



MARINE DEPARTMENT

No.MD/DM/OMC-MULT/2022

Date: 30-08-2022

NOTICE INVITING BUDGETARY OFFER

Sub:- Notice Inviting Budgetary Offer for carrying out manning, operation, maintenance and repairs of Multi-User Liquid Terminal (MULT), Puthuvypeen, Cochin Port Authority - Reg.

Please find attached Scope of Work, important Terms & Conditions and other details prepared by Cochin Port Authority pertaining to the work of Manning, Operations, Repairs and Maintenance of MULT Terminal at Puthuvypeen, Kerala (Annexure-I). In order to prepare the cost estimates for inviting open tenders for the above work, Cochin Port now invites budgetary offers from reputed firms as per this Notice.

The components of work consists of two parts viz. **Part –A:** to carry out manning, operation, maintenance and repairs of **Common Facilities and Services** provided at the MULT Terminal and **Part B:** to carry out manning, maintenance, repairs and up-keeping of POL handling facilities and other ancillary services to ensure healthiness of the all installed systems which are exclusively identified as **Non-LPG Cargo Handling Facilities at MULT Terminal.**

The bidders are requested to submit the **Budgetary offers** as per the Price Schedule attached and may be sent in sealed cover super scribing “ Budgetary offer for carrying out manning, operation, maintenance and repairs of Multi-User Liquid Terminal (MULT), Puthuvypeen, Cochin Port Authority” to the Deputy Conservator, Cochin Port Authority, Willingdon Island, Cochin-682 009 so as to reach us on or before **09-09-2022 at 17:00 hrs.**

Before preparation of Budgetary offers, the bidders are advised to visit the MULT Terminal site so as to understand the scope of work clearly. The visit for inspection shall be made on any working day, after obtaining the prior confirmation of Superintending Engineer (M) Tanker Terminals (Mob: 9446314127) or Asst. Engineer(M) Tanker Terminals (Mob: 9847058405), Cochin Port Authority. E-mail: sajeev.va@cochinport.gov.in

The bidders may note that the offers are invited only for **budgetary** purpose. Cochin Port is not bound to award the work to any bidders based on the **budgetary** offer submitted. Cochin Port Authority will not be liable for any financial obligation to the bidders in connection with the preparation of his budgetary offer.

Encl: ANNEXURE-I

**Sd/-
DEPUTY CONSERVATOR
COCHIN PORT AUTHORITY**

PRICE SCHEDULE –BUDGETARY OFFER

Name & Address of the Firm:

Sl. No.	Description of work	Monthly Rate excluding GST
1	Part-A: Carry out manning, operation, maintenance and repairs of Common Facilities and Services provided at MULT Terminal as per the Scope of Work of Tender for a period of one year extendable for further one more year at the same rates and Terms & Conditions.	
2	Part- B: Carry out manning, maintenance and repairs of POL handling facilities and other ancillary services which are exclusively identified as Non-LPG Cargo Handling Facilities provided at MULT Terminal as per the Scope of Work of the Tender for a period of one year extendable for further one more year at the same rates and Terms & Conditions.	
	Total for 1 & 2	

Signature of the Representative

- Note:- (1) The bidder shall quote the price in Indian Rupees only excluding GST.
(2) The bidder shall attach copies of their PAN, TIN and GST Registration Certificates.
(3) The offer is invited only for budgetary purpose. Cochin Port is not bound to award the work to any bidders based on the budgetary offer submitted.

BILL OF QUANTITIES (BOQ) – UNIT RATE FOR VARIOUS WORKMEN
CATEGORIES FOR 8 HOURS. WORK

Name and address of the Bidder:

Sl. No.	Description	Daily Rate (in Rs.) per person excluding GST
1.	Motor Mechanic	
2.	Electrician	
3.	Asst. Mechanical	
4.	Asst. Electrical	
5.	Fireman	
6.	Fitter	
7.	Multi-Tasking Crew (MTC)	
8.	House Keeping Staff	

Note: The above rates shall be valid for one year extendable for further one more year.

Signature of the Representative

- Note:- (1) The bidder shall quote the price in Indian Rupees only excluding GST.
(2) The bidder shall attach copies of their PAN, TIN and GST Registration Certificates.
(3) The offer is invited only for budgetary purpose. Cochin Port is not bound to award the work to any bidders based on the budgetary offer submitted.

**SUB: TENDER FOR OPERATION AND MAINTENANCE OF MULT TERMINAL
AT PUTHUVYPIN, KERALA**

BACK GROUND.

Multi-User Liquid Terminal (MULT) has been constructed at Cochin Port in Puthuvyppeen, based on a Concession Agreement between Cochin Port Authority and M/s. Indian Oil Corporation. The Terminal consists of two Jetties viz. MULT Jetty (for handling POL cargo and LPG) and Barge Jetty (for bunkers and POL handling) constructed adjacent to the MULT Jetty. MULT jetty is capable of handling Tankers upto 80,000 DWT. Barge Jetty is capable of handling Barges upto 5000 DWT. A lay out of the MULT Jetty and Barge Jetty is furnished as APPENDIX-I.

Construction works of MULT Terminal were completed in September, 2018. MULT Jetty consists of LPG cargo handling facility (viz. 2 Nos. LPG Loading/Unloading Arms and related safety control Systems, LPG Pipelines to the Booster area etc) and POL Pipelines to Manifold No.1 , utility lines etc.. Whereas Barge Jetty consists of POL Pipelines to Manifold No.2, utility lines etc. Non-LPG hydro-carbon(POL) handling facilities at MULT Jetty as well as at Barge Jetty is not expected to be operational in the initial phase since line connectivity/storage are not yet established by the stake holders. Full fledged fire-fighting System has been installed and commissioned at MULT Terminal as per OISD 156 standards (integrated for LPG and other liquids).

Commercial operation of LPG cargo handling at MULT Terminal is expected to be commenced shortly. As per the conditions of Concession Agreement dated 04-04-2014 executed between Cochin Port Authority and M/s. Indian Oil Corporation Limited, Cochin Port Authority (CoPA) is obliged to manage, operate, maintain and repair the Common Facilities and Services provided at the Terminal, in accordance with the provisions of the Concession Agreement on cost sharing basis between M/s. IOCL and CoPA in the ratio of 45:55. CoPA is also obliged for manning, operation and maintenance of Non-LPG Handling Facilities and Services provided, separately at its own risk and cost.

As IOCL has engaged CoPA as the Management Contractor thereby entrusting CoPA with the responsibilities of operating and managing the Common Facilities and Services, CoPA propose to invite open tenders in three parts viz. Part A and Part-B for engaging an O&M Contractor as per the following brief Scope of Work :

Part A: to carry out manning, operation, maintenance and repairs of **Common Facilities and Services** provided at the MULT Terminal; and

Part B: to carry out manning, maintenance, repairs and up-keeping of POL handling facilities and other ancillary services to ensure healthiness of the all installed systems which are exclusively identified as **Non-LPG Cargo Handling Facilities at MULT Terminal.**

Part A. Common Facilities & Services at the Terminal:-

Common Facilities & Services include but not limited to the following components:-

1. MULT Jetty with Breasting dolphins and Mooring dolphins equipped with capstan controlled quick release hooks and Service platform (34m x14m) capable of handling vessels of LOA 100 m to 230 m and 10000 DWT to 80000 DWT

2. Control building with Fire pumps, Foam pumps, Jockey pumps, MCC panel and Power panel etc. in Ground floor, Foam tanks , Employer office rooms and server battery back up etc. in 1st floor and Fire control panel, Mimic panel, Fire alarm panel, Public address system , Trelleborg Marine systems, communication system etc. in 2nd floor .
3. Fire fighting facilities complying to OISD -156 STD (integrated for LPG and other liquids), the pipeline net work from control building to DG station, covering Fuel station, MULT jetty , booster area hook up point excluding Manifold 1 hydrant lines.
4. Fuel station with 2x20000 L Underground tanks with Fuel pumps ,controls etc.
5. 11 KV Sub-Station, HT/LT Switch Gears, Transformer, DG station with DG sets, HT/LT control panels etc.
6. Lighting arrangements complying to OISD STD on entire MULT road and inside the terminal excluding points beyond DG station upto Barge jetty.
7. Potable water line arrangement on MULT trestle.
8. Bituminous road with road side drain upto DG Station and approach trestle of the MULT jetty.
9. Fire Safety
10. Safety
11. Security of the Terminal;
12. House Keeping of the Terminal.
13. Water Supply System

Detailed inventory of **Common Facilities & Services** of the Terminal are furnished as **APPENDIX-2**.

Part B. Non- LPG Cargo handling facilities at the Terminal

Non- LPG Cargo handling facilities at the Terminal include but not limited to the following components:-

1. Barge jetty (100m x 10m) capable of handling vessels of LOA 40 m to 120 m and 1500 DWT to 5000 DWT.
2. 12” piggable Product lines from MULT and Barge jetty extending to the Manifolds with slop / stripper pumps and slop tanks at jetties.
3. Compressor, Nitrogen and Slop return line from MULT and Barge jetty to the Manifolds.
4. Potable water line arrangement on Barge trestle.
5. Manifold 1&2 each equipped with 1X 20000 Litre Underground slop tank with slop pumps , compressor for pig launching purpose and nitrogen cylinders for line purging.
6. Fire fighting facilities complying to OISD -156 STD (integrated for LPG and other liquids) extending from DG station up to Barge jetty including both Manifolds.
7. Lighting arrangements complying to OISD STD from points beyond DG station upto Barge jetty
8. Bituminous road with road side drain from DG Station to the end of road towards Barge jetty and approach trestle of the Barge jetty

Detailed inventory of **Non- LPG Cargo handling facilities at the Terminal** are furnished as **APPENDIX-3**.

