REQUEST FOR INFORMATION (RFI)

DAMAGE CONTROL TRAINING FACILITY (DCTF)

1. The Indian Navy under Ministry of Defence, Government of India, intends to procure Damage Control Training Facility (DCTF), along with associated equipment, operation, training and maintenance. The simulator will be similar to the existing facility at Visakhapatnam, kochi and Port Blair and will be procured under Buy (Indian-IDDM) from registered Indian Vendors. The Simulator is to be delivered to **Mumbai and Karwar**. With an aim to identify probable Indian Vendors who can set-up the facility, the Vendors are requested to forward information as sought in this RFI. The aim of seeking this RFI is also to finalise the specifications for the DCTF with inputs from Indian Vendors.

2. This Request for Information (RFI) consists of three parts as indicated below:-

(a) **Part I**. The first part of the RFI incorporates operational requirements, characteristics and features that should be met by the facility. A few important technical parameters are also mentioned.

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

(c) **Part III**. Guidelines for framing criteria for Vendor Selection/ Pre-Qualification in Buy (Indian - IDDM) category.

PART- I

3. **Intended Use (Operational Requirements)**. The facility is intended towards imparting realistic training to Naval personnel in an Damage Control environment where the personnel will be trained to Control flooding in Machinery Compartment, Accommodation Spaces, use of fixed shoring on hatch, Square and Grid shoring, Pipe repair facility, Educator, Submersible and DD Pump Operation. The training scenarios created should be repeatable and consistent. The vendor will be responsible for operation, conduct of training and maintenance of the simulator for at least 10 years post-delivery.

(लहर सिंघल)
(Lehar Singhal)
लेफ्टिनेंट कमांडर
Lieutenant Commander
लेफ्टिनेंट कमांडर (एन.बी.सी.डी.)-एन ए
Lt Commander (NBCD)-NA
एन.बी.सी.डी. निदेशालय
Directorate of NBCD
नौसेना मुख्यालय, रक्षा मंत्रालय
Naval Headquarters, Ministry of Defence

4. **Important Technical Parameters**. Important Technical Parameters are placed at **Appendix A**. Detailed specifications will be published in the RFP which will be issued to Vendors after verifying their credentials and capabilities to set-up Damage Control Training Facility (DCTF). Further Salient aspects of the envisaged facility alongwith details that are required to be submitted are as follows:-

(a) Feasibility to build Damage Control Training Facility (DCTF) as per technical/ operational parameters and specifications indicated at **Appendix A**. The Vendors are required to furnish details for each of the operational and technical parameters as brought out in **Appendix A**. Any modification to the parameter/ specifications listed at **Appendix A**, can be suggested by the Vendor with suitable justification(s).

(b) **Concept Design/Capability Estimation/Alternatives for same or better Training Requirements**. A visit to the existing DCTFs at INS Vishwakarma in Visakhapatnam, Seamanship School in Kochi or at Sri Vijayapuram may be undertaken at own expense for better understanding of user's requirement, in consultation with the NHQ/DNBCD. The following to be included in response:-

(i) Vendors to submit the concept design for the DCTF alongwith dimensions and layout.

(ii) Option of providing upcoming technologies, if any, which will meet the intended purpose of the Training Simulator Facility and enhance its employability.

(iii) Vendor to provide inputs/recommendation with respect to any alternatives to meet the same/better training requirements.

(iv) Details pertaining to capacity, infrastructure, financial status of the Vendor to be furnished and how it is intended to be used to meet the delivery schedule of the Simulators.

(v) Past experience of Vendor in executing similar projects.

(vi) Details of present order book status to be furnished.

(c) Agreement and / or collaboration with firms with regard to design, production, monitoring and technology to be indicated and clearly highlighted in the response.

(लेहर सिंघल)
(Lehar Singhal)
लेफ्टिनेंट कमांडर
Lieutenant Commander
लेफ्टिनेंट कमांडर (एन.बी.सी.डी.)–एन ए
Lt Commander (NBCD)-NA
एन.बी.सी.डी. निदेशालय
Directorate of NBCD
नौसेना मुख्यालय, रक्षा मंत्रालय
Naval Headquarters, Ministry of Defence

(d) **Budgetary Quotation**.

(i) Budgetary quote is to be submitted as per format given below.

Ser	Items	Cost (₹)	Remarks
(aa)	Setting-up DCTF including two years warranty with detailed break-up		
(ab)	Literature and Operator's Manual		
(ac)	Training Aids		
(ad)	Pre-commissioning Training 10 personnel for 10 working days excluding cost of travel/ boarding/ lodging		
(ae)	Cost for operation and training		
(af)	CMC for at least 8 years post warranty with annual break-up		
(ag)	Freight, Transit and Insurance		
(ah)	Special Maintenance Tools, Test Equipment and software		
(aj)	Miscellaneous		
(ak)	Taxes and duties		
(al)	**Total** {Total of Ser (ah) to (aj) above}		
(am)	**Foreign Exchange Component,** if any, be indicated.		

(ii) All entities factored in the costing are to be indicated in the break up. Details of export / import duties and Foreign Exchange Component, if any applicable, to be indicated separately.

(e) Information on whether the offered design is in use by any other Indian customer is also to be indicated.

(f) The Simulator will be operated and maintained by contracted manpower provided by the Vendor. Facility maintenance, post guarantee period, is to be carried out under CMC by the Vendor. The CMC package will support the following maintenance tasks for atleast 08 years post completion of warranty:-

(लहर सिंघल)
(Lehar Singhal)
लेफ्टिनेंट कमांडर
Lieutenant Commander
लेफ्टिनेंट कमांडर (एन.बी.सी.डी.)-एन ए
Lt Commander (NBCD)-NA
एन.बी.सी.डी. निदेशालय
Directorate of NBCD
नौसेना मुख्यालय, रक्षा मंत्रालय
Naval Headquarters, Ministry of Defence

(i) Rectification of defects as soon on reporting of the same.

(ii) Consultancy on technical issues.

(iii) Planned preventive maintenance as per recommendation of the OEM.

(iv) Onsite maintenance support by SELLER's personnel.

(v) Component and sub assembly level repairs/ replacement (as applicable) of the equipment/ sub equipment would be undertaken by the SELLER at no extra cost.

(vi) In case of malfunction of any major equipment and sub-equipment of the DCTF, joint analysis would be undertaken by both Navy and the firm to determine whether the malfunction is attributed to operator error or material failure/ equipment breakdown.

(vii) All major equipment, sub equipment and components (including auxiliary equipment like air conditioners, diesel generators etc) fitted in the DCTF will fall under the purview of the CMC.

(g) **O&M Training**. The SELLER would be required to provide training to naval personnel on contractual basis in coordination with the BUYER and ensure availability of training equipment and trained manpower prior commissioning of the facility. The following to be covered:-

(i) Vendors to indicate acceptance to conduct the training at OEM premises and Vendor premises for the crew and maintainers.

(ii) The SELLER will provide the Operator and Maintenance training to a team of 10 personnel for a minimum period of 05 days and not exceeding 10 days at all three locations.

(iii) The proposed syllabus of training for the above course will be forwarded by the SELLER to the BUYER for concurrence within 12 months of signing of Contract and will meet the needs of operation, repair and maintenance of the complete equipment, test set up, assemblies/ sub assemblies, trouble shooting etc.

(कहर सिंघल)
(Kehar Singhal)
लेफ्टिनेंट कमांडर
Lieutenant Commander
लेफ्टिनेंट कमांडर (एन.बी.सी.डी.)–एन ए
Lt Commander (NBCD)-NA
एन.बी.सी.डी. निदेशालय
Directorate of NBCD
नौसेना मुख्यालय, रक्षा मंत्रालय
Naval Headquarters, Ministry of Defence

(iv) The training for the operators and maintainers will be organized and conducted at least three months prior to installation and commissioning of the DCTF.

(v) Vendors would also be required to provide an operational manual with details of precautions in operation and side effects if any.

(vi) Additional literature/ equipment details may be submitted along with the response to the RFI.

(h) **Timelines**. The following to be responded to:-

(i) Tentative delivery schedule for delivery of the DCTF to ***IN*** at **Mumbai and Karwar** after conclusion of contract including milestones is **24 months**.

(ii) The Setting up of the facility would need to commence as per a stipulated time period post conclusion of contract.

(iii) Vendor to submit critical activities/ milestones and estimated timelines for various phases, total timeframe for implementation of the project and critical phases most susceptible to slippages.

(j) Vendors may consider this RFI as advance information to obtain requisite Government clearances and setting up of necessary infrastructure both in terms of manpower and material requirements.

(k) Experience in building/ supply of ships or DCD related Simulators which meets the requirement as listed in this document, along with details of customer/ clients and cost per Simulator, delivery date, etc. will have to be submitted.

(l) An Option Clause may be exercised in the procurement case as per Para 93 of Chapter II of DAP 20. Vendors must express their willingness or otherwise for Option Clause, including the duration for which the Option clause would be valid.

(m) Vendor is to indicate the compliance and/ or conformity to various industrial and classification society rules and standards related to operations and safety such as Indian Standards Institute (ISI), CE, MIL (Military) Spec, Information Technology (IT) related etc., for various components/ sub-components of the Simulator as applicable.

