict between the 14 FPVs Agreement and this Agreement, the provisions contained in the 14 FPVs Agreement to that extent shall prevail over this Agreement as between the Buyer and the Seller and this Agreement shall thereafter be amended/ modified to such an extent so that there is no inconsistency between this Agreement and the 14 FPVs Agreement.

10.2 Alteration of terms

All additions, amendments, modifications and variations to this Agreement shall be effectual and binding only if the same is in writing and signed by the duly authorised representatives of the Parties.

10.3 Waiver

10.3.1 Waiver by any Party of a default by another Party in the observance and performance of any provision of or obligations under this Agreement:

- (a) shall not operate or be construed as a waiver of any other or subsequent default hereof or of other provisions of or obligations under this Agreement;
- (b) shall not be effective unless it is in writing and executed by a duly authorised representative of the Party; and
- (c) shall not affect the validity or enforceability of this Agreement in any manner.

10.3.2 Neither the failure by any Party to insist on any occasion, the performance of the terms, conditions and provisions of this Agreement or any obligation hereunder nor granting time granted by any Party to any other Party for such performance, shall be treated or deemed as waiver of such breach or acceptance of any variation or the relinquishment of any such right hereunder.

10.4 No third party beneficiaries

This Agreement is solely for the benefit of the Parties and no other person or entity shall have any rights hereunder.

10.5 Survival

10.5.1 Termination of this Agreement:

- (a) shall not relieve the Parties of any obligations hereunder which expressly or by implication survive termination hereof; and
- (b) shall not relieve either Party of any obligations or liabilities for loss or damage to the other Party arising out of, or caused by, acts or omissions of such Party prior to the effectiveness of such termination or arising out of such termination.

10.5.2 All obligations surviving the cancellation, expiration or termination of this Agreement shall only survive for a period of 3 (three) years following the date of such termination or expiry of this Agreement.

10.6 Severability

If for any reason whatever any provision of this Agreement is or becomes invalid, illegal or unenforceable or is declared by any court of competent jurisdiction or any other instrumentality to be invalid, illegal or unenforceable, the validity, legality or enforceability of the remaining provisions shall not be affected in any manner, and the Parties will negotiate in good faith with a view to agreeing to one or more provisions which may be substituted for such invalid, unenforceable or illegal provisions, as nearly as is practicable to such invalid, illegal or unenforceable provision. Failure to agree upon any such provisions shall not be subject to dispute resolution under Clause 10.1 of this Agreement or otherwise.

10.7 Successors and assigns

This Agreement shall be binding on and shall inure to the benefit of the Parties and their respective successors and Permitted Assigns.

10.8 Notices

All notices or other communications to be given or made under this Agreement shall be in writing and shall either be delivered personally or sent by courier or registered post with an additional copy to be sent by facsimile or e-mail. The address for service of each Party, its facsimile number or e-mail set out under its name on the signing pages hereto. A notice shall be effective upon actual receipt thereof, save that where it is received after 5.30 (five thirty) p.m. on a business day, or on a day that is not a business day, the notice shall be deemed to be received on the first business day following the date of actual receipt. Without prejudice to the foregoing, a Party giving or making a notice or communication by facsimile or e-mail shall promptly deliver a copy thereof personally, or send it by courier or registered post to the addressee of such notice or communication. It is hereby agreed and acknowledged that any Party may by notice change the address to which such notices and communications to it are to be delivered or mailed. Such change shall be effective when all the Parties have notice of it.

10.9 Language

All notices, certificates, correspondence and proceedings under or in connection with this Agreement shall be in English.

10.10 Authorised representatives

Each of the Parties shall, by notice in writing, designate their respective authorised representatives through whom only all communications shall be made. A Party hereto shall be entitled to remove and/or substitute or make fresh appointment of such authorised representative by similar notice.

10.11 Original Document

This Agreement may be executed in three counterparts, each of which when executed and delivered shall constitute an original of this Agreement.

ARTICLE 11
REPRESENTATIONS AND WARRANTIES

11.1 Each Party, for itself and not for the others, represents and warrants to the others that:

- (a) it has the power and authority to execute this Agreement and perform its obligations hereunder;
- (b) its obligations under this Agreement constitute legal, valid and binding obligations enforceable in accordance with the terms of this Agreement; and
- (c) it is not aware of any legal, quasi-legal, administrative, arbitration, mediation, conciliation or other proceedings, claims, actions, governmental investigations, orders, judgments or decrees of any nature made, existing, threatened, anticipated or pending by or against it which may prejudicially affect the due performance or enforceability of this Agreement or any obligation, act, omission or transaction contemplated hereunder.