SCOPE OF WORK OF O&M CONTRACT:-

This section provides details of Services to be provided by the O&M Contractor under the Agreement. In addition to the description set out hereunder, description of Services required to be provided by the O&M Contractor is also enumerated in other provisions of the Agreement. Without prejudice to such description hereunder and under various provisions of the Agreement, the O&M Contractor shall provide all such services which may be required for the timely and efficient performance of the Services.

O&M Contractor selected by Cochin Port Authority (CoPA) through open e-tendering shall be responsible for carrying out the manning, operation, maintenance and repairs of Common Facilities & Services at the Terminal as indicated at **Part-A** above and to carry out manning, maintenance and repairs of Non- LPG Cargo handling facilities at the Terminal as indicated at **Part-B** above by providing appropriate man power possessing the required qualification, experience and training as set out in the tender document and satisfying the conditions required by the Agreement, as per the detailed Scope of Work mentioned hereunder and subject to the Terms & Conditions mentioned in this tender document. The bidder is required to quote the O&M charges of Part A and Part B against each line item of Bill of Quantities (BOQ). The period of O&M Contract shall be one year from the date of commencement of O&M Services extendable for further one more year at the same rate and terms & conditions, at the discretion of Cochin Port Authority.

The equipments and facilities provided at the Terminal shall be operated and maintained in accordance with Original Equipment Manufacturers (OEM) Manuals, per the relevant IS and standard guidelines of NFPA/ OISD guidelines, in accordance with Good Industry Practice ensuring compliance with applicable Laws, and rules& regulations, promulgated by Cochin Port Authority or any other authority exercising jurisdiction in Cochin Port area, IOCL or any other applicable Governmental Authorities.

The contractor shall enter into Comprehensive Annual Maintenance Contract with the OEMs/OEM's Authorised service centres for the critical equipments viz. (i) Trelleborg Marine system (ii) DG sets & associated Systems (iii) All PLCs and Control Panels/Systems (iii) Fire Monitors at MULT Jetty and Barge Jetty during the tenure of Contract, to ensure uninterrupted operation of the above critical equipments.

The Contractor shall prepare the formats of Records to be maintained during the tenure of Contract pertaining to the operations, maintenance works and breakdown repairs and get it approved by CoPA. Such records shall be maintained by the Contractor and shall form part of ISO documentation.

All the staff deployed by the Contractor at the Terminal should be aware of the basic safety norms to be followed in a Port Terminal handling hydrocarbons and are bound to comply with the such safety norms of the Terminal.

Exclusions: The following items of works are excluded from the Scope of Work of O&M Contractor :-

- (i) The facilities exclusively made for LPG cargo handling viz. 2 Nos. LPG Loading/Unloading Arms and related safety control Systems, Pipelines laid to the Booster Area which will be manned, operated and maintained by M/s. IOCL.
- (ii) Supply of Security Personnel for MULT Terminal for which CoPA will make its own arrangement;
- (iii) Procurement of Foam required for Fire Fighting is not included under the Scope of O&M Contract;

PART-A: MANNING, OPERATION, MAINTENANCE AND REPAIRS OF COMMON FACILITIES & SERVICES OF THE TERMINAL

The Scope of Work of Part-A, MANNING, OPERATION, MAINTENANCE AND REPAIRS OF COMMON FACILITIES & SERVICES OF THE TERMINAL shall consist of following items of works:-

1. Operation and Maintenance of Equipments in Fire pump house

The Equipments in Fire Pump House include but not limited to the items mentioned in the inventory list enclosed as **APPENDIX-II**. The Contractor is required to carry out the manning, operation, maintenance and repairs of equipments, accessories and facilities as detailed below:-

- (i) The Scope of work include Operation, scheduled/preventive maintenance and breakdown repairs of 6 Nos. Fire pumps including engines, gear boxes and all accessories, Foam pumping system comprising of 1 No. Foam Pump coupled with engine, 1 No. Foam Pump coupled with electric motor including gear boxes, Foam filling Pump and accessories, 2 Nos. Electric driven jockey pumps, in accordance with the OEM's manuals and as detailed in this tender document.
- (ii) All the batteries of the engines are to be properly charged with the battery charger provided, electrolyte specific gravity/ levels to be maintained, terminals properly tightened, battery surfaces cleaned and terminals to be covered with insulation mats to prevent accidental contact of battery terminals and related records shall be maintained.
- (iii) Operation and maintenance of Motor Control Centre (MCC) panel, Power distribution panel, battery charging panel, back up power system, lighting and exhaust system and other controls and all items mentioned under **APPENDIX-II** (inventory list) shall be under the Scope of work of O&M Contract.
- (iv) Repairs and maintenance of various types of electrical/control cables inside the Fire Pump House and cleaning/maintenance/repairs of cable trays shall be under the Scope of work of O&M Contract.
- (v) The Fire pump house staff shall assist the Fire crew to conduct weekly Fire pump/ Foam pump trials.
- (vi) The Fire pump house staff shall assist the staff deployed at Fuel station to fill up diesel in Fire pump/Foam pump engine day tanks.
- (vii) The work of replenishing foam in Foam tanks with Foam filling pump and pumping of fresh water to the overhead tanks from ground tanks shall be carried out by the staff deployed at Fire pump house.
- (viii) Operation and maintenance of 5 Ton HOT overhead crane inside Fire pump house shall be under the Scope of O&M Contract. Periodical testing of above over head crane by Competent Authority shall be arranged by the Contractor. Reimbursement of fee paid to the statutory authority by the O&M Contractor will be made by Cochin Port Authority on production of supporting documents.

- (ix) For the maintenance and operation of equipments in Fire pump house, 1 Motor Mechanic and 1 Electrician with respective National Trade Certificate with minimum 2 years experience in the relevant trade shall be posted round the clock. 1 Asst. Mechanical and 1 Asst. Electrical with respective National Trade Certificate shall be posted in the Fire Pump House round the clock to assist the operation and maintenance at Fire Pump House. (Please refer the consolidated man power requirement given in the Tender document for more details)
- (x) Housekeeping inside the Fire pump house should be managed with Fire pump house staff as entry of staff, who are not familiar with the machineries can cause damages and accidents inside the Fire pump house.
- (xi) Proper records on operation and maintenance & repairs of equipments in Fire pump house as per the formats approved by CoPA, shall be maintained by the Contractor.

2. Operation and Maintenance of Equipments at Control Room

- (i) The O&M Contractor shall be responsible for shore related works for berthing/unberthing operations of the vessel and to monitor the ship operations (LPG cargo handling operations will be responsibility of M/s. IOCL) during the stay of vessel at berth. In order to carry out the operational functions, O&M Contractor shall post one shift in-charge of operations and one Sub-Officer (Fire) in the control room. The duties and responsibilities of Shift in-charge of operations and Sub-Officer posted in Control Room are detailed under the heading "Man-power Requirement".
- (ii) The Contractor has to carry out periodical maintenance of all the connected systems of the Trelleborg Marine systems including Power back up facilities installed maintained at 1st floor, display system and laser enclosure provided at jetty frontage. The Contractor needs to ensure 100% availability of Trelleborg system prior to berthing/unberthing and during the stay of vessel at the Terminal. Trelleborg Marine System being a critical equipment required for performing marine operations of the Terminal, in order to ensure 100 % availability of the system during berthing/unberthing/ stay of vessel at the Terminal, the Contractor shall enter into a comprehensive AMC for the System with the OEM.
- (iii) Proper records on vessel operations as per the formats approved by CoPA, shall be maintained by the Contractor.

3. Operation and Maintenance of Equipments at Fuel station

Fuel station is equipped with 2 x 20000 L Underground storage tanks with 2 x fuel pumps. The work at Fuel station include but not limited to :-

- (i) Receipt of diesel from tanker lorry which may be required once in 3 months or so and to store the diesel in UG Tanks.
- (ii) Pumping of diesel from UG tanks to the day tanks located at DG station, Fire Pump Room as per the requirement received from the concerned section.

- (iii) Maintenance of documents on receipt and distribution of diesel to individual day tanks at Fire Pump Room and DG Station.
- (iv) All Safety precautions shall be taken while receiving fuel from tanker Lorries.
- (v) Receipt of diesel and pumping to the respective day tanks shall be preferably done during General shift hours.
- (vi) The Contractor shall deploy the appropriate electrical staff working in Fire Pump Room as per the requirements at Fuel Station.
- (vii) As the receipt and distribution of Diesel is not a regular affair, dedicated Staff is not envisaged at Fuel station. The Contractor shall deploy the appropriate electrical staff working in Fire Pump Room and also Multy tasking Crew as per the requirements at Fuel Station.
- (viii) Proper records on operation and maintenance & repairs of equipments in at Fuel Station and also the receipt and distribution of diesel as per the formats approved by CoPA, shall be maintained by the Contractor.