(लहर सिंघल)
(Lehar Singhal)
लेफ्टिनेंट कमांडर
Lieutenant Commander
लेफ्टिनेंट कमांडर (एन.बी.सी.डी.)-एन ए
Lt Commander (NBCD)-NA
एन.बी.सी.डी. निदेशालय
Directorate of NBCD
नौसेना मुख्यालय, रक्षा मंत्रालय
Naval Headquarters, Ministry of Defence

(n) Ability of the vendors to comply with all provisions of DAP 2020 is to be indicated. If not, then the relevant Para/ clause of DAP 20 which cannot be agreed to along with reasons is to be indicated. The vendors are required to indicate their willingness to the terms of payment as per DAP 2020.

(p) Vendor has to indicate inputs/ details wrt obsolescence management and upgradation of the component/ parts of equipment of the Damage Control Training Facility (DCTF) which may become obsolete during the life cycle of the simulator, as per provisions of DAP 20 and amendments thereof.

(q) **Compliance to Environmental Norms**. Vendor to submit compliance to environmental standard for weather, corrosion resistance, etc.

(r) **Undertaking Certificate**. Vendor to submit an undertaking that in the past they have never been banned/debarred from doing business dealing with MoD/GoI/ or any other Govt organization.

5. The Vendor should confirm that following conditions are acceptable: -

(a) The solicitation of offers will be as per 'Single Stage -Two Bid System'. It would imply that a 'Request for Proposal' would be issued soliciting the technical and commercial offers together, but in two separate sealed envelopes. The validity of commercial offers would be at least **18 months** from the date of submission of offers.

(b) The technical offers would be evaluated by a Technical Evaluation Committee (TEC) to check its compliance with RFP.

(c) The requirement of Field Evaluation Trials for simulators is waived off iaw Para 67 of Chap II of DAP 20. The simulator will be accepted post completion through **Delivery Acceptance Trials** which will be conducted as per schedules of the approved QAP in consultation with the *IN*'s project team.

(d) Amongst the Vendors cleared by TEC, a Contract Negotiations Committee (CNC) would decide the lowest cost bidder (L1) and conclude the appropriate contract.

(e) Vendor would be bound to provide product support for time period specified in the RFP, which includes spares and maintenance tools/jigs/fixtures for field and component level repairs. Documentation for training/ maintenance/ repairs are also to be provided.

(लेहर सिंघल)
(Lehar Singhal)
लेफ्टिनेंट कमांडर
Lieutenant Commander
लेफ्टिनेंट कमांडर (एन.बी.सी.डी.)–एन ए
Lt Commander (NBCD)-NA
एन.बी.सी.डी. निदेशालय
Directorate of NBCD
नौसेना मुख्यालय, रक्षा मंत्रालय
Naval Headquarters, Ministry of Defence

(f) The vendor would be required to accept the general conditions of contract given in the Standard Contract Document at **Chapter VI** of **DAP 20.**

(g) **Integrity Pact and Earnest Money Deposit (if applicable)**. An Integrity Pact alongwith appropriate IPBG is a mandatory requirement is to be submitted at the time of bid submission (Refer **Annexure I** to **Appendix O** of **Schedule I**, **Chapter II** of **DAP 20)**.

(h) **Performance-cum-Warranty Bond**. Performance-cum-Warranty Bond both equal to 5% value of the contract inclusive of taxes and duties is required to be submitted after signing of contract, as appended below:-

(i) **Performance-cum-Warranty Bank Guarantee**. Performance-cum-Warranty Bank Guarantee equal to 5% value of the contract inclusive of taxes and duties is required to be submitted after signing of contract as per current PWBG rate promulgated by Ministry of Defence (MoD). However, the final amount of PWBG will be applicable as per the rate promulgated by MoD from time to time and in force at the time of tender submission.

(ii) **Performance Bank Guarantee for CMC**. A Performance Guarantee by the way of a Bank Guarantee of a sum equal to 5% of the total price of CMC for contracted duration is required to be submitted after signing of contract as per current rate promulgated by Ministry of Defence (MoD). However, the final amount of BG will be applicable as per the rate promulgated by MoD from time to time and in force at the time of tender submission.

(j) **Indigenous Content (IC)**. The procurement of the Simulator will be as per DAP 20, and accordingly Vendors are required to submit the details regarding Indigenous Content (IC). The categorisation for the procurement is intended to be under Buy (Indian - IDDM). The Simulator must meet the minimum IC parameters in accordance with Para 21 of Chapter I of DAP 20 and MoD ID NO. 5(07)/2023/DAC Sectt dated 15 Jan 24. The Vendor is also required to comment on the categorisation and IC content as per DAP 20. The category wise (less Strategic Partnership model cases) summary of IC as per cost of the **Base Contract Price** (i.e. Total Contract Price less cost of AMC /CMC/ After Sales Service) will be as under:-

निदेशालय DIRECTORATE OF एन एच क्यू डी एन बी सी डी NHQ DNBCD NBCD एन बी सी डी

(लहर सिंघल)
(Lehar Singhal)
लेफ्टिनेंट कमांडर
Lieutenant Commander
लेफ्टिनेंट कमांडर (एन बी सी डी)-एन ए
Lt Commander (NBCD)-NA
एन.बी.सी.डी. निदेशालय
Directorate of NBCD
नौसेना मुख्यालय, रक्षा मंत्रालय
Naval Headquarters, Ministry of Defence

Category	IC
Buy (Indian-IDDM)	Indigenous design and ≥ 50% Minimum 50% of overall IC as stipulated for all categories of procurement cases to be in the form of material/ components/ software that are manufactured in India.

PART-II

6. **Procedure for Response**

(a) Vendors must fill the form of response as given in **Appendix B** (as per **Annexure II** to **Appendix A** to **Chapter II** of **DAP 20)** of this document. Apart from filling details about company, details about the exact product meeting our generic technical specifications should also be carefully filled. Additional literature on the design and construction of DCTF can also attached with the form. The Vendor to submit separate enclosure clearly indicating compliance with the operational/ technical specifications placed at **Appendix A** of this RFI. Non-Compliance to any of the parameters listed in **Appendix A**, has to be clearly indicated along with reasons. Any other relevant additional literature or document on the DCTF can also be attached with the RFI response form.

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

ADG Acquisition Technical/Cmde (DNBCD)
Directorate of DNBCD
Naval Headquarters, Ministry of Defence
Room No 205, D Block Defence Office Complex Africa Avenue
New Delhi 110023
Fax: 011 26771564
Email ID: dnbcd@navy.gov.in

(c) Last date of acceptance of filled RFI response is 08 weeks **(DD/MM/YY)**. The Vendors short listed for issuance of RFP would be intimated.

7. The Government of India invites responses to this request only from Original Equipment Manufacturers (OEM)/ Authorized Vendors/ Government Sponsored Export Agencies (applicable in the case of countries where domestic laws do not permit direct export from OEMs). The end user of the equipment is Indian Navy.

(लेहर सिंघल)
(Lehar Singhal)
लेफ्टिनेंट कमांडर
Lieutenant Commander
लेफ्टिनेंट कमांडर (एन बी सी डी)-एन ए
Lt Commander (NBCD)-NA
एन.बी.सी.डी. निदेशालय
Directorate of NBCD
नौसेना मुख्यालय, रक्षा मंत्रालय
Naval Headquarters, Ministry of Defence

8. This information is being issued with no financial commitment and the Ministry of Defence reserves the right to change or vary any part the DCTF at Mumbai and Karwar at any stage. The Government of India also reserves the right to withdraw it should it be so necessary at any stage. The acquisition process would be carried out under the provisions of DAP 2020.

9. **Vendors, if required, can communicate to the Project Officer of DNBCD with below mentioned contact details for seeking clarification/ information on the documents (such as Navy Order (NO), Naval Construction Document (NCD), etc) mentioned in this document**:-

Lt Cdr (DNBCD)-N
Directorate of DNBCD
Naval Headquarters, Ministry of Defence
Room No 205, D Block Defence Office Complex Africa Avenue
New Delhi 110023
Fax: 011 26771564
Email ID: dnbcd@navy.gov.in

10. Apart from the information sought as per the Appendices, the Vendors may also forward technical details/brochure/preliminary design/literature, etc, as deemed appropriate.

PART- III

Guidelines for Framing Criteria for Vendor Selection/ Pre-qualification iro Damage Control Training Facility (DCTF) under Buy (Indian-IDDM) Category

11. The guidelines prescribed for short-listing/ pre-qualification of Indian vendors in case of extant case are detailed in **Annexure IV to Appendix A to Chapter II of DAP 20**.

12. **SME/MSME/Startup Certification.** Vendor to provide certificate/relevant documents of being a SME, MSME or Startup, if applicable.