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ARTICLE 12
EXPENSES

12.1 It is expressly agreed by and between the Parties hereto that the Seller shall bear and pay upfront all the costs, charges and expenses including the fees of the Escrow Bank's advocate/s that may be incurred by the Escrow Bank on account of any litigation arising out of or in connection with this Agreement and the Escrow Bank shall not be required or liable to bear or pay any such costs and expenses. In the event the Escrow Bank, without prejudice to its rights herein, happens to incur any such costs, charges and expenses (including fees of Escrow Bank's advocate/s), the same shall be reimbursed by the Seller to Escrow Bank immediately upon demand from the Escrow Bank.

12.2 The Seller further agrees and undertakes to pay or reimburse to Escrow Bank immediately on demand all costs, charges and expenses arising out of or in connection with this Agreement (including but not limited to opening up of Escrow Account and costs, charges and expenses as stated in the foregoing paragraph) or incidental to the enforcement of any of the provisions of this Agreement or in connection with any stamp duty, statutory taxes, charges, duty, etc. or duty required to be paid by Escrow Bank under this Agreement or with respect to amendment, waiver or consent relating to this Agreement.

GLOSSARY

AMC	Annual Maintenance Contract
AoN	Acceptance of Necessity
APBG	Advance Payment Bank Guarantee
ASTM	American Society for Testing and Materials
ATP	Acceptance Test Procedure
B&D	Base and Depot
CAMC	Comprehensive Annual Maintenance Contract
CCTV	Closed Circuit Television
CGBR	Coast Guard Book of Reference
CGHQ	Coast Guard Headquarters
CGOT	Coast Guard Overseeing Team
CGRPS	Coast Guard Refit and Production Superintendent
CGRPT	Coast Guard Refit and Production Team
CGSD	Coast Guard Store Depot
CKD	Completely Knocked Down
CNC	Contract Negotiation Committee
COTS	Commercial Off The Shelf
DAC	Defence Acquisition Council
DAP	Defence Acquisition Procedure
DCHQ	Damage Control Headquarters
DGNAI	Director General Naval Armament Inspectorate
DGQA	Director General of Quality Assurance
DP	Delivery Period
DRDO	Defence Research and Development Organisation
EMC	Electro Magnetic Compatibility
EMD	Earnest Money Deposit
EMI	Electro Magnetic Interference
EOT	Engine Order Telegraph
EPIRB	Emergency Position Indicating Radio Beacon
ERV	Exchange Rate Variation
ESP	Engineering Support Package
FET	Field Evaluation Trials
GLS	Guideline Specifications
GoI	Government of India
GRDD	Guarantee Repair Dry Docking
GMDSS	Global Maritime Distress & Safety System
IBS	Integrated Bridge System
IC	Indigenous Content
ICAF	Impressed Current Anti Fouling
ICCP	Impressed Current Cathodic Protection
ICG	Indian Coast Guard
IDDM	Indigenously Designed, Developed & Manufactured
IM	Indigenously Manufactured
IMCS	Integrated Machinery Control System
IMO	International Maritime Organisation
IP	Integrity Pact

ISO	International Organisation for Standardisation
LD	Liquidated Damages
LED	Light Emitting Diode
LRU	Line Replaceable Unit
MARPOL	International Convention for the Prevention of Pollution from Ships (Marine Pollution)
MCR	Machinery Control Room
MET	Maintainability Evaluation Trial
MoD	Ministry of Defence
MoU	Memorandum of Understanding
MRLS	Manufacturer Recommended List of Spares
MSB	Main Switch Board
MSO	Main Signal Office
MSP	Maintenance Support Package
MTBF	Mean Time Between Failure
MTBR	Mean Time Between Routines
MTTR	Mean Time To Repair
M-ToT	Maintenance Transfer of Technology
NATO	North Atlantic Treaty Organisation
NCD	Naval Construction Document
NCLT	National Company Law Tribunal
NCNC	No Cost No Commitment
NES	Naval Engineering Standards
OBM	Out Board Motor
OBS	Onboard Spares
OEM	Original Equipment Manufacturer
OTE	Open Tender Enquiry
PA	Production Agency
PCIP	Pre Contract Integrity Pact
PERT	Programme Evaluation & Revenue Technique
POL	Petroleum Oil and Lubricants
PVC	Poly Vinyl Chloride
QAP	Quality Assurance Plan
RAS	Replenishment At Sea
RFP	Request for Proposal
RIB	Rigid Inflatable Boat
RU	Ready Use
SAR	Search and Rescue
SHQ	Service Headquarters (CGHQ)
SKD	Semi Knocked Down
SMT	Special Maintenance Tools
SOLAS	Safety of Life at Sea
SRR	Search & Rescue Region
SRU	Shop Replaceable Unit
STE	Special Test Equipment
STP	Sewage Treatment Plant
TBO	Time Between Overhaul
TEC	Technical Evaluation Committee
ToT	Transfer of Technology
WC	Water Closet