4. Operation and Maintenance of Electrical Sub-Station, DG Sets and Panels:

- (i) Sub-station compound comprises 1 No.11KV/433 V Transformer, 2 Nos. Alternators coupled with diesel engines, power panels, distribution panels and other equipments listed in APPENDIX-II (inventory list) and its operation and maintenance comes under Contractor's scope.
- (ii) Daily checks, Scheduled and Preventive maintenance of Transformer and DG sets etc. have to be carried out by the Contractor in line with OEM's recommendations and records to be maintained.
- (iii) Weekly trials of DG sets to be carried out to ensure auto starting on power failure.
- (iv) Pipe lines are provided from Fuel Station to DG station for transferring diesel for the operation of DG Sets. The Contractor has to make arrangement for pumping of diesel to the DG station by deploying appropriate man power. Records for the receipt and consumption of diesel shall be maintained by the Contractor.
- (v) As the DG sets are operating on auto-mode, round the clock dedicated Staff is not envisaged at DG station. The Contractor shall deploy the appropriate electrical staff working in Fire Pump Room as per the requirements at DG Station.
- (vi) The Contractor needs to ensure 100% availability of at least one DG set at all times with an overall availability of 90% for 2 DG sets during the Contract period. DG set being a critical equipment required to perform the Terminal operations without any interruption, the Contractor shall enter into a comprehensive AMC for the System with the OEM.
- (vii) DGs are operated in master-slave mode depending upon the load, which is controlled by PLC.
- (viii) Housekeeping inside the DG station should be managed with the electrical staff deployed at Fire Pump Room.

5. Operation and Maintenance of Common User Facilities at MULT Jetty Frontage :-

- (i) The Fire Fighting Facilities provided at the MULT Jetty Frontage (Refer Appendix-II (inventory list) are coming under Common User Facilities, are to be maintained by the O&M Contractor. The scope of work of Fire Fighting Facilities included under the O&M contract are furnished separately.
- (ii) The contractor's scope of work at Jetty frontage include connection/disconnection of fresh waterlines to the vessels as and when required.

6. Berthing / Un-berthing operations of Tankers :-

- (i) The Contractor shall be responsible for mooring/unmooring operations of the Tankers calling at MULT Terminal as per the instructions/requirement of IOCL and CoPA. The contractor shall be responsible for providing appropriate manpower as per the requirement for performing the above operations.
- (ii) Adequate no. of manpower for operation of mooring hook winches, carrying of messenger lines, engaging and disengaging of mooring hooks equipped at mooring and breasting dolphins arranged on either sides of the Service Platform, shall be engaged for berthing operations at MULT Jetty.
- (iii) During the stay of vessel at berth, one operational staff has to be deployed for watch duty at operator room of MULT jetty. One Fire man from the pool shall be made available at berth as standby to communicate the operational exigencies to the control room.
- (iv) Contractor is required to monitor environmental parameters such as wind velocity, tide & wave, weather etc. prevailing at the Terminal premises and take appropriate action for the safe cargo handling operations and berthing/unberthing operations.
- (v) During un –berthing of vessel, though dis-engagement of the mooring rope is done from the Trelleborg Hook release control station by the Control room personnel, staff may be deployed at berth to disengage the mooring hook for releasing the mooring rope in case of any failure of Hook release system.

7. Maintenance of Quick Release Mooring Hooks (QRMH):-

The mooring hooks have to be maintained in good working order as per OEMs maintenance schedule, to ensure 100% availability for vessel berthing/un berthing activity. The Contractor is required to carry out periodical greasing and operational checks of Mooring Hooks, Capstan and Foot switch provided at breasting and mooring dolphins. The Contractor needs to ensure operational readiness of QRMH System sufficiently in advance of berthing of the vessel.

8. Operation and Maintenance of Illumination system of the Terminal

The Contractor shall be responsible for keeping the illumination system of the Terminal in good working order and to maintain the required illumination level in different areas of the terminal during day and night operations as per requirement. Following average Illumination

levels provided at various locations of the Terminal shall be maintained by the O&M Contractor in view of the safety requirements :-

Sl. No.	Location	Illumination Level
1	Conference / Office / Training Room	500 Lux
2	UPS / Electrical Room	300 Lux
3	Corridors	200 Lux
4	Control Room	500 Lux
5	LV and HV Panel room	300 Lux
6	Server Room	300 Lux
7	Dining area	300 Lux
8	Toilets	200 Lux
9	Stairways	200 Lux
10	Locker room	100 Lux

- (i) Operation of all the out-door illumination are regulated through timers. Hence manual intervention is normally not required. In case of malfunctioning of the system, appropriate electrical staff may be deployed from the pool of Fire Pump Room staff for switching on/off and attending the complaints to the illumination system.
- (ii) The repairs/replacement of lights, repairs and maintenance of total illumination system is under the Scope of O&M Contractor.

9. **Operation and Maintenance of Communication facility**

- (i) The Contractor shall be responsible for repairs and maintenance of communication facility such as VHF communication system and public address system with talk back in healthy condition during the tenure of the contract. This is very much essential for safe and effective operation and maintenance of the Terminal.
- (ii) The Contractor shall be responsible for damage, theft, mishandling of the VHF communication system and talk back system provided at all operational points.
- (iii) Cochin Port Authority shall handover the existing VHF sets (handsets, base stations, etc.) to the Contractor for use at the Terminal. At the end of the contract, the Contractor shall return the VHF sets and other communication facility received from Cochin Port Authority in good working condition.

10. **FIRE SAFETY**

MULT being a Terminal handling LPG and other POL products, fire safety of the Terminal is of paramount importance. Man power, deployed to control Fire hazards should be competent enough to handle the Fire hazards of Tanker Terminals. The employees of the Contractor should be aware of the various statutory requirements/regulations of OISD and PESO. The Contractor's Scope of work includes but not limited to the following:-

- (i) Contractor shall be responsible to attend Fire hazards and other adverse incidents at the Terminal in compliance with on-site emergency management plan of MULT Terminal.
- (ii) Contractor shall deploy well trained, competent officers and fire crew round the clock to handle Fire hazards and other emergencies.
- (iii) Contractor shall be responsible for Operation & Maintenance of Fire Fighting System by deploying appropriate Manpower.
- (iv) The fire staff should be made conversant with the fire fighting systems and public address systems installed at the Terminal.
- (v) Fire staff should provide support to the Maintenance and operational team to conduct weekly trials of Fire/Foam pumps and Monitors and all fire fighting systems as per OISD 156 STD requirements.
- (vi) Operation of valves in Fire fighting /Foam lines and operation of monitors by remote and locally falls under the scope of work of Fire crew.
- (vii) Periodical maintenance of the fire fighting equipments has to be carried out and records to be maintained.
- (viii) Any requirement of re-filling of fire extinguishers and replacement of defective fire extinguishers of urgent nature shall be done by the Contractor utilising imprest account being maintained by the Employer as per the procedure detailed at Clause (M), Procurement of spares, consumables, materials, under the heading "Maintenance Program". In case of planned replacements of items (eg. Periodical Refilling & pressure testing of Fire Extinguishers as per IS), the Contractor shall plan such requirements well in advance and intimate the Employer so as to arrange the same on Port account.
- (ix) Periodical Mock drills shall be conducted as per statutes /as advised by Employer to check the preparedness of facing a disaster in coordination with all sections.
- (x) The Contractor shall responsible for maintaining relevant records of the activities of Fire section as per the direction of Employer.

11. **SAFETY**

- (i) All the work inside the terminal may be carried out in compliance with Dock workers (Safety, Health and Welfare) Act,1986 and all other statutory/safety requirements as applicable.
- (ii) The Contractor shall post a Safety Engineer who has to ensure that all the operational and maintenance activities are carried out in accordance with laid down SOP and by observing the safety/statutory requirements of the Terminal.
- (iii) Safety Engineer/Inspector shall be reported to the Shift in-charge of operations of the Terminal.
- (iv) The Contractor shall be responsible to ensure the safety of the Terminal and all of the Terminal Personnel, other personnel employed by the Contractor for the services and other individuals and invitees who are at any time on the Terminal.
- (i) The contractor shall provide on-going and refresher training on safety for all his employees as per the directions issued by the Employer from time to time.

- (ii) The Contractor shall conduct annual calibration of all measuring devices which are fitted in the terminal.
- (iii) The Contractor shall conduct periodical testing of lifting equipments/gears used for the purpose of maintenance activities like fabrication / repairs / overhauling/ disassembly-assembly, etc. and also storing of spares & stores .
- (iv) In case the Contractor has intention to install / engage any machines / equipment / accessories in connection with the execution of O&M Contract, it shall meet the standards of equipments intended to use inside the Terminals handling Hydrocarbons. The Contractor shall obtain approval of Employer/Statutory authorities for such usage, as applicable before installation/usage of such equipments.
- (v) Adequate precautions shall be taken to prevent accidents from electrical equipment. When workers are employed on electrical installations, which are already energized, insulating mats, working apparels such as gloves, sleeves and boots as may be necessary shall be provided to the workers by the Contractor.
- (vi) All the maintenance activities shall be executed after taking shutdown and issuance of work permit from sub-stations or E-house of machines. The Contractor must obtain written clearance whenever required, in a format (maintained in shutdown register) acceptable to Cochin Port Authority, clearly indicating the nature of maintenance intended to be undertaken, the equipment name, expected time of commencement and completion. The Contractor shall also mention the time that he would require to bring the machine to operational condition in the event of any emergency need.
- (vii) Contractor shall take all reasonable precautions to avoid pollution or contamination of the air, land or water arising out of the performance of the work.
- (viii) Should there be a discharge or escape of appreciable quantity of pollutants or contaminants during performance of its obligations under this Contract which occurs as a result of activities of Contractor or its sub-Contractor, the Contractor shall immediately take all action necessary to contain, control, recover or disperse the substance and to eliminate the safety and environmental risks and correct the damage resulting there from.
- (ix) The Contractor shall provide first-aid equipment for on-site emergency medical treatment and deploy a Safety Engineer to enforce and refreshment of safety measures among all the Contractor personnel. The Contractor shall provide on-going and refresher training for all his personnel which will help in increase productivity.
- (x) The Contractor shall maintain all records pertaining to the safety matters of the Terminal.