निदेशालय DIRECTORATE OF एन एच क्यू डी एन बी सी डी NHQ DNBCD NBCD एन बी सी डी

(लहर सिंघल)
(Lehar Singhal)
लेफ्टिनेंट कमांडर
Lieutenant Commander
लेफ्टिनेंट कमांडर (एन.बी.सी.डी.)-एन ए
Lt Commander (NBCD)-NA
एन.बी.सी.डी. निदेशालय
Directorate of NBCD
नौसेना मुख्यालय, रक्षा मंत्रालय
Naval Headquarters, Ministry of Defence

Appendix A
(Refers to Para 4 of RFI)

OPERATIONAL / TECHNICAL SPECIFICATIONS FOR DAMAGE CONTROL TRAINING SIMULATOR (DCTF)

SECTION A – GENERAL

Ser	Description		Vendor Response
1.	**Aim**	RFI for procurement of a Damage Control Training Simulator is intended to impart realistic training to Naval personnel in a damage control environment where the personnel will be trained to control flooding onboard *IN* ships at **Mumbai and Karwar**. The training facility will include ship modules representing relevant compartments of a ship such as Machinery compartments, accommodation spaces, repair party post, passageways etc most prone to flooding. The case should include setting-up, operation, training and maintenance of the DCTF. Specific requirement of ***IN*** to be applied during design/ construction of the simulator in addition to the rule requirements.	
2.	**Functions**	Impart training in DC focusing on following aspects: - (a) Control flooding in Machinery Compartment. (b) Control flooding in Accommodation Space. (c) Fixed shoring on hatch. (d) Square and Grid shoring. (e) Pipe repair facility. (f) Eductor, Submersible and DD Pump Operation.	
3.	**General Remarks**	(a) Facility comprises of four main units viz DC simulator, Training building, Pump house and DGLT and Underground Sump. (b) The simulator is to be built as per IHQ MoD(N) approved Classification Society Rules. A certificate is to be provided by the Classification	

(लेहर सिंघल)
(Lehar Singhal)
लेफ्टिनेंट कमांडर
Lieutenant Commander
लेफ्टिनेंट कमांडर (एन.बी.सी.डी.)-एन ए
Lt Commander (NBCD)-NA
एन.बी.सी.डी. निदेशालय
Directorate of NBCD
नौसेना मुख्यालय, रक्षा मंत्रालय
Naval Headquarters, Ministry of Defence

		Society confirming that 'Class Notations have been provided for all functional requirements indicated in RFP'. Proposed class notations to be indicated in RFI response. (c) The facility should have the training capacity of training 5000 trainees annually with average class strength of 50 trainees per class. (d) The facility should have a warranty of atleast 2 yrs, operation and training for atleast 10 yrs and CMC for atleast 08 yrs. (e) Materials used should be appropriate for their intended use, and should be able to withstand rigors of the training environment, which includes various chemical applications, higher humidity and water applications during the training. Selected materials should not produce any harmful toxic effects by products. (f) The layout of the Damage Control Training Facility (DCTF) would be approved by the Naval Project Team. (g) Observation points are to be so located that individual battle scenario could be viewed and the response of the trainees could be closely monitored	

SECTION B – DC SIMULATOR/ TRAINING UNIT

Ser	Description		Vendor Response
4.	**Dimension/ Material**	(a) The training unit should be a three deck steel structure akin to actual ship. (b) The training unit should be constructed as a stiffened steel box structure of 14,600 mm long, 6700 mm wide and 7875 mm high to represent a three deck structure of a modern warship. It should be suspended on portal frames and actuated by hydraulic system to roll.	

निदेशालय DIRECTORATE OF एन एव बी सी डी NBCD DNBCD NBCD एन बी सी डी

(तहेर सिंघल)
Lieutenant Commander
लेफ्टिनेंट कमांडर (एन बी सी डी)–एन ए
Lt Commander (NBCD)-NA
एन.बी.सी.डी. निदेशालय
Directorate of NBCD
नौसेना मुख्यालय, रक्षा मंत्रालय
Naval Headquarters, Ministry of Defence

		The new facility will be required to be scaled up accordingly. (c) Simulator should be designed as per the mechanical properties of IS 2062 or equivalent quality steel and the structural design drawing with supporting calculations approved by class before the same should be forwarded to Navy for approval. The box structure should be different to that of a ship because of the need of its suspension at the two ends. Apart from the self-weight, weight of the flooded water will cause heavy bending stresses. The bottom deck should be heavily stiffened by deep longitudinal girders to give better flexible rigidity. Besides, the end plates housing the suspension spindles should be heavily reinforced to counter the excessive loading/ shear. (d) The steel structure with portal frames should be FEM analysed for class approval. System drawings are to be approved by Navy. Civil work and external utilities should be designed and constructed according to good engineering practices. However, Commercial items and hydraulic components may be certified by OEM.	
5.	**Simulator**	(a) The training simulator should be mounted on longitudinal axis and should be bearing on two steel portal frames fixed on to a suitable RCC foundation. Hydraulic actuators are to be mounted on the support frame to tilt the training unit to a selected position up to 20° either side of the vertical, or cause the unit to oscillate periodically at a controlled speed and amplitude up to 15° either side of the vertical at a roll period of 20 secs. In loaded condition from the 4th cycle onwards, the control of the hydraulic system should be microprocessor based and should be regulated from the staff control room and power pack room located inside the shed.	

(लहर सिंघल)
(Lehar Singhal)
लेफ्टिनेंट कमांडर
Lieutenant Commander
Lt Commander (DNBCD) NA
Directorate of NBCD
नौसेना मुख्यालय, रक्षा मंत्रालय
Naval Headquarters, Ministry of Defence

		(b) The training unit should be housed in a covered shed of adequate height and partially cladded on sides. (c) A 10t capacity EOT crane should also be provided in the shed.	
6.	**Underground Sump**	The Underground sump with capacity of approx. 250 T should be located directly below the training unit structure so as to facilitate easy de-flooding / draining during the training exercises and to store the entire volume of fresh water required for the conduct of various exercises. The water should be pumped to the overhead tank through one of the 2 Nos transfer pumps of the pump room.	
7.	**Overhead tank**	The overhead tank should be supported on RCC structure above the pump house building and same should be of approximately 150 Tones capacity. Fresh water stored in the overhead tank can be diverted into flooding area through simulated shell and splinter damage holes via flooding boxes, distorted hatches, manholes and split welds on bulk-heads via flooding boxes. Pipe work should also allow the ingress of water, all of which will be under constant situation management, exercises should be controlled from the staff control room and observation points	
8.	**Pump House and DLGT**	(a) The pump house should be located on the side of the training unit shed. 02 in nos. F.W Transfer pumps, one in no. fire pump and 02 in nos. Air Compressors should be located in the pump house. (b) Adjacent to pump house a DGLT building should be located. The arrangement here should consist of a Four Pole Structure, a 630 KVA, 22KV / 0.433 kV outdoor step down transformer, bus duct, 500KVA capacity captive diesel alternator, AMF Panel and PMCC Panel.	

(लहर सिंघल)
(Lehar Singhal)
लेफ्टिनेंट कमांडर
Lieutenant Commander
लेफ्टिनेंट कमांडर (एन बी.सी.डी.)–एन ए
Lt Commander (NBCD)-NA
एन.बी.सी.डी. निदेशालय
Directorate of NBCD
नौसेना मुख्यालय, रक्षा मंत्रालय
Naval Headquarters, Ministry of Defence

9.	**Deck 1**	The No.1 Deck should be the uppermost deck and should be provided with Guard rails arrangement, hydrants and emergency Diesel Driven fire-pump with suction points and two representative deck houses which are to enclose hatches and ladders leading to No2 deck. (a) Two Deck Houses. It should provide access via a watertight hatch down to No.2 deck Entry / Escape lobby. It should also be fitted out as a secondary base for the damage / repair party with stowage for loose equipment. (b) Lobby. It should provide access via a watertight hatch down to No.2 deck entry / escape lobby & staff observation should be provided. (c) Two Fire hydrants (d) One escape scuttle from the Senior Rates Space below. (e) One portable emergency fire pump. (f) Two 80mm ϕ suction points for the portable fire pump.	
10.	**Deck 2**	The No. 2 deck should be placed just below the No. 1 deck, and should be subdivided by steel bulkheads to form the following compartments: (a) Senior Rates Casualty handling area. This compartment should be made to accommodate 4 in nos. crew with berths, kit lockers, chairs and a table and Beverage making facilities. It has access through a sliding door to the passageway sized to allow free movement of a stretcher, casualty and attendants or through an escape scuttle complete with monkey ladder to No.1 deck. (b) Damage / Repair Party Post. It contains lockers consisting of a submersible pump with stowage for damage control tools. The post should also be fitted out with sufficient stowage for loose equipment including plugs, shores,	

(लहर सिंघल)
(Lehar Singhal)
लेफ्टिनेंट कमांडर
Lieutenant Commander (NBCD)-NA
एन.बी.सी.डी. निदेशालय
Directorate of NBCD
नौसेना मुख्यालय, रक्षा मंत्रालय
Naval Headquarters, Ministry of Defence

wedges, splinter boxes, portable emergency lighting etc.

(c) Ventilation Fan Chamber. It will contain the air handling and ventilation equipment for the DCTF. Access to this room should be through a sliding / hinged door from the passageway.

(d) BASCCA Stowage Compartment. This compartment should be meant for stowage of loose equipment used in training exercises. Appropriate accessories including divers personal gear and BASCCA stowage with 2 sets of BASCCA along with one set of charging facility to be provided.

(e) Staff Control Room. This compartment should be fitted out with all the mechanical, electrical and microprocessor controls necessary to regulate the operation of the DCTF.

(f) Workshop. The workshop should be fitted out with a workbench of size 1200Lx750Wx750H with a metal working bench vice (150x200 size), drawers, cupboard and Neil Robertson stretcher.

(g) Staff Observation Post (which also serves as an entry or escape lobby). This compartment should be fitted with an observation point for No.2 deck.

A central passageway, which provides access through the deck and should be divided by watertight doors and smoke curtains. This passageway should be 1400 mm wide and it includes side recess to accommodate watertight hatches above ladder leading down to No.3 deck. The passageway should be sectioned by use of three watertight bulkhead doors and should be provided with smoke curtains.