12. **SECURITY OF THE TERMINAL**

- (i) The Employer will deploy Security Personnel through a separate Contractor. The O&M Contract shall co-operate with the Contractor engaged by Cochin Port Authority for security.
- (ii) The Contractor shall maintain various records and registers pertaining to the security of the Terminal.

13. **CIVIL WORKS**

During the contract period, it is anticipated that only minor civil maintenance works needs to be carried out by the Contractor under O&M Contract. The work may include but not limited to repairs to plastering's necessitated due fair wear and tear like peeling of wall plasters & broken concrete pavement in civil structures and buildings, dislodged tiles, false sealing etc. in buildings, leaks to fresh water lines, sanitary blockages, patch work of internal bituminous roads etc. The O&M Contractor is required to carry out such Civil maintenance/repair works including procurement of all materials required, at his cost & risk.

14. **HOUSE KEEPING /CLEANLINESS:**

- (i) It is the responsibility of the Contractor to maintain the cleanliness in the entire terminal area including offices by deploying adequate number of staff. The requirement of house keeping include but not limited to the areas viz. Fire Pump Room, Foam Tank Room and Offices , Rest Rooms, Control room (The approximate floor area of offices 500 Sq. meters), Fuel Station, DG Station, Toilets & wash area inside Office buildings & outside (Total 3 Nos.). Pedestal Walkways, LPG Jetty, Barge Jetty premises, Manifold area (both Barge Jetty and LPG Jetty), bi-roads inside the compound.
- (ii) The scope of housekeeping work of the Contractor shall cover, but not limited to, the following:
 - a) Cleaning of floors (approximate floor area 500 sq. Meters) and removal of cobwebs in the buildings mentioned above.
 - b) Sanitation of toilets & wash area (total 3 nos.)
 - c) Clearing of waste materials etc. from approach trestle towards jetty frontage, berth floors and maintain it clean and tidy;
 - d) Manifold areas of LPG Jetty and Barge Loading Jetty should be made clean at all times by removing wastes, debris, oil/grease contaminations etc. by applying appropriate cleaning agent.
 - e) Cleaning of road side drain to maintain drainage/sewage system. Special attention in this regard shall be given prior to monsoon to avoid water logging.
 - f) Periodic clearing of bushes , grasses etc. to prevent growing of vegetation inside the terminal.

- g) De-watering and cleaning of cable pits.
- h) Cleaning of internal roads within the Terminal Compound.
- i) Material shall be stored in locations, which will not block access ways and permit easy cleaning of the area.
- j) Spillage of oil, grease etc. to the floor, from equipments should be avoided to keep the floor clean and tidy.
- k) All hoses, cables, and similar items shall be located, arranged, and grouped so that they will not block any access way and will permit easy cleaning and maintenance.
- l) All trash, debris, scrap and waste materials shall be collected, segregated according to class, stored, and deposited in waste collection areas as designated by the Contractor acceptable to the Cochin Port Authority.
- m) Oil spills/oily waste should not be allowed to throw into sea water.
- n) Waste materials collected shall be removed from the Terminal and disposed by the Contractor at his cost and risk and adhering the statutory norms.
- o) All the consumables and various housekeeping equipments required for housekeeping works shall be arranged by the Contractor at his cost. The bidders may consider this aspect while furnishing their financial bid.**

- (iii) Minimum staff required/day : 3 (in General shift). The Contractor shall have the option to carry out the house keeping works through sub-contracts also subject to the approval of the Employer.
- (iv) The employees deployed for housekeeping are required to wear PPE as per the safety requirements of the Terminal and shall follow all safety instructions of the Terminal issued by the Employer from time to time.
- (v) The Contractor shall maintain all the records pertaining to the house keeping of the Terminal.

15. **PROVISION FOR UTILITY VEHICLE:-**

The contractor has to deploy one number suitable type Multi Utility Vehicle during the tenure of contract to facilitate timely transportation of materials and workmen. All costs associated with deployment of above vehicle including cost of fuel, maintenance, driver costs etc. shall be borne by the Contractor. The Contractor may note that the above vehicle shall not be permitted to enter the restricted areas of the Terminal.

16. **WATER SUPPLY:**

Water supply from Kerala Water Authority is yet to be established at the Terminal. In order to meet the day –to-day requirement of fresh water at the Terminal, the Contractor has to make arrangement to procure fresh water through Tanker Lorries. The Contractor shall also make arrangement to procure and provide potable water in dispensers to be provided at various locations of the Terminal. The actual expenditure incurred towards procurement of fresh water through the above two

modes will be reimbursed on monthly basis on production of supporting bills. The above arrangement shall be continued until water supply arrangement of KWA is established to the Terminal. Two nos. 5000 ltrs capacity each tanks are provided inside the Terminal. Water supplied through Tanker lorries shall be metered while filling to the above Tanks and quantity received shall be accounted through appropriate registers.

17. **Provision of Hydra Cranes, Forklifts, Sky lift etc.:**

- (i) If deployment of any specialised equipments like Hydra Crane, Forklift, Sky-lift etc. from outside agencies is required for performing any work of special nature, essentiality of such requirements shall be communicated and such deployment shall be done with the consent of the Employer.
- (ii) Sources of such equipments shall be identified by the Contractor in advance and responsibility of timely engagement of such equipments shall be vest with the contractor. Engagement of such equipments shall be done at the full risk, cost and responsibility of the Contractor.
- (iii) Operation of all the above vehicle shall in compliance of the Safety norms of the Terminal handling hydrocarbons.

Note: The bidders shall consider the Scope of Work from (1) to (17) indicated above while quoting the rates for line item “ **Part-A: Manning, Operation, Maintenance and Repairs of Common Facilities & Services of the Terminal**”

PART B: MANNING, MAINTENANCE AND UP-KEEPING OF POL HANDLING FACILITIES AND OTHER ANCILLARY SERVICES TERMED AS “NON-LPG CARGO HANDLING FACILITIES AT MULT TERMINAL”.

The Scope of Work of Part-B, Manning, Maintenance and Up-keeping of “ Non-LPG Cargo Handling Facilities at MULT Terminal” is as follows:-

1. **Operation and Maintenance of Fire Fighting Facilities at Barge Jetty**

Fire Fighting Facilities provided under the heading “ Inventory of Non-LPG Handling Facilities”, APPENDIX-3 are to be maintained by the O&M Contractor. Scope of work of Fire Fighting Facilities described in Part A above and Maintenance Program is also applicable for Fire Fighting Facilities provided under Non-LPG Cargo Handling Facilities of MULT Terminal.

2. **Maintenance of Non-LPG Handling Facilities at MULT Jetty:-**

Non-LPG handling facilities listed under the heading “ Inventory of Non-LPG Handling Facilities”, APPENDIX-3 are not expected to be operational during the current tenure of O&M Contract. However, the O&M Contractor is required maintain and up-keep the installed facilities at MULT Jetty for handling Non-LPG cargo, at the minimum level and to carry out periodical trials of equipments/machineries to keep these equipments in good working order. The above periodical works are to be carried out during general shift.

Brief Scope of work of the O&M Contractor under Part –B at MULT Jetty area include but not limited to the following :-

- (i) Two Nos. each motor driven Slope Pumps and Stripper Pumps are to be tried out once in a week and the defects if any found during the trials are to be rectified by the O&M Contractor.
- (ii) There are total six Nos. Lines laid from the MULT Jetty leading to the back up area of the Jetty as detailed under the heading “Product line” and “Utility line”. The Scope of O&M contract include the routine maintenance of lines, line supports, trestles, valves, gauges, fittings etc. The work also include, chipping, painting, greasing of various items etc. as and when required.
- (iii) The items such as Pig Launcher, PRV, Pressure Transmitters, Temperature Transmitters, slope oil lines, slop tanks etc. Mentioned in APPENDIX-III meant for Non-LPG cargo movement at MUTL Jetty frontage are to be maintained by O&M Contractor. The equipments need to be maintained as per OEM’s maintenance schedules. The Contractor may kept in mind that these installations are meant for Non-LPG handling which is not expected to be operational during the current O&M contract period and hence bear minimum maintenance is required to keep the Non-LPG cargo handling system in good working order and the same is required to be carried out only periodically.

3. **Maintenance of Non-LPG Handling Facilities at Barge Jetty:-**

Barge Jetty constructed adjacent to the MULT Jetty, meant for handling Non-LPG hydro-carbons, is not expected to be operational during the proposed O&M contract period. However, the O&M Contractor is required to maintain the installations provided at Barge Jetty at the minimum level to keep the machineries, equipments and other facilities in good working order. Such periodic maintenance works are to be carried out during general shift.

The brief Scope of work of the O&M Contractor for maintaining Non-LPG handling facilities listed under the Heading Barge Jetty” of Appendix-III (inventory list) is as follows :-

- (i) Two Nos. each, motor driven Slope Pumps and Stripper Pumps are to be tried out once in a week and the defects if any found during the trials are to be rectified by the O&M Contractor.
- (ii) Total six Nos. Lines are laid from the Barge Jetty leading to Manifold 2 located at the back up area of Barge Jetty and as detailed under the Heading “Product line-barge jetty and the Heading “Utility line Barge Jetty ” of Appendix-3. The scope of O&M contract includes routine maintenance of lines, line supports, trestles, valves, gauges, fittings etc. The work also include, chipping, painting, greasing of valves etc. as and when required.
- (iii) The facilities such as Pig Launcher, PRV, Pressure Transmitters, Temperature Transmitters, slope oil lines, slop tanks etc. at Barge Jetty frontage meant for Non-LPG cargo movement are to be maintained by O&M Contractor. The machineries and equipments needs to be maintained as per OEM’s maintenance schedules.