निदेशालय DIRECTORATE OF एन बी सी डी NBCD NBCD एन बी सी डी

(लहर सिंघल)
(Lehar Singhal)
लेफ्टिनेंट कमांडर
Lieutenant Commander
लेफ्टिनेंट कमांडर (एन बी सी डी)-एन ए
Lt Commander (NBCD)-NA
एन.बी.सी.डी. निदेशालय
Directorate of NBCD
नौसेना मुख्यालय, रक्षा मंत्रालय
Naval Headquarters, Ministry of Defence

11.	**Deck 3**	No. 3 deck should be located just below the No. 2 deck and should be divided into the following compartments where the trainees would face the real battle damage situations: (a) Junior Rates Mess. This compartment should be able to accommodate 11 Nos. Crew bunks, Kit lockers, Chairs and Tables. The compartment should be floodable up to a level of 1400 mm. Damage incidents to cover the following:- (aa) Shell punctures and splinter holes in both deck and bulkheads. (ab) Distorted Dummy hatch. (ac) Split bulkhead welds. (b) Generator Compartment. The compartment to contain dummy equipment. The compartment should be floodable up to a level of 1400 mm and the damage incidents to consist of the following:- (aa) Shell punctures holes similar to Junior Rate Mess bulkhead. (ab) A variable pattern splinter plate to the outer hull. (ac) A distorted fuel tank cover. (ad) Holes and leaking flanges to both water main pipes and a simulated hydraulic (water only) and H.P. air leak. (c) Fire- Pump Compartment. This should be a working compartment and should be fitted with a fixed Eductor and an electrically driven fire and salvage pump of 100 m^3/hr. capacity. Damage incidence consists of shell puncture holes in the Junior Rate Mess bulkhead. The compartment should be floodable up to a level of 300 mm.	

DIRECTORATE OF NBCD NHQ

(लहर सिंघल)
(Lehar Singhal)
लेफ्टिनेंट कमांडर
Lieutenant Commander
लेफ्टिनेंट कमांडर (एन.बी.सी.डी.)-एन ए
Lt Commander (NBCD)-NA
एन.बी.सी.डी. निदेशालय
Directorate of NBCD
नौसेना मुख्यालय, रक्षा मंत्रालय
Naval Headquarters, Ministry of Defence

		(d) Auxiliary Machinery Space. This compartment should be fitted out with dummy pipes and valves to simulate a typical below waterline compartment. Access to the auxiliary machinery space should be via watertight door into the access lobby. (e) Entry / Escape Lobby & Staff observation Point. An entry lobby should be provided / equipped with three 700 mm x 600 mm one way viewing ports to enable full supervision of trainees within generator room. Staff observation point should be meant for close supervision of trainees within the Junior Rate Mess. (f) Lobby. This lobby should be meant for providing access to No.2 deck through ladder and watertight hatch. It also provides access to the auxiliary machinery space and fire-pump compartments through watertight doors. The compartment should be able to be flooded up to a level of 300 mm and should be fitted with an overflow pipe to maintain the level.	
12.	**Filtration Plant**	(a) A filtration plant of adequate capacity to be provided for filtration of sump water. (b) Protection to be made against fire and theft of the DCTF when not in use by providing locking arrangement and a keyboard with in a suitable box with glass front door outside holding a master key. (c) Painting as per approved painting scheme should be carried out for the DCTF to have long life. (d) Sump should be provided with good quality glazed tiles. (e) Suitable gratings should be provided on compartment flooring at required places.	

निदेशालय DIRECTORATE एन एच क्यू डी एन बी सी डी NHQ DNBCD NBCD एन बी सी डी

(लहर सिंघल)
(Lehar Singhal)
लेफ्टिनेंट कमांडर
Lieutenant Commander
लेफ्टिनेंट कमांडर (एन बी सी डी)–एन ए
Lt Commander (NBCD)-NA
एन.बी.सी.डी. निदेशालय
Directorate of NBCD
नौसेना मुख्यालय, रक्षा मंत्रालय
Naval Headquarters, Ministry of Defence

13.	**Dummy equipment**	Model hawsepipe, dummy cable incorporated on both sides of the Foxle, dummy capstan/ winch (provided by the ***IN)***, for fitment on foxle (approx wt – 1.5T)	
14.	**Other desirables**	The DC Simulator (Ship-like structure) is required to be mounted on a suitable elevated structure. Further, the following are required to be incorporated internally: - (a) Compartments should be provided with water overflow pipes to maintain the maximum water flooding level. (b) Damage control gear should be stored onboard three deck structure for use by the trainees. (c) The compartment should be mechanically Air-Conditioned/ Ventilated. (d) A separate trunking to introduce simulated non-toxic smoke into the training area by a smoke generator capable of producing dense smoke should also be available. Realistic background battle noise should be played over the broadcasting system. Incident air leak will also form one of the damage conditions. (e) In addition, forced as well as natural exhaust should be provided. (f) On conclusion of exercises, flood water should be discharged under gravity to the sump tank through drain trough below the three deck structure training unit from where it should be transferred / pumped to replenish the fresh water in the overhead tank over the pump house building. A suitable water filtration unit should also be provided to filter the sump water.	

(लेहर सिंघल)
(Lehar Singhal)
लेफ्टिनेंट कमांडर
Lieutenant Commander
लेफ्टिनेंट कमांडर (एन.बी.सी.डी.)-एन ए
Lt Commander (NBCD)-NA
एन.बी.सी.डी. निदेशालय
Directorate of NBCD
नौसेना मुख्यालय, रक्षा मंत्रालय
Naval Headquarters, Ministry of Defence

		(g) The bulkheads and decks exposed to the atmosphere are required to be lagged internally, for heat insulation and effective air conditioning. (h) Macrotech flooring or equivalent need to be provided for all compartments. (j) All doors and hatches will replicate water tight ship doors and hatches as fitted onboard ships conforming to NCD 1447/1448. (k) Safety doors are to be provided with mechanisms that retain them in the closed position without locking to ensure they are always available for emergency exits.	

SECTION C – DC TRAINING FACILITY BUILDING/ CIVIL WORKS

15.	**Description**	The laboratories, classrooms and other utility spaces will be located beside the DC Simulator. The DC Training Facility Building is required to be provided as part of the facility and will comprise of the following:- (a) AC classrooms, to accommodate 50 trainees with furniture and training aids viz, Electronic Smart Boards, computers, rostrums, intercom connections etc. (b) AC Office spaces for accommodating 04 (indicative) staff and Officer-in-Charge, with suitable furniture, cupboards and other office fittings/ items. (c) Equipment Room housing pumps, switchboards, water treatment plant and intercom exchange. (d) Two change rooms each for male and female trainees with toilets, urinals, washbasins and lockers for 50 trainees.	

निदेशालय DIRECTORATE OF एन बी सी डी NBCD DNBCD NBCD एन बी सी डी

(लहर सिंघल)
(Lehar Singhal)
लेफ्टिनेंट कमांडर
Lieutenant Commander
लेफ्टिनेंट कमांडर (एन बी सी डी)–एन ए
Lt Commander (NBCD)-NA
एन.बी.सी.डी. निदेशालय
Directorate of NBCD
नौसेना मुख्यालय, रक्षा मंत्रालय
Naval Headquarters, Ministry of Defence

		(e) An MI room with appropriate fittings, equipment and furniture for first aid treatment. (f) A separate DG room with DG and suitable acoustic enclosure for the DG.	
16.	**Boundary/ rain proofing**	(a) To achieve a minimum required physical security necessary for the safety of the facility, a concrete wall of height 3m, is to be constructed around the DCTF. The perimeter wall is to be of masonry construction and chain link fence with concertina at the top. (b) To provide a rain-shelter to the Simulator, Aluminium roofing, supported by vertical trusses, is to be constructed over the 3m height boundary wall on three sides (except the front side where the civil structure is located). The vertical trusses between the boundary wall and the Aluminium roofing should be of 6m height. (c) Further sheltering from rains should be achieved by fitment of Aluminium sheets of 3m height dropped down from the roof on all four sides. This would result in adequate ventilation as a result of the open space (of height 3m) between the 3m boundary wall and the Aluminium sheet on the three sides.	
17.	**Civil Works**	The civil works involved in the erection of the DC Training Facility (simulator and buildings) would need to be designed keeping the following factors in mind:- (a) Earthquake resistance and monsoons prevalent at Mumbai and Karwar. Requirement would exist to design easy drainage of rain water, seepage resistance and shelter for all doors and windows. (b) Load Bearing capacity of the soil at the proposed site.	

निदेशालय DIRECTORATE OF एन एच क्यू डी एन बी सी डी NHQ DNBCD NBCD एन बी सी डी

(लहर सिंघल)
(Lehar Singhal)
लेफ्टिनेंट कमांडर
Lieutenant Commander
लेफ्टिनेंट कमांडर (एन.बी.सी.डी.)–एन
Lt Commander (NBCD)-NA
एन.बी.सी.डी. निदेशालय
Directorate of NBCD
नौसेना मुख्यालय, रक्षा मंत्रालय
Naval Headquarters, Ministry of Defence

(c) loading of the simulator and the civil structure.

(d) Further, all civil works are to incorporate anti-termite treatment and water proofing to basements/ foundation and bathrooms/ toilets.

(e) The following civil works (indicative) are involved for the operation of the DC Training Facility

(i) DCTF Shed
(ii) Underground Sump
(iii) Pump Room, Change room & Showers & Overhead Tank
(iv) DGLT room
(v) R.C.C. foundation for the supports of two portal frames
(vi) Lateral Roads & Leveling of ground.
(vii) Fencing with gates and mesh

(f) Detailed designs/drawing of all the above works are to be made after carrying out soil testing, survey work and analyzing various forces on structure. **All the civil works, structural design and drawings are to be approved by a recognized mutually agreed 3rd party.**

(g) The firm is to undertake the demolition of structures for the purpose of site clearance and erection of DC Simulator, if required. The assessed value of the building material is to be credited to the government.

(h) Underground Sump. The sump is to be constructed in RCC with suitable foundation. A drain pipe of suitable diameter and length along with an isolating valve should be provided to the sump tank pump discharge line so as to enable

निदेशालय DIRECTORATE OF एन बी सी डी NBCD

(लहर सिंघल)
(Lehar Singhal)
लेफ्टिनेंट कमांडर
Lieutenant Commander
लेफ्टिनेंट कमांडर (एन बी सी डी)-एन ए
Lt Commander (NBCD)-NA
एन.बी.सी.डी. निदेशालय
Directorate of NBCD
नौसेना मुख्यालय, रक्षा मंत्रालय
Naval Headquarters, Ministry of Defence

complete draining of the sump tank for maintenance purposes. The dimensions of the sump should be as follows:-

Capacity	-	250 Tones
Length	-	11000 mm
Breadth	-	12000 mm

(j) Pump Room and Header Tank. The dimension of the pump room should be as follows:-

Length	-	12300 mm
Breadth	-	7460 mm
Height	-	Standard
Overhead Tank	-	Capacity 150 Tones

(k) Overhead Tank. Overhead tank is to be positioned above the pump room on a supporting structure with suitable height so as to provide adequate head for the water to be supplied for flooding pre-set damage positions at pressure ranging from 2 to 4 meter WG. A change room with shower facility is to be provided above the pump room. Detailed Drg. / Design are to be made after the soil test and detailed calculation of pipe lengths, bends, etc. giving due consideration to dead and imposed loads and transverse and longitudinal wind loads.

(l) DGLT Room. The dimensions of the DGLT room are 7.5 m x 4.5 m.

(m) Steel Portal Frame & Its Foundation. The portal frames will be designed by finite element techniques in the static and dynamic (rolling) condition for a fully laden simulator load of 150 tones. The portal frames should be erected on RCC foundations designed to resist the lateral and vertical loads and moments at the footing of

निदेशालय DIRECTORATE OF एन एच क्यू डी एन बी सी डी NHQ DNBCD NBCD एन बी सी डी

(लहर सिंघल)
(Lehar Singhal)
लेफ्टिनेंट कमांडर
Lieutenant Comm[illegible]
लेफ्टिनेंट कमांडर ([illegible])–एन ए
Lt Commander (NBCD), NA
एन.बी.सी.डी. निदेशालय
Directorate of NBCD
नौसेना मुख्यालय, रक्षा मंत्रालय
Naval Headquarters, Ministry of Defence

		the frames. RCC foundations are to be designed on the basis of the soil test data. (n) <u>Lateral Roads & Leveling of Ground.</u> Lateral roads and leveling of ground after surveying, laying of tar road around DCTF unit would be required to be carried out, if required. An access road of width 3m to the site of DCTF is to be constructed. The total length of the road including inlay inside the perimeter wall would be approximately 50m. The ground at the site needs to be leveled prior to commencement of civil works. A fencing around the DCTF is to be provided of approved design.	

SECTION D – MECHANICAL ENGINEERING SYSTEMS

18.	**Overhead Tank**	(i) Two in number centrifugal motor driven fresh water transfer pumps are to be provided to replenish the overhead tank from the underground sump. Either of the pumps can be used to fill the overhead tank. Capacity of each pump will be 600m3/hr at 20 MWC so as to fill the overhead tank in 15 - 20 minutes. (ii) F.W. Transfer pumps should be installed in the pump house and should be of C.I. body, Impellers of C.I. to be IS 210 Gr FG 200 and the shaft of stainless steel SS 304. These Transfer pumps should be driven by electric motor. A Fire Pump of 100 m3/hr. capacity at 70 m head should be also provided in the pump house. Fire pump should be of C.I. body, Impellers (C.I. to be 210 Gr FG 200) and the shaft of stainless steel (SS 304). (iii) Discharge from the overhead tank can also be used for charging the High pressure fresh water system by suitable selection of valves. A pressure of about 7 bar should be maintained in the high pressure fresh water system. The motor driven pumps should be	

निदेशालय DIRECTORATE OF NBCD एन.बी.सी.डी. NHQ DNBCD NBCD एन.बी.सी.डी.

(जुहर सिंघल)
(Zeher Singhal)
लेफ्टिनेंट कमांडर
Lieutenant Commander
लेफ्टिनेंट कमांडर (एन.बी.सी.डी.)-एन ए
Lt Commander (NBCD)-NA
एन.बी.सी.डी. निदेशालय
Directorate of NBCD
नौसेना मुख्यालय, रक्षा मंत्रालय
Naval Headquarters, Ministry of Defence

		provided with both local and remote control facilities. The High Pressure fresh water system supplies fresh water to the following systems /locations: (i) High Pressure fresh water system (HPFWS) of DCTF. (ii) Specific pre-determined damage incident piping system (iii) Eductor System. (iv) Fire and Salvage pump system. (v) Designated compartment for controlled fire exercises.	
19.	**High Pressure Water System**	(a) Fresh water from overhead tank should be used for incident flooding and salvage operations. The pressure in flooding system should be maintained up to 0.4 bar (maximum) and in HPFWS the pressure should be about 7 bar. Flooding valve is to be provided for each pre-determined damage incident. These valves should be able to remotely control the mechanical rod gearing system from the control post. (b) The main supply flood valve from overhead tank should be motorized and interlocked with centrifugal fresh water transfer pump. These valves should be controlled from the control room and they should close automatically when crash stop situation occurs at the event of sudden complete power failure. (c) Water from overhead tank should be used to simulate damage incident in the desired location. Thereafter, the accumulated water from the location should be drained to the water sump located below the three deck structure through motorised valves or through eductor system. The water system should be closed loop system. This should be minimising the requirement of replenishment.	

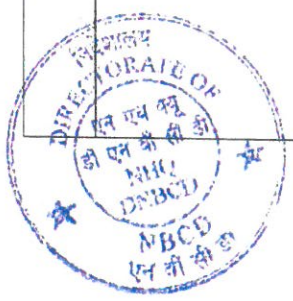
(लहर सिंघल)
(Lehar Singhal)
लेफ्टिनेंट कमांडर
Lieutenant Commander
लेफ्टिनेंट कमांडर (एन बी सी डी)–एन ए
Lt Commander (NBCD)-NA
एन.बी.सी.डी. निदेशालय
Directorate of NBCD
नौसेना मुख्यालय, रक्षा मंत्रालय
Naval Headquarters, Ministry of Defence

		(d) A hydrophore system comprising of one multi stage vertical high pressure centrifugal pump having 3m3/hr. capacity at 7 bar head driven by suitable motor along with 500 L capacity pressure vessel. Pump construction should be of S.S. material.	
20.	**Flooding System**	(a) Fresh water from the overhead tank should be introduced into each pre-set damage condition through flooding valves. These valves should be remotely controlled from staff control room through mechanical extension / rod gearing with end-position indicating lamps. (b) Damage incidents should consist of a series of shell puncture and splinter holes in both deck and bulkheads, distorted dummy hatch, split bulkhead welds, distorted fuel tank manhole covers, leaking flanges from water main pipe, hydraulic and HP air leaks etc. This allows ingress of water, hydraulic fluid (in this case fresh water to avoid contamination with sump water) and HP air in predetermined positions and synchronised with audio system to provide a simulation of real life damage situation on board Naval Ships. (c) Flood main supply valve from overhead tank should be motorised and interlocked with the fresh water transfer pump. Control for this valve and remote control of the pump should be from staff control room. This valve should be closed automatically when the crash stop is operated. In case of power failure also this valve will automatically close using the battery backup.	
21.	**Drain System**	(a) Rapid drain valves should be provided below No.3 deck under the Junior Rates Mess, Generator room and access lobby. These valves should be motor driven butterfly type and should be provided with local manual override facility. These drain valves should be	

निदेशालय DIRECTORATE OF एन.बी.सी.डी. NBCD एन बी सी डी

(लेहर सिंघल)
(Lehar Singhal)
लेफ्टिनेंट कमांडर
Lieutenant Commander
लेफ्टिनेंट कमांडर (एन.बी.सी.डी.)–एन ए
Lt Commander (NBCD)-NA
एन.बी.सी.डी. निदेशालय
Directorate of NBCD
नौसेना मुख्यालय, रक्षा मंत्रालय
Naval Headquarters, Ministry of Defence

		remotely controlled from the Staff Control Room. Drain valves should be fitted beneath drain trough below the no. 3 deck. (b) As the name suggests, these valves would help in draining out the flood water (to water sump). In the event of total power failure all drain valves should fail safe open via 24 volt battery backup system. After complete draining of the water from the exercise compartments, drying arrangement to be provided through hot air which blows through vent ducting. In addition, each of the junior sailor's mess and Generator compartment should be fitted with one each manually operated drain valves. The manual operation should be provided remotely through rod gearing arrangement from staff control room. These can be used in the event of total power failure. All the valves should be of Intervalve make, type IVGK, with pressure rating of PN10, material of construction of valve Body should be SGI, Disc should be of Nitrile Rubber & Stem should be of SS316. Motorised valves should be provided with Electrical Actuators suitable for 24V DC supply. (c) Design of drain system should be such as to empty each compartment from the maximum flood level in approximately 90 seconds, from the moment the drain valves should be fully opened. In addition, Scuppers as necessary are to be provided on No.1 and No.2 deck to facilitate drainage as required	
22.	**Salvage Eductor System**	(a) One fixed and one portable eductor of capacity 15 m3/hr. (15 TPH) to be provided for carrying out salvage operations. The fixed salvage eductor will service all flooding incident compartments. (b) Fixed salvage eductor of capacity 15 m3/hr should be installed in the fire pump compartment on deck 3. The eductor should	