4. Maintenance requirement of Equipments and Facilities at Manifold No.1.

Manifold No.1 located at the back up area of the MULT Jetty consists of 1x 20000 L underground slop tank for slop receipt from MULT jetty, 2 x slop out pumps, 2 x pig receivers and 1 x compressor for pig movement meant for Non-LPG Cargo movements. The details of equipments, machineries and accessories installed at Manifold No.1 which are required to be maintained under the O&M Contract are indicated under the Heading “Manifold No.1” of APPENDIX-3. The brief Scope of work of the O&M Contract include but not limited to :-

- (i) Two Nos. Motor driven Slope Pumps are to be tried out once in a week and the defects if any found during the trials are to be rectified by the O&M Contractor.
- (ii) The items mentioned under the heading “MANIFOLD 1” of APPENDIX-3 (inventory list) such as Electric Reciprocating Air compressor & Accessories, Fire Fighting Facilities, 20 KL capacity Slop Tank, Pig Receivers etc. are to be maintained by O&M Contractor. The machinery/equipments needs to be maintained as per OEM’s maintenance schedules.

5. Maintenance Requirement of Equipments and Facilities at Manifold No.2.

Manifold No.2 located at the back up area of the Barge Jetty consists of 1x 20000 L underground slop tank for slop receipt from Barge jetty, 2 x slop out pumps, 2 x pig receivers and 1 x compressor for pig movement meant for Non-LPG Cargo movements. The details of equipments, machineries and accessories installed at Manifold No.2 which are required to be maintained under the O&M Contract are indicated under the Heading “Manifold No.2” of Appendix-3 (Inventory list). The brief Scope of work of the O&M Contract include but not limited to :-

- (i) Two Nos. Motor driven Slope Pumps are to be tried out once in a week and the defects if any found during the trials are to be rectified by the O&M Contractor.
- (ii) The items under the heading “MANIFOLD 2” of APPENDIX-3 such as Electric Reciprocating Air compressor & Accessories, Fire Fighting Facilities, 20 KL capacity Slop Tank, Pig Receivers etc. are to be maintained by O&M Contractor. The machinery/equipments needs to be maintained as per OEM’s maintenance schedules.

6. Operation and Maintenance of Illumination system at Barge Jetty:-

The Contractor shall be responsible for keeping the Illumination System of the Barge jetty in good working order and to maintain the same properly to ensure the illumination level specified earlier in this document. The Contractor shall maintain a minimum stock of 10 Nos. of each type LED lights for facilitating immediate replacements as per the requirement. Payment of cost of LED lights kept in stock will be released after procurement and on submission of Debit Note along with supporting documents.

Operation of all the out-door illumination are regulated through timers. Hence manual intervention is normally not required. In case of malfunctioning of the system, appropriate electrical staff may be deployed from the Fire Pump Room staff for switching on/off and attending the complaints to the illumination system.

The bidders may note that the facilities indicated under “ Non-LPG handling Facilities” is not expected to be operational during the current O&M contract period and hence bear minimum maintenance is required to keep the Non-LPG Cargo handling Systems in good working order and the same is required to be carried out only periodically. The Contractor shall carry out the maintenance of Non-LPG handling facilities with the maintenance staff posted in General Shift as per the requirement.

Note: Contractor shall maintain appropriate records pertaining to all the maintenance works specified above from (1) to (6) under Part-B of Scope of Work. The bidders shall consider the Scope of Work from (1) to (6) indicated above while quoting the rates for line-item “ **Part-B: Manning, Maintenance and Up-keeping of POL Handling Facilities and Other Ancillary Services termed as “ NON-LPG CARGO HANDLING FACILITIES AT MULT TERMINAL”.**”

Mode of execution of maintenance works are detailed at APPENDIX-4

MAN POWER REQUIREMENT UNDER O&M CONTRACT

- 1) O&M Contractor shall perform various obligations under the Contract by providing the minimum number of Personnel as set out in this section. All the personnel deployed shall be adequately qualified and experienced to handle the relevant functions and shall be meet the requirements indicated in the tender document :-

Sl. No.	Designation	Total for 1 shift	Remarks
A	Terminal O&M In-charge (General Shift)	1	(General Shift)
B	CONTROL ROOM OPERATION		
	1 Shift in-Charge	1	
	2 Sub- Fire Officer	1	
C	FIRE PUMP ROOM		
	1 Motor Mechanic	1	
	2 Electrician	1	
	3 Asst. Mechanical	1	
	4 Asst. Electrical	1	
D	FIRE SAFETY		
	1 Fire Officer	1	(General Shift)
	2 Fireman	4	
E	SHIFT ENGINEER		
	1 Electrical/E&C Engineer	1	
F	SAFETY		
	1 Safety Engineer	1	(General Shift)
G	STORES		
	1 Store Keeper	1	(General Shift)
H	GENERAL MAINTENANCE TEAM		(General Shift)
	1 Fitter	1	
	2 Motor Mechanic	1	
	3 Electrician	1	
I	1 Multi Tasking Crew (MTC)	5	
J	HOUSE KEEPING		(General Shift)
	1 House Keeping Staff	3	
	Total Staff per Shift operation:16 (to be worked in 24X7 basis) General Shift: 10 (Day time duty)		
	Job descriptions, educational qualifications and experience requirements of each category Personnel are given in APPENDIX-5,		

- 2) Man-power requirement indicated in the Tender Document is the minimum manpower required to carry out the various works as per the Scope of work of O&M Contract as assessed by CoPA. The Contractor is bound to provide the man-power as per the above minimum requirement of staff in various categories both in shifts and in General Shift.
- 3) It is the responsibility of bidders to assess the adequacy of above staff strength to perform various contractual obligations as per the Scope of Work in an efficient, timely, reliable manner (which shall at all times be consistent with Good Industry Practice and in accordance with the applicable statutory/safety requirements). If the bidders feels that additional man-power is required over and above the requirements projected above, the bidders shall submit his manpower deployment plan along with the tender. During the tenure of O&M contract, even if the staff strength is increased by the Contractor, Employer is not bound to make any additional payment over and above the quoted rates. However, for deployment of such additional man power, Employer's prior consent is required.

Job descriptions, educational qualifications and experience requirements of various categories of Personnel are indicated as **APPENDIX-5**.

IMPORTANT TERMS & CONDITIONS

1. Tenure of O&M Contract :

Period of O&M Contract shall be initially for one year from the date of commencement and the same is extendable for further one more year at the same quoted rates and terms & conditions, at the discretion of the Employer;

2. Commencement of Service:

The O&M Contractor is required to commence the Operational Services within 30 days from the date of issue of Letter of Acceptance by the Employer. Before commencing the Operational Services, the O&M Contractor shall complete the following requirements:-

- (i) Recruitment of various categories of Personnel, obtaining approval of the Employer to deploy the manpower identified, complete the training of Employees selected including the orientation training at MULT Terminal ;
- (ii) Preparation of various formats of Documents to be maintained and reports to be furnished to the Employer and obtain Employer's approval;

3. Terminal operation Timing :-

The Terminal has to be operated 24X7 basis. The Contractor may adopt appropriate shift timing for his Employees as per the prevailing statutes and the same may be indicated in the offer.

The Contractor has to ensure continuous/ uninterrupted operation and maintenance requirement of the Terminal round the clock. The Employees performing duties in shifts shall be permitted to leave from the duty place after proper taking over of duties by the personnel of the succeeding shift. In order to ensure proper handing over/taking over of the works, there shall be an overlapping of 10 minutes in the shift arrangements.

4. Access Control System:- The Contractor has to install an appropriate Access Control System to record the attendance, entry and exit of his Employees. All the costs associated with the installation, operation and maintenance of Access Control System shall be borne by the Contractor. Installation of appropriate Access Control System shall be done by the Contractor with the approval of Employer. Access Control System to be installed by the O&M Contractor should also have the following features:-

- (iii) CoPA should be able to download the attendance details including punch-in and punch-out of all Employees of the O&M Contractor on a daily basis and for a particular period ;
- (iv) The O&M Contractor should be able to update Active/inactive status of any of his Employees in the System;

- (v) CoPA should be able to download the details of Active/Inactive Employees list from the System (At any point of time, the total no. of active Employees should not exceed the no. of Staff as declared by the O&M Contractor);
- (vi) CoPA should be able to download the details of the Employees worked on a particular shift/day/period.

5. Payment Terms:

Payment of O&M Charges and re-imburement of various expenses incurred by the Contractor as described in the Tender document will be made on monthly basis within 2 weeks from the date of submission of invoice and all other supporting documents specified in the Tender.

6. Invoicing:

The Contractor may note that the MULT Terminal is located within the Puthuvypen SEZ area. The Contractor shall raise the Invoices and Debit Notes on Cochin Port Authority as per GST applicable to SEZ.

7. Security Deposit: 3% of One year's O&M Contract value.

8. Liquidated Damages:

If the Contractor fails to commence the O&M service in all respects within the date stipulated in the Letter of Acceptance (LOA) by the Employer as specified in the contract, the O&M Contractor shall be liable to pay to the Cochin Port Authority as liquidated damages, a sum equivalent to 0.5% of the total contract value for one year, per week of delay subject to a maximum of 10% of the total Contract value for one year.