(लेहर सिंघल)
(Lehar Singhal)
लेफ्टिनेंट कमांडर
Lieutenant Commander
लेफ्टिनेंट कमांडर (एन.बी.सी.डी.)-एन ए
Lt Commander (NBCD)-NA
एन.बी.सी.डी. निदेशालय
Directorate of NBCD
नौसेना मुख्यालय, रक्षा मंत्रालय
Naval Headquarters, Ministry of Defence

		take suction from each flooding compartment through direct, independent suction line. Each line should have one suction valve mounted on valve chest in the pump room. (c) Working water for the eductor to be supplied from fire main HPFWS discharge line. By opening, the suction valve of flooded compartment, the fixed salvage eductor should suck out water from the compartment and discharge overboard through an outlet pipe to the sump. (d) Portable eductor of capacity 15 m3/hr to be utilised for pumping out water from No.2 and No.3 decks. To facilitate operation of the eductor, valves should be provided on No.2 & 3 decks to supply working water and serve as overboard discharge through the scuppers.	
23.	**Incident Leak from HP Air System**	A simulated air leak supplied by HP compressed air at 30 bar should be installed in the generator compartment. The air supply to the leak incident should be controlled by a valve positioned in the Staff Control Room. The system comprise of suitable compressor of reputed make each of approx. 19.62 m3/hr capacity at 30 bar along with 2 x 500 liters air receiver suitable for 40 bar air pressure should be provided. Compressor air system pipes should be of seamless steel to ASTM A-106 Gr. B with forged fittings.	
24.	**Fire and Salvage Pump**	(a) An electrically driven vertical non-self-priming centrifugal Fire and Salvage pump should be provided in the fire pump compartment to take suction from the flooded compartment. The pump to be of capacity of 100 m3/hr (100 Tones/ hr) at 20 meters head. The pump should be driven by an electrical motor suitable for operation. (b) The pump should be provided with local and remote stop / start control.	

(लहर सिंघल)
(Lehar Singhal)
लेफ्टिनेंट कमांडर
Lieutenant Commander
लेफ्टिनेंट कमांडर (एन.बी.सी.डी.)–एन ए
Lt Commander (NBCD)-NA
एन.बी.सी.डी. निदेशालय
Directorate of NBCD
नौसेना मुख्यालय, रक्षा मंत्रालय
Naval Headquarters, Ministry of Defence

		(c) One in no. DQA (WP) approved submersible pump of capacity 40 m3/hr should be provided.	
25.	**HVAC**	(a) The air conditioning system for the DCTF should be direct expansion type through air-cooled condenser and two chilled water air handling units and designed for following:- Outside condition:35 Deg. C DBT, 30% RH Inside condition:22 +/- 2 Deg. C DBT, 55 +/- 5% RH (b) During the flooding operation, the Air conditioning / ventilation in the affected compartment should be shut off. Provision should be made for suitable hot air supply to the flooded compartments for drying the compartments on completion of damage control exercises. A combination of forced and natural exhaust through hoods on no. 1 deck should be provided for these compartments.	

SECTION E – ELECTRICAL SYSTEMS

26.	**Receipt and Distribution of Power**	Incoming main electric power supply of 22KV should be received from an existing 22 KV HT line near DCTF DGLT room. A four pole structure complete with D.O.F., G.O.D., L.A., CTS & PTS should be provided to receive the supply. Supply should be then stepped down to required voltage and then connected to PMCC on LT side for further distribution to various loads.	
27.	**Captive Power Generation**	In the event of failure of the incoming state electricity power supplies, provision is to be made for automatic switching over to own generated power supply. For this purpose, a Self-excited and self-Regulated brushless 500 KVA, Battery started Diesel Generator set with Auto Main Failure panel (AMF) would be required in DGLT room. DGLT room should also house PMCC panel comprising of 1250 A rating bus bars, 1250 A ACBs for Transformer incomer and DG incomer, Capacitor Auto	

(लहर सिंघल)
(Lehar Singhal)
लेफ्टिनेंट कमांडर
Lieutenant Commander
लेफ्टिनेंट कमांडर (एन.बी.सी.डी.)-एन ए
Lt Commander (NBCD)-NA
एन.बी.सी.डी. निदेशालय
Directorate of NBCD
नौसेना मुख्यालय, रक्षा मंत्रालय
Naval Headquarters, Ministry of Defence

		Panel, PDBs, MLDBs, LDBs, various starters, relays and protections for motors etc	
28.	**Provisions for Various Installations**	Supply to all equipment should be provided through fixed wiring. In addition, an emergency supply system should also be installed. The emergency system should be provided through bulkhead emergency connection boxes, portable emergency cables and bulkhead stowage and it should cover the operational aspect of the DCTF. This would enable the simulation of emergency supply connection to the fire and salvage pump in the event of mains failure.	
29.	**Flooding Controls**	Electrical supplies should be required to power electrically driven pumps and motorised valves as described below: (a) The supply for the fire and salvage pump (located in fire pump compartment). (b) Provision should be made for a 115 V, 50 Hz, single phase socket positioned adjacent to each entrance into the major flood compartment. (c) Control for two fresh water transfer pumps (located in pump house) which should be driven by 37.5 KW motors situated in the pump room with remote start / stop and for the purpose of monitoring from the staff control room. (d) Electrically operated content gauge to give information on the fresh water availability in the overhead tank with indications provided locally and on the staff control panel. (e) Electrically operated drain valves should be positioned below No.3 Deck in Generator Compartment, Junior Rates Mess and Access Lobby. These valves should be operated and controlled from staff control room. In the event of power failure, the drain valves should be automatically opened using the battery back-up. Operation of emergency crash stop should automatically open the drain valve.	

निदेशालय DIRECTORATE OF एन एच क्यू डी एन बी सी डी NHQ DNBCD NBCD एन बी सी डी

(लहर सिंघल)
(Lehar Singhal)
लेफ्टिनेंट कमांडर
Lieutenant Commander
लेफ्टिनेंट कमांडर (एन.बी.सी.डी.)-एन ए
Lt Commander (NBCD)-NA
एन.बी.सी.डी. निदेशालय
Directorate of NBCD
नौसेना मुख्यालय, रक्षा मंत्रालय
Naval Headquarters, Ministry of Defence

		(f) A Flooding Alarm system with Flood detectors should be installed in the main incident compartment with indicators located in the staff control room. The system comprises of Four Zone Flooding Control Panel, Analyzer unit and Flood sensors with wire (4 nos.) The flooding alarm system should be of Auto Alarm make.	
30.	**Lighting**	(a) Standard fluorescent and bulkhead fittings as per the naval standards should be provided on the three deck training structure. In wet spaces, incandescent light fittings should be used. (b) Local switching should be provided throughout the three deck training structure with the exception of the incident flooding which should be as on No.3 deck, where control should be provided only in the Staff Control Room. (c) On operation of the emergency Crash stop, 24V DC emergency supply should be switched on in all operational areas for emergency lighting. (d) Patternised automatic emergency lanterns (AELs) should be installed on board the three deck training structure to enable escape routes to be visible. (e) Photo-luminescent stickers / indicator should be also provided to supplement the AELs. (f) Torches and re-chargeable helmet mounted head lamps should be provided with stowage facilities in the damage repair party post.	
31.	**Broadcast System**	(a) A broadcast system of reputed make should be installed with loudspeakers positioned at various locations in the three deck training structure. Input to the broadcast system should be either from microphone station or through a cassette player. (b) A DVD player should be positioned in the staff control panel to broadcast realistic battle noises through the broadcast system. The cassette player output should be manually reduced in volume when a	

(लहर सिंघल)
(Lehar Singhal)
लेफ्टिनेंट कमांडर
Lieutenant Commander
लेफ्टिनेंट कमांडर (एन.बी.सी.डी.)-एन ए
Lt Commander (NBCD) NA
एन.बी.सी.डी. निदेशालय
Directorate of NBCD
नौसेना मुख्यालय, रक्षा मंत्रालय
Naval Headquarters, Ministry of Defence

		broadcast is being made from one of the microphone stations. (c) Signal routing and control should be through a relay unit fitted in the staff control panel. This unit also provides a general alarm facility. The power supply for the relay unit and microphone station should be derived from a power supply unit fitted in the staff control panel. (d) 15 nos. Metal housing speakers of reputed make and 02 nos. Cabinet speaker's model should be installed at various suitable locations.	
32.	**Communication and CCTV**	(a) Intercom system for 2 way communication should be provided comprising of single line communication assemblies. Intercom stations should be provided in all areas and posts manned during operation of training unit as well as control and operation areas. (b) Besides the above, a Sound Powered Telephone system should also be provided interconnecting seven compartments. Additionally 03 nos. microphones should be provided near SPT for the instructor to monitor trainee's communications during the exercises. (c) A suitable CCTV system of reputed make should be provided in three deck training structure. The system enables the operator to switch between the cameras and also to record the coverage on a compact disc, if desired of past 30 days.	
33.	**Control Panel facilities**	The Staff Control Room Console of reputed make for the training unit should be located within the control post and the panel should be functionally divided into convenient sections to accommodate complete control of internal actuators like Fans / Blowers, Valves, Heaters, Indication lamps, Solenoid valves, Lighting, Air Leak system, CCTV and Broadcast system, Rolling & Healing system, Fire Fighting system, Flooding system etc. Consoles should be designed so as to give maximum operational comfort to the operator.	