9. AVAILABILITY REQUIREMENT OF CRITICAL SYSTEMS

- (i) O&M Contractor is required to ensure the availability percentage of various systems as shown below during the contract period:-

Sl. No.	Equipment/System	Overall availability shall not be less than on monthly basis	Other availability requirements on monthly basis, if any
1	Fire Pumps, 760 M3/hr. in Tower system- 3 Nos.	90%	100% availability of at least 2 Nos. Pumps, should be assured at all times.
2	Fire Pumps of 750 M3/hr. in Hydrant system-3 Nos.	90%	100% availability of at least 2 Nos. Pumps, should be assured at all times.
3	Jockey Pumps- 144 m ³ /hr- 2 Nos.	90%	100% availability of at least 1 No. Pump, should be assured at all times.
4	Foam transfer pumps, at Fire Pump Room, 750 lpm@17bar – 2 Nos.	90%	100% availability of at least 1 No. Pump, should be assured at all times.
5	Trelleborg Marine System	90%	100% availability during the berthing/ un berthing and stay of the Tankers at MULT should be ensured
6	DG Sets -2 Nos	90%	100% availability should be ensured during the power failures
7	Tower Water Monitors : 2 Nos	95%	

8	Tower Water Foam Monitors: 2 Nos	95%	
9	Ground Water monitors - 2 Nos.	95%	
10	Ground Water Monitors (barge Jetty) – 2 Nos	95%	

Note: Periodicity of Trials of all the above Pumps shall be as per the OISD norms (ie. Twice in a week)

10. PENALTY FOR NON-ACHIEVEMENT OF MINIMUM REQUIRED AVAILABILITY OF EQUIPMENTS:-

(a) Penalty in case of non-achievement of 100% availability requirements:-

Sl. No.	Equipment/System	Availability requirement	Penalty for non-achievement of required availability.
1	Fire Pumps, 760 M3/hr. in Tower system- 3 Nos.	100% availability of at least 2 Nos. Pumps, should be assured at all times.	Rs. 24,000/- per day or part thereof on prorata basis.
2	Fire Pumps of 750 M3/hr. in Hydrant system-3 Nos.	100% availability of at least 2 Nos. Pumps, should be assured at all times.	Rs. 24,000/- per day or part thereof on prorata basis
3	Jockey Pumps- 144 m ³ /hr- 2 Nos.	100% availability of at least 1 No. Pump, should be assured at all times.	Rs. 12,000/- per day or part thereof on prorata basis
4	Foam transfer pumps, at Fire Pump Room, 750 lpm@17bar – 2 Nos.	100% availability of at least 1 No. Pump, should be assured at all times.	Rs. 12,000/- per day or part thereof on prorata basis
5	Trelleborg Marine System	100% availability during the berthing/ un berthing and stay of the Tankers at MULT should be ensured	Rs.48,000/- per day or part thereof on prorata basis
6	DG Sets -2 Nos	100% availability should be ensured during the power failures	Rs. 24,000/- per day or part thereof on prorata basis

(b) Penalty in case of non-achievement of minimum overall availability requirements:-

Sl. No.	Equipment/System	Minimum overall availability requirement	Penalty for non-achievement of required availability.
1	Fire Pumps, 760 M3/hr. in Tower system- 3 Nos.	90 %	Rs.5,000/- per each completed percentage of unavailability
2	Fire Pumps of 750 M3/hr. in Hydrant system-3 Nos.	90 %	Rs.5,000/- per each completed percentage of unavailability

3	Jockey Pumps- 144 m ³ /hr- 2 Nos.	90 %	Rs.2,000/- per each completed percentage of unavailability
4	Foam transfer pumps, at Fire Pump Room, 750 lpm@17bar – 2 Nos.	90 %	Rs.5,000/- per each completed percentage of unavailability
5	Trelleborg Marine System	90 %	Rs.12,000/- per each completed percentage of unavailability.
6	DG Sets -2 Nos	90 %	Rs.5,000/- per each completed percentage of unavailability
7	Tower Water Monitors : 2 Nos	95%	Rs.12,000/- per each completed percentage of unavailability
8	Tower Water Foam Monitors: 2 Nos	95%	Rs.12,000/- per each completed percentage of unavailability
9	Ground Water monitors - 2 Nos.	95%	Rs.6,000/- per each completed percentage of unavailability
10	Ground Water Monitors (barge Jetty) – 2 Nos	95%	Rs.6,000/- per each completed percentage of unavailability

(c) GENERAL PENALTY:

(i) Other than the critical items mentioned at Clause (1) above, whenever and wherever a work to be attended reported by Employer's representative remains unattended/incomplete within a reasonable time as fixed by the Employer, considering the importance of work, a penalty of Rs. 500/- per complaint will be imposed on the Contractor. If the work is remained unattended/incomplete within a specified period as notified by the Employer to the Contractor, the Employer reserves the right to carry out such work through outside agencies at the cost of the O&M Contractor.

(ii) In case of absence of any of the Employees from the categories viz. (1) Shift in-Charge (control Room Operations), (2) Sub- Fire Officer (3) Multi-Tasking Crew (MTC) (4) Motor Mechanics (5) Electrician (6) Fitter (7) Asst. Mechanical (8) Asst. Electrical (9) Fireman (10) Shift Engineer and (11) House Keeping Staff (staff of any category as indicated in the man-power requirement, a penalty will be imposed @ 2000 per day or per shift as applicable for each absentee. In order to monitor the attendance, the O&M Contractor is required to furnish the details of attendance of Employee taken from the Access Control System.

11. ANNUAL MAINTENANCE CONTRACT REQUIREMENTS FOR CRITICAL EQUIPMENTS:

- (ii) The O&M Contractor is required to cover the following critical Systems of the Terminal under Comprehensive AMC with the respective OEMs of the System till end of the O&M Contract period, to ensure its availability of not less than 95% :-

Sl. No.	System	Nos.
1	Trelleborg Marine System including PLC	Complete set
2	DG Sets including PLC	2
3	Tower Water Monitors	2
4	Tower Water Foam Monitors	2
5	Ground Water monitors	2
6	Ground Water Monitors (barge Jetty)	2
7	Fire Fighting Control Panels including PLC	Complete set

- (ix) The O&M Contractor shall enter into Comprehensive AMCs with the OEMs of respective Systems within 30 days from the date of Employer's LOA issued to the O&M Contractor. The Contractor has to consider the availability requirements mentioned above while framing the terms & conditions of AMC with the OEMs of critical equipments. The O&M Contractor is required to furnish the offers of OEM above equipments indicating the AMC charges and obtain prior approval of CoPA before entering into AMC with the AMCs of the above equipments.
- (iii) Cochin Port had entrusted the work of re-installation, testing & commissioning of 6 nos. fire pumps and 2 nos. jockey pumps, final testing and commissioning of automated fire-fighting system of the terminal to M/s. Hitek Engineering Services, Mumbai with the following brief scope of work:-
- Removal of 6 Nos. Jack Wells provided in sea beds below 6; Nos. Fire Pumps Suction,
 - Re-installation, testing & Commissioning of 6 Nos. Fire pumps and 2 Nos. Jockeypumps
 - Final testing and commissioning of entire automated Firefighting system of the Terminal.

The works to be carried out by M/s. Hitek Engineering services as per their scope is guaranteed for a period of six months from the date of satisfactory completion/ acceptance of work by the Employer. The spares replaced if any by M/s. Hitek Engineering Services shall also be covered under guarantee against manufacturing defects for a period of six months from the date of tender for O&M Contract may consider the above aspect while quoting their rates.

- (iv) Payment of AMC charges: AMC charges during the tenure of AMC shall be paid to the OEMs by the O&M Contractor and the same will be re-imbursed by the Employer to the O&M Contractor on production of documentary evidence. Period of AMC shall be covered till completion of O&M Contract.

12. PROCEDURE FOR HANDING OVER /TAKING OVER OF THE TERMINAL ON COMMENCEMENT OF CONTRACT:

- (i) In order to facilitate the handing over and taking over process for commencing the O&M Contract, a joint inspection of the Terminal, various equipment, systems, buildings, substations, spares and store items, communication devices etc. need to be conducted to confirm that all the items as per the inventory list attached as APPENDIX-II are available at the Terminal.
- (ii) Joint inspection shall be done in the presence of authorised representatives of O&M Contractor and Cochin Port Authority.
- (iii) The condition, status, shortages if any of all the items specified in the inventory list of MULT Terminal shall be recorded in the Joint Inspection Report. Rectification of any deficiencies in any of the structures, Systems, equipments etc. identified during the joint inspection shall be rectified on Cochin Port Authority's account. The Contractor has to take over the Operation & Maintenance activities of the Terminal on "As is where is basis" and all the related documents shall be jointly signed.
- (iv) The O&M Contractor shall also submit a list of items, tools & tackles owned by him and brought to the MULT Terminal in connection with the execution of contract, to the Employer and the shall maintain a register to this effect. The details of tools and tackles and other item subsequently brought by the O&M Contractor to the Terminal/withdrawn from the Terminal shall be recorded in a register and the same shall be submitted for periodical verification by the Employer.
- (v) Cochin Port Authority will provide all available drawings, OEM manuals etc. required for operation and maintenance of the Terminal at the time of handing over. It is the responsibility of Contractor to preserve such documents during the tenure of the O&M Contract.
- (vi) Preparation of various formats of reports, registers, schedules shall be done by the Contractor and submitted to the Employer within 15 days and the all the document formats are to be finalised within 21 days from the date of take over. Maintenance of all documents shall be the responsibility of the Contractor.

13. PROCEDURE FOR HANDING OVER /TAKING OVER OF THE TERMINAL ON COMPLETION OF CONTRACT:

- (i) The original inventory list of equipments, facilities, installations, materials etc. mutually signed at the time of commencement of Contract (Handing over/Taking

Over document) shall be maintained in the form of a Register and shall be updated as and when any addition/deletion of equipments, facilities, materials etc. are made in the inventory then and there and the same shall be signed by the Representatives of the Employer and the O&M Contractor. A final inventory list shall be prepared by the Contractor and submit the same to the Employer at least three weeks prior to the expiry of Contract period. A joint inspection of the inventory of equipments, facilities, installations, materials etc. will be carried out by the authorised representatives of Employer and the O&M Contractor shall be carried out within 7 days prior to the date of expiry of Contract which will be signed by the authorised representatives of O&M Contractor and the Employer. The condition, status, shortages if any of all the infrastructure and properties of the Terminal shall be recorded in the Joint Inspection Report. Any deficiencies/shortage identified in any of the structures, Systems, installations, equipments etc. during the joint inspection (except the normal wear and tear) shall be rectified by the Contractor at his cost and risk within a reasonable time as notified by the Employer. If the Contractor failed to rectify the deficiency/shortage within in time period notified by the Employer, the Employer reserves that right to rectify the deficiencies/shortages and the cost of the same will be recovered from the Contractor.

- (ii) Movement of any materials/items from the Terminal after finalising the inventory of items shall be done only after obtaining Employer's consent.
- (iii) On the date of completion of the Contract, the Employer will take over the assets as mutually finalised.

14. On the date of completion of Contract period, the O&M Contractor should have completed the following requirements:-

- (i) The Contractor shall remove all of the Contractor's tools, equipment and materials brought by the Contractor.
- (ii) The Contractor shall remove its entire personnel except as otherwise instructed by Cochin Port Authority. The Contractor shall be solely liable for resettlement, compensation or any other obligations in respect of the Contractor's personnel engaged during the term of the contract. The Contractor shall keep Cochin Port Authority indemnified against claims, if any, pertaining to O&M Contractor's personnel.
- (iii) The Contractor shall settle all dues, recoveries, insurance claims, if any, with Cochin Port Authority.
- (iv) The Contractor shall handover all the records / instruction manuals/ drawings / documents received from Cochin Port Authority in properly bound and documented condition.
- (v) The Contractor shall prepare and handover all the records such as, but not limited to, Terminal performance, logs and history data of the equipment which may or may not be part of day to day report in hard and soft copy.
- (vi) The Contractor shall remove & dispose from the site premises all scraps, petroleum, waste materials, rubbish and other debris generated during the term of

contract, as well as all tools, his equipment, machinery and surplus material and shall leave the site premises area in a neat, clean and usable condition.

15. Upon receipt of the certificate of final acceptance, the Contractor will make application to Cochin Port Authority for final payment, i.e. (monthly payment for last 1 month) within 30 days. Cochin Port Authority shall make payment to the Contractor within 30 days after receiving the final payment application, complete in all respect.

16. Drawings and manuals of the Terminal

Drawings, specification and OEMs manuals of various systems, Drawings of Terminal, buildings, substations, programme for PLCs etc. that are required for performing the Scope of Work of the O&M Contract shall be handed over to the O&M Contractor by the Employer.

It is the responsibility of the contractor to keep the above documents in the safe custody with satisfactorily indexed. Photos/videos of important activities performed during the tenure of O&M Contract shall also be preserved by the O&M Contractor for the records of the Employer. Such drawings, manuals, etc. handed over to the O&M Contractor shall continue to be the property of Cochin Port Authority. Confidentiality of such documents shall be maintained by the Contractor except for the scopes under contractual obligations and same shall be returned to Cochin Port Authority on completion of the contract.

17. Tools and tackles, special tools and tackles, testing equipment, scaffolding etc. required for operation and maintenance shall be arranged by the Contractor at his cost and risk.
18. Cochin Port Authority may conduct inspections / audit of the Terminal to check the health of the Terminal and maintenance & operation standards followed by the Contractor. The Contractor shall provide all necessary assistance / documents for such inspections/audit as desired by Cochin Port Authority.
19. The contractor shall notify Cochin Port Authority promptly regarding the occurrence of any emergency situation and take quick action to prevent any threatened damage, injury or loss to the Terminal or persons or property inside the Terminal.

20. Responsibility to rectify loss or damage:

- (i) If any loss or damage happens to the works/property, or any part thereof due to negligence of the Contractor of which the Contractor is supposed to take care during the period of the contract, the Contractor shall, at his own cost and risk, rectify such loss or damage to the works/property to the satisfaction of the Cochin Port Authority.
- (ii) In the event of an emergency where, in the judgment of Cochin Port Authority, delay would cause serious loss or damage, repairs or adjustments may be made by Cochin Port Authority or a third party chosen by Cochin Port Authority by giving advance notice to the contractor and the cost of such works shall be paid by the contractor.

21. EMPLOYER'S RIGHT FOR TERMINATION OF O&M CONTRACT FOR NON-PERFORMANCE OF THE CONTRACTOR:

If the overall availability of critical equipments mentioned at Clause (1) above, falls below 85% consecutively for two months, the Employer reserves the right to terminate the Contract by giving 30 days notice. In such situations, the Employer shall forfeit the Security Deposit of the Contract.

22. Sub-Contracting: Except to the extent provided below, the O&M Contractor shall not sub-contract or otherwise engage any independent contractor to perform any of its obligations under the O&M Contract:

- (i) Engagement of OEMs for AMC of critical equipments as specified in the O&M Contract;
- (ii) Engagement of OEMs for emergency repairs of any other items installed in the Terminal and are not covered under (i) above;
- (iii) Engagement of Sub-Contractor for carrying out Housekeeping works as per the Scope of Work of tender, if so desired by the O&M Contractor;
- (iv) Engagement of any other Contractor for specialised nature of work to be completed on emergency basis.

Any sub-contracting as stated above shall only be undertaken subject to the approval of and in the manner as directed by CoPA. The Sub-contractor selected by the O&M Contractor shall possess relevant experience and skills for undertaking the sub-contracting activities and shall be an independent entity not related to O&M Contractor. The O&M Contractor shall obtain CoPA's prior approval in respect of the selected sub-contractor and any contract in respect of such activities. All the employees of the Sub-Contractors engaged for the works are required to comply with all the various safety norms, due procedures, rules & regulations and standing instructions applicable for the Personnel working inside the MULT Terminal. The O&M Contractor shall fully responsible for ensuring the above requirements while engaging Personnel of Sub-Contractors.

23. Incident Reporting: The O&M Contractor shall notify CoPA immediately in the prescribed format of any event related to the performance of this Agreement which could have caused, has caused, or could in the future cause injury or illness to any Person, or which could have caused or has caused loss of or damage to the facilities/property of CoPA and /or of the O&M Contractor, or which could have caused or has caused a negative impact on the environment.

The O&M Contractor shall either investigate such events and/or shall co-operate fully with CoPA in cases where CoPA decides to carry out its own investigation of such events. The O&M Contractor shall implement all recommendations arising from investigations and shall ensure that findings are fully communicated to the Personnel, serving throughout this agreement period, and to CoPA

24. STAFF SELECTION & DEPLOYMENT:

- (i) The bidders are required to submit organization structure and job descriptions in reasonable details for each category of the contractor's personnel and staffing

plan proposed to be deployed under the O&M Contract to perform the contractual obligations, along with the bid.

- (ii) The bidder need to ensure that the Personnel deployed meet the educational qualifications, experience, physical standards and other criteria specified in the tender.
- (iii) Within 7 days from the date of issue of Letter of Acceptance by the Employer, the successful bidder shall furnish the list of Personnel proposed to be deployed at MULT terminal under O&M Contract, to Cochin Port Authority together with the relevant details and documents. After verification of the details and observing the formalities/requirements specified in the tender, the Employer, after ensuring the suitability of personnel as per the tender requirement, shall furnish a list of approved personnel to be deployed at MULT Terminal. During verifications, if it is found that the Personnel proposed by the successful bidder is not meeting the requirements specified in the tender same shall be notified to the successful bidder and alternate personnel meeting the tender requirement shall be deployed at the Terminal.
- (iv) Police verification of contractor's Employees: The O&M Contractor shall furnish necessary Home-town Police Clearance Certificate in respect of character and antecedents of all Employees engaged, before commencing the deployment at the Terminal. The above requirement is also applicable in scenarios where the O&M Contractor is deploying sub-contracted Employees in the Terminal with the approval of the Employer. This will be a part of Contractual Agreement, as entire Cargo Jetty, Oil Jetty area has been declared as "Prohibited Area".
- (v) Orientation Training:- The Contractor shall depute his personnel for orientation training at MULT for all the Personnel as per the approved list communicated by the Employer and the Personnel has to successfully complete the training prior to commencement of O&M Services.
- (vi) The Contractor shall ensure that all the required personnel / resources are available at the time of the handover so as to be able to appropriately takeover and commence the intended services in relation to each systems and equipments.
- (vii) If the Contractor is required to deploy the staff on overtime basis, additional over time charges applicable if any, has to be borne by the Contractor. The Employer is obliged to pay the monthly O&M charges as accepted by the Employer, in accordance with the terms of the Contract.
- (viii) The personnel of the Contractor must possess proper photo identity cards issued by the O&M Contractor. Entry and exist of the personnel to the Terminal shall be recorded in the Access Control System as detailed in the Tender Document.
- (ix) On emergency situations, if the Employer requires additional manpower, the Contractor is required to provide such additional man power. The cost of such additional manpower will be paid by the Employer as per the rate quoted in the tender for the respective category. 24 hours prior notice will be given by the Employer for such additional man-power.
- (x) Any new Personnel being deployed by the Contractor shall undergo orientation training prior to their deployment at the Terminal. The Contractor shall make arrangements for prior to the posting accordingly.
- (xi) Removal of Personnel at CoPA's Request: If CoPA complains of the conduct of the any of the Personnel deployed by the O&M Contractor and provides the

reasons thereof, the O&M Contractor shall remove such Personnel forthwith, but in any event within a period of seven days from the date of receipt of such compliant from CoPA and O&M Contractor shall nominate a suitable replacement which replacement shall be subject to the prior approval of CoPA. All costs associated with such removal and replacement of such Personnel shall be borne by the O&M Contractor.