निदेशालय DIRECTORATE OF एन एच क्यू डी एन बी सी डी NHQ DNBCD NBCD एन बी सी डी

(लहर सिंघल)
(Lehar Singhal)
लेफ्टिनेंट कमांडर
Lieutenant Commander
लेफ्टिनेंट कमांडर (एन.बी.सी.डी.)–एन ए
Lt Commander (NBCD)-NA
एन.बी.सी.डी. निदेशालय
Directorate of NBCD
नौसेना मुख्यालय, रक्षा मंत्रालय
Naval Headquarters, Ministry of Defence

34.	**Fire Alarm System**	A suitable Fire alarm system (Auto alarm make) should be provided in fire simulator compartments. System should comprise of 17 in nos. detectors (14 in nos. IR photo electric detectors, 01 no. ionization detector and 02 in nos. Rate of rise fixed temp heat detectors) located at appropriate places inside the three deck training structure.	
35.	**Hydraulics System and control for Heeling/ Rolling**	(a) The DCTF structure should be of Size 14.6m (L) x 6.7 m (W) x 7.875 m (H). Approx. Laden Mass = 150 Tones. The DCTF should be mounted on longitudinal axis bearings which should be supported by steel portal frames ('A' Frames) at the two ends. The structural details of the steel portal frames and its supporting foundations are given in section 7.The hydraulic system should be required to:- (i) Heel the DCTF from 0° to 20° max. either side i.e. ± 20° & keep locked in any position. (ii) Roll the DCTF up to ± 15° in 20 Sec under all loading conditions. Per cycle i.e. a roll frequency of about 0.052 Radian / Sec (0.5 RPM). (b) The hydraulic system should be remotely operated and driven by dual pump system i.e. have a standby pump assembly. There should be provision for a manually operated pump in the event of power failure. Operation should be from both the pump house as well as Staff Control Console. Provision should be made for bringing the training structure to neutral position from tilted position in the event of emergency stop. The heeling of the unit should automatically be stopped in the event of emergency crash stop being operated.	

SECTION E – OPERATION, TRAINING, MAINTENANCE

36.	**Operator Training**	The crew of the DCTF will be required to be trained on the operation of systems, machinery and equipment installed in the DCTF. The vendor shall arrange to provide training to the staff for the operation of equipment, systems and units as part	

(लहर सिंघल)
(Lehar Singhal)
लेफ्टिनेंट कमांडर
Lieutenant Commander
लेफ्टिनेंट कमांडर (एन.बी.सी.डी.)-एन ए
Lt Commander (NBCD)-NA
एन.बी.सी.डी. निदेशालय
Directorate of NBCD
नौसेना मुख्यालय, रक्षा मंत्रालय
Naval Headquarters, Ministry of Defence

		of the DCTF during trials and prior to commissioning of the DCTF for approx **ten personnel** for a period of **ten working days**. The operators are required to be trained for the operation of the various systems individually and with the operation of the entire system. The training should also encompass protection, relevant procedures and safeguards with respect to operation/ usage of equipment/ systems/ machinery that would be a part of the training facility.	
37.	**Annual Training**	The operation of the training facility and the conduct of training at the DCTF will be conducted by a team provided by the Vendor, under the supervision of the staff of *IN* unit. The operation and training will be contracted with the vendor for at least 10 yrs from date of commissioning of the simulator.	
38.	**Warranty**	The DCTF delivered shall carry a warranty for at least 24 months from the date of commissioning. The cumulative downtime should not exceed more than 10% in one year.	
39.	**AMC**	(a) The general concept of repair and maintenance of DCTF, to be catered through CMC. The vendor will be required to submit proposal for post warranty **CMC for** at least **08 years, inclusive of all spares**. The CMC proposal must be submitted separately by the vendor with technical aspects being included in the technical offer and commercial aspects being included in the commercial offer. The same will be taken cognizance of, while deciding the L1. (b) The CMC will include, but will not be limited to all corrective and preventive maintenance of the systems, equipment and machinery in satisfactory working order and will include 'Planned Preventive Maintenance' (PPM), repairs, servicing, calibration and replacement of defective parts, sub-assemblies, equipment, as applicable.	

(लहर सिंघल)
(Lehar Singhal)
लेफ्टिनेंट कमांडर
Lieutenant Commander
लेफ्टिनेंट कमांडर (एन.बी.सी.डी.)-एन ए
Lt Commander (NBCD)-NA
एन.बी.सी.डी. निदेशालय
Directorate of NBCD
नौसेना मुख्यालय, रक्षा मंत्रालय
Naval Headquarters, Ministry of Defence

		(c) The vendor will be required to provide Itemized Spare Parts Price List (Prices to be indicated only in the commercial offer), list of optional equipment and the likely consumption rate of the spares based on the exploitation pattern of the equipment. (d) The vendor would have to finalise the terms for the life time product support in the main contract only.	
40.	**Product Support**	The vendor would be bound to provide product support in terms of maintenance, materials and spares for a minimum period of 20 years.	
41.	**Technical Literature**	The technical literature to be provided during delivery and may include detailed description of the DC Training Facility, operators cum exploitation manual, comprehensive manual laying down description, exploitation and operating procedures of equipment pertaining to various systems with reference to locations and systems, design details and inspections reports pertaining to construction of civil structure including labs, DCTF exercise manual, guarantee certificates, safety procedures and other relevant documents	
42.	**Training Aggregates**	Computer based training package based on interactive multimedia and training aids like Charts, Slides, Training Brochures, Training Work Models, Blow up diagram, Video films	
43.	**Acceptance Trials**	The requirement of Field Evaluation Trials for simulators is waived off iaw Para 67 of Chap II of DAP 20. The simulator will be accepted post completion through Delivery Acceptance Trials which will be conducted as per schedules of the approved QAP in consultation with the *IN*'s project team.	

(लहर सिंघल)
(Lehar Singhal)
लेफ्टिनेंट कमांडर
Lieutenant Commander
लेफ्टिनेंट कमांडर (एन.बी.सी.डी.)-एन ए
Lt Commandor (NBCD)-NA
एन.बी.सी.डी. निदेशालय
Directorate of NBCD
नौसेना मुख्यालय, रक्षा मंत्रालय
Naval Headquarters, Ministry of Defence

SECTION F – MISCELLANEOUS

44.	**Dummy Equipment**	*IN* will provide old equipment from representative class of ship as free issue materials (FIL) for the purpose of dummy equipment for mock up, which will need to be installed by the Vendor.	
45.	**Spares**	The spares for all the equipment and system is to be supplied by the Vendor and the recommended list is required to be forwarded to the Navy for vetting.	
46.	**Standarisation**	The equipment and systems installed in the DC Training Facility should conform to the standard range used by the Navy to facilitate commonality and ease of maintenance. The source of the standard item should be obtained from the Navy prior to ordering.	
47.	**Design**	The Vendor will execute all works in relation to detailed design, material and equipment procurement/ supply, installations, inspection and tests, operation and training of the offered systems.	

SECTION G: QUESTIONNAIRE FOR FOR DAMAGE CONTROL TRAINING SIMULATOR (DCTF)

Ser	Questionnaire	Vendor Response
1.	Can you design, supply, manufacture, install, Set to Work & commission a DCTF which can also roll/oscillate along the vertical axis, for the Indian Navy? If yes state your company profile, Technical Expertise, and registrations.	
2.	Is the entire system certified by IRS/LRS? If yes, provide details and copy of certification.	
3.	Have you provided any similar system/ ship to any of the establishment in India/other countries? If yes, provide purchase orders and references.	
4.	Has your system been certified by any other Navies/militaries of the world? If yes, provide copy of certification.	

(लहर सिंघल)
(Lehar Singhal)
लेफ्टिनेंट कमांडर
Lieutenant Commander
लेफ्टिनेंट कमांडर (एन.बी.सी.डी.)–एन ए
Lt Commander (NBCD)-NA
एन.बी.सी.डी. निदेशालय
Directorate of NBCD
नौसेना मुख्यालय, रक्षा मंत्रालय
Naval Headquarters, Ministry of Defence

5.	In case you have your own pre designed DCTF kindly provide the design philosophy.	
6.	Comment upon the hydraulic system and controls for heeling/ rolling	
7.	Can you make the simulator akin to actual ship module? Provide details and design philosophy.	
8.	Which all damage scenarios can you simulate for safe training	
9.	Comment upon the quality of building material and the type of loading that the structure is likely to incur.	
10.	How will the flooding and de-flooding be facilitated and how will the water be stored. Comment on quantity/quality/ feasibility of recirculation of this water	
11.	Can you provide atleast 3 decks with adequate subdivisions into messes/ machinery spaces control rooms, DC posts etc.	
12.	What kind of stowage and drying areas can you provide?	
13.	Can you provide non-toxic smoke generation for enhanced training?	
14.	Can you simulator provide hot air for drying of compartments after flooding exercises.	
15.	What kind of ventilation can you provide in the simulator?	
16.	How will the flood water enter into the simulator? Also comment on the flow rate	
17.	Can you provide training on air leak	
18.	Can you provide emergency manual operation for heel/roll in case of no power supply?	
19.	Comment upon arrangement for constant monitoring and emergency procedures for safety.	
20.	How will you ensure quality upkeep of water? Comment on water filtration	
21.	What kind of workshop can you provide for DC items	
22.	How many personnel can be trained on DCTF simultaneously?	
23.	Does your system have an audio and visual alarm in case of emergency in the compartment?	
24.	Provide the details of display unit provided along with the system being provided in the DCHQ? (Including all features)	

(लहर सिंघल)
(Lehar Singhal)
लेफ्टिनेंट कमांडर
Lieutenant Commander
लेफ्टिनेंट कमांडर (एन.बी.सी.डी.)-एन ए
Lt Commander (NBCD)-NA
एन.बी.सी.डी. निदेशालय
Directorate of NBCD
नौसेना मुख्यालय, रक्षा मंत्रालय
Naval Headquarters, Ministry of Defence

25.	Explain the design of your flooding system, drainage system and salvage educator system.	
26.	What is the total current and voltage rating of the entire system? Provide breakup for sensor, display, system etc., separately.	
27.	Comment on flooding control sensors and system, lighting system and broadcast system.	
28.	Can your facility provide dummy/ mock up equipment/ platforms to adequately populate the compartments and increase the degree of difficulty as felt onboard ships	
29.	What kind of air conditioning and ventilation can you provide in the facility?	
30.	Can your firm provide all consumables as part of AMC to run the facility? Provide the list of consumables required to run the facility.	
31.	What power of DG will be required to run the facility? How will you facilitate power supply in case of failure of incoming state electricity power	
32.	Does your facility caters for a battery backup for minimum of 10 minutes for all support systems essential to cater for time lag in DG taking over power supply load.	
33.	What mode of communications will be provided to effectively communicate with the trainees during the conduct of exercise?	
34.	Can your facility provide all training aids for the facility and class room training? If yes, what all training aids will be provided?	
35.	Can you provide a sickbay and ambulance for medical emergencies?	
36.	Can arboriculture be provided around the facility?	
37.	Can your facility provide adequate no. of fire points in civil structure i.a.w National Building Code Regulation	
38.	Can your firm provide training aids and annual training to Naval personnel? If Yes, elaborate.	
39.	What is the recommended list of spares?	

(लहर सिंघल)
(Lehar Singhal)
लेफ्टिनेंट कमांडर
Lieutenant Commander
लेफ्टिनेंट कमांडर (एन.बी.सी.डी.)-एन ए
Lt Commander (NBCD)-NA
एन.बी.सी.डी. निदेशालय
Directorate of NBCD
नौसेना मुख्यालय, रक्षा मंत्रालय
Naval Headquarters, Ministry of Defence

40.	Is your firm capable of producing the facility indigenously? What is the % content of foreign equipment? Provide details.	
41.	What is the minimum area (Sqm) required for you to set the facility? Provide layout drawing	

SECTION H:
RECOMMENDED SPECIFICATION FOR SELECTION OF COMPONENTS / EQUIPMENTS INSIDE DCTF

1.	Pumps	:	IS 8418, NES 327
2.	Eductors	:	DEFSTAN 02-327/1
3.	Pipes	:	HPFWS pipes will be of Cu Ni90/10 to BR 3013(2)/ NES-779 Part- 3 LP pipes will be Carbon steel to 3601:87 and shall be hot dip galvanised.
4.	Watertight Hatches	:	IS 7048, DEFSTAN 02-127/1.
5.	Watertight Doors	:	NES 127, JS 4384
6.	Damage Control Lockers	:	NES 119.
7.	Fire Hydrant, Fire Protection	:	IS 908, NES 119.
8.	Fire Detection & Alarm Syst.	:	IS 2189, NES 603.
9.	Flax Canvas Hose for Fire Fighting	:	IS 4927
10.	Compressed Air System	:	NES 314, BR 3013(2) Pt.5
11.	Flanges & Fittings for HOFWS	:	BS 4507:89
12.	Non-Destructive Test	:	NES 729
13.	Valve Rod Gearing	:	NES 361
14.	Valves	:	NES 375, IS 4038/ 9338,

निदेशालय DIRECTORATE OF एन.बी.सी.डी. NBCD

(Lehar Singhal)
लेफ्टिनेंट कमांडर
Lieutenant Commander
लेफ्टिनेंट कमांडर (एन.बी.सी.डी.)-एन ए
Lt Commander (NBCD)-NA
एन.बी.सी.डी. निदेशालय
Directorate of NBCD
नौसेना मुख्यालय, रक्षा मंत्रालय
Naval Headquarters, Ministry of Defence

			IS 14148/131 14/12969.
15.	Limited Fire Hazard Cable	:	NES 512 Pt4, NES 517 Pt 1 NES 525, IS 11000.
16.	Miscellaneous Cables for Special Services.	:	NES 512 Pt 7.
17.	Selection of Small Electrical Fittings and Components.	:	NES 538
18.	Design & User Requirements Of Internal Communication system.	:	NES 542 Pt-1.
19.	Fasteners	:	NES 862, IS 3757/13096.
20.	Painting of Surfaces	:	NES 758, 759 and 763. IS 6951I 9954/ 1404/ 1419/ 117.
21.	Fittings for Marine Purpose	:	IS 4310
22.	Pipeline Colour Code for Identification.	:	IS 2379

NOTE: THE SYSTE TO COMPLY WITH LETEST RELEASED VERSIONS OF ABOVE-MENTIONED STANDARDS. *IN CASE THE SYSTEM YOU ENVISAGE IS COMPLIANT TO AN EQUIVALENT/ BETTER THE SAME MAY BE PROVIDED ALONG WITH A THIRD-PARTY CERTIFICATION. SUPERSEDED VERSIONS FOR REFERENCE STANDARDS WILL BE APPLICABLE.*

निदेशालय DIRECTORATE OF एन.बी.सी.डी. NBCD एन.बी.सी.डी.

(लहर सिंघल)
(Lehar Singhal)
लेफ्टिनेंट कमांडर
Lieutenant Commander
लेफ्टिनेंट कमांडर (एन.बी.सी.डी.)–एन ए
Lt Commander (NBCD)-NA
एन.बी.सी.डी. निदेशालय
Directorate of NBCD
नौसेना मुख्यालय, रक्षा मंत्रालय
Naval Headquarters, Ministry of Defence

Appendix B
(Refer to Para 7(a) of RFI)

VENDOR INFORMATION PROFORMA

1. **Name of the Vendor/ Company/ Firm and Unique ID (if any).**

_____

(Company profile including Share Holding pattern, in brief, to be attached). In the eventuality of the firm emerging as L1, Contract will be concluded in the name and address of the firm, as indicated here). Vendors are to undertake that any subsequent proposal for change in name of firm or address, will be intimated to IHQ MoD(N) at the first available opportunity and supporting documents be furnished accordingly within five working days of their approval by the competent authority.

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

Original Equipment Manufacturer (OEM) Yes/ No
Authorised Vendor of foreign Firm Yes/ No (attach details; if yes)
Others (give specific details) _____

3. **Contact Details.**

Postal Address: _____

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

4. **Local Branch/ Liaison Office in Delhi (if any).**

Name & Address: _____
Pin code: _____ Tel: _____ Fax: _____ E mail: _____

5. **Financial Details.** Category of Industry (Large/ medium/ small Scale): _____

निदेशालय DIRECTORATE OF एन.बी.सी.डी. NBCD NHQ DNBCD एन.एच.क्यू. डी.एन.बी.सी.डी.

(लहर सिंघल)
(Lehar Singhal)
लेफ्टिनेंट कमांडर
Lieutenant Commander
लेफ्टिनेंट कमांडर (एन.बी.सी.डी.)-एन ए
Lt Commander (NBCD)-NA
एन.बी.सी.डी. निदेशालय
Directorate of NBCD
नौसेना मुख्यालय, रक्षा मंत्रालय
Naval Headquarters, Ministry of Defence

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

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

7. **Details of Registration.**

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

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

Name of Organization: _____

Membership Number: _____

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

(a) Name of Product : _____
(IDDM Capability be indicated against the product)
(Should be given category wise for e.g. all products under night vision devices to be mentioned together)

(b) Description (attach technical literature): _____

(c) Whether OEM or Integrator : _____

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

(e) Industrial License Number : _____

(f) Indigenous component of the product (in percentage): _____

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

(लहर सिंघल)
(Lehar Singhal)
लेफ्टिनेंट कमांडर
Lieutenant Commander
लेफ्टिनेंट कमांडर (एन.बी.सी.डी.)-एन ए
Lt Commander (NBCD)-NA
एन.बी.सी.डी. निदेशालय
Directorate of NBCD
नौसेना मुख्यालय, रक्षा मंत्रालय
Naval Headquarters, Ministry of Defence

(h) Production capacity per annum: _____

(j) Countries / agencies where equipment supplied earlier (give details of quantity supplied) : _____

(k) Estimated price of the equipment _____

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

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

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

10. Alternatives to meet the objectives of the equipment/ better operational requirements set forth in the document.

11. Any other relevant information: _____.

12. **Declaration**

(a) It is certified that the above information is true and any changes will be intimated at the earliest.

(b) It is certified that in the past that _____ (name of firm) has never been banned/debarred for doing business dealings with MoD/ GoI/ any other Government Organization and that there is no inquiry going on by CBI/ED/any other Government agency against the firm.

(लहर सिंघल)
(Lehar Singhal)
लेफ्टिनेंट कमांडर
Lieutenant Commander
लेफ्टिनेंट कमांडर (एन.बी.सी.डी.)-एन ए
Lt Commander (NBCD)-NA
एन.बी.सी.डी. निदेशालय
Directorate of NBCD
नौसेना मुख्यालय, रक्षा मंत्रालय
Naval Headquarters, Ministry of Defence

(Authorised Signatory)