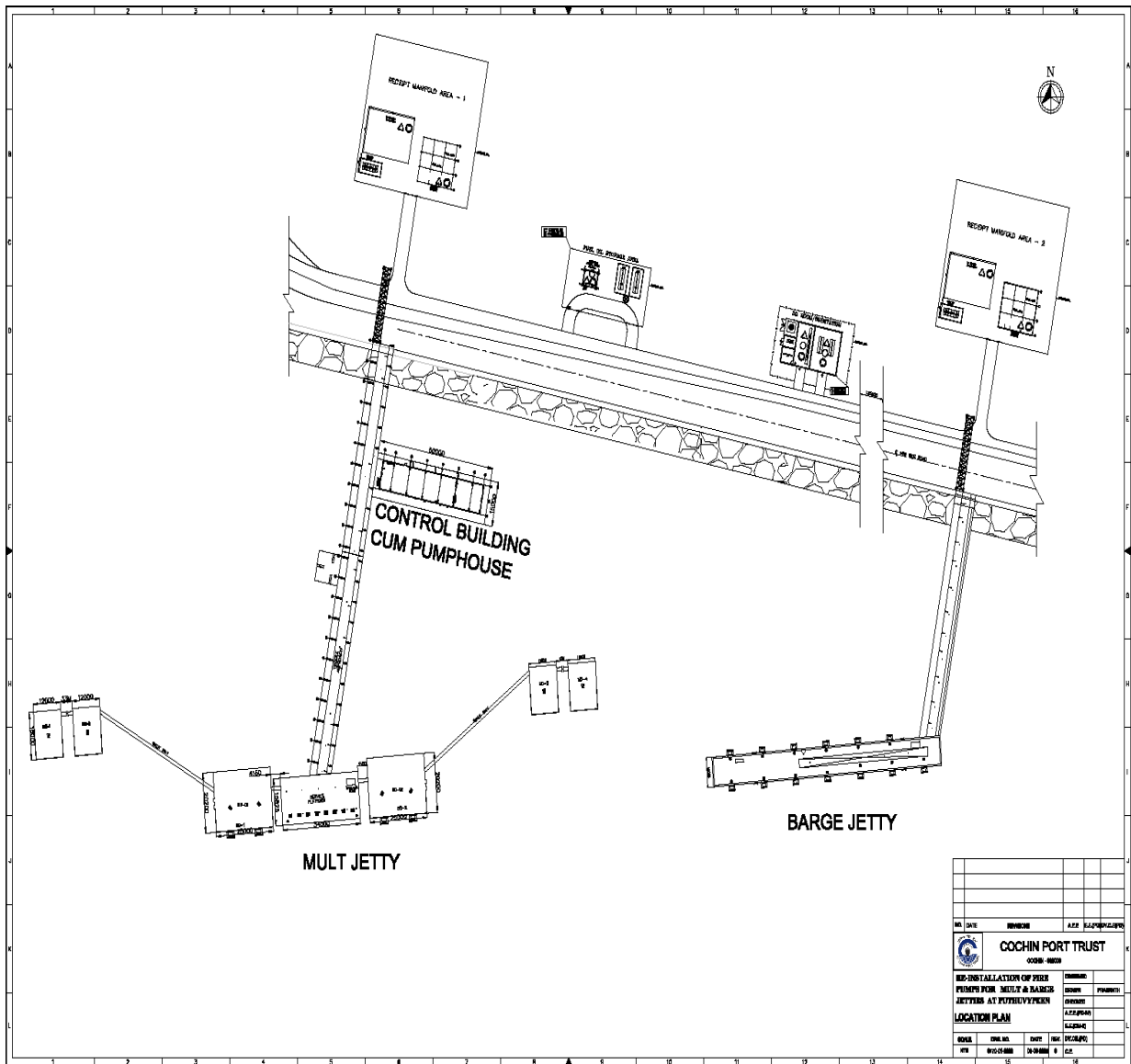
- (xii) **Damages:** Any damage caused by the workmen engaged by the Contractor to any machinery or equipment or installation or property of Cochin Port Authority due to negligence, ignorance or malafide intention shall be made good at the cost and risk of the Contractor within a reasonable period of time acceptable to Cochin Port Authority, failing which the cost of the damages assessed by Cochin Port Authority shall be recovered from the bill of the Contractor or any money due to the Contractor.
- (xiii) All individuals engaged in the performance of the Contractor's obligations under this contract shall be the employees of the Contractor and their working hours, rates of compensation and all other matters relating to their employment shall be determined solely by the Contractor in accordance with the applicable laws & regulations. The Contractor shall be solely responsible for employment policies that specify the requirements for staff working under him and such policies are to be consistent & in line with the applicable labour laws and any government directives applicable to Cochin Port Authority.
- (xiv) Public Transport Facility : The MULT Terminal is located Puthuvypeen where public transport means are not available. The Contractor may note the above position and provide appropriate and safe transport arrangement for his Employee for to and fro journey of his employees to the Terminal at his cost and risk.
- (xv) The O&M Contractor shall provide for boarding, lodging, transport, leave and other facilities to all its Personnel in a manner to ensure timely, efficient , safe and reliable discharge of the Services to the CoPA.
- (xvi) O&M Contractor shall ensure that the Personnel deployed by him shall comply with, and the O&M Contractor shall be liable for and indemnify CoPA against any breach, infringement or non-compliance with any and all applicable Laws by such Personnel.
- (xvii) The O&M Contractor shall at all times take all reasonable precautions to prevent any unlawful, riotous or disorderly conduct by or amongst the Personnel , and to preserve peace and protection of persons and property on and near the area where the Services are performed. The O&M Contractor shall give prompt notice to CoPA of any such anticipated or actual unlawful, riotous or disorderly conduct.
- (xviii) Social Benefits: The O&M Contractor shall provide such social and employment benefits for its Personnel as are required by Laws.
- (xix) Drug and Alcohol Policy:- The O&M Contractor is responsible for ensuring that all the Personnel during the period of O&M Contract are not at any time in possession of , do not take , have not taken, and/or not under the influence of any intoxicating substance , or alcohol, or drug. The O&M Contractor shall

ensure that all of the Personnel deployed by him at the Terminal are made aware of and comply with the above requirement.

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MULT LAYOUT



APPENDIX-2

MULT INVENTORY LIST - COMMON FACILITIES		
Sl No:	Common Facilities	Qty
1.MULT ROAD		
1	90 W LED Street lights (from SEZ road to MULT)	60
2	90 W Flame proof LED Street lights	11
3	90 W LED Light fitting on MULT cross over	1
4	45 W flame proof LED fitting on MULT cross over	1
5	Boom barrier	4
6	Cabin fan (Luminous)- big security cabin	2
7	Light fittings -big security cabin- 2 inside, 1 outside	3
8	Boom barrier 1 and 2 cabin remote - in big security cabin	2
9	Cabin fan (Bajaj) -small security cabin at MULT and Barge	2
10	Light fittings -small security cabin- 1 inside in each cabin	2
11	Boom barrier 3 and 4 cabin remote -in small security cabin	2
12	Fresh Water tank 5000 l	2
13	Kirloskar Water Pump - 3.7 kw/5 HP, Type: KDS-538+ , Sl: No: A17ALW002651, Size:65 x 50 , LPS 7.4, Head range- 6 m-38 m, 3 ph, 50 hz, 400V, Induction motor	1
14	FRP hose box (750MMX 600MMX 250MM)	9
15	MCP #12 (at MULTjn)	1
2. FUEL STATION COMPOUND		
1	Fuel transfer pump with motor and gear box- ROTOPUMPS- SI No: GH1181431, GH181432, 5 cub m/hr , 4.4 bar, rpm 447, 1.29 kw, 44 M head / Motor- Crompton greaves, M/C No:BEC2F4DJ, 3 ph induction, Ex"d", IP55, 415 V, 3.26 A, rpm 1415, , 1.5 kw(2 hp), 40 kg,Temp class 4 / Gear box - Radicon , SI No: M221457, M221458, 1.5 kw, oil grade 460, O/P rpm 447, Ratio 3.2	2
2	Fuel tank 20 m ³ with fittings	2
3	PRV for fuel line (set @5 kg/cm ²)-FAINGER LESER	1
4	Flame sensor #10	1
5	Gas detector #6	1
6	FRP hose box (750MMX 600MMX 250MM)	2
7	Horn Loudspeaker 15W	1
8	Compound wall 90 W Flame proof LED light fittings	2
9	45 watt flame proof LED fitting	4
10	Earth clamp box with earth clamp	1
11	MCP #14	1
12	Fire water Pipe line 300 NB	38 m
CIVIL ITEMS KEPT AT FUEL STATION COMPOUND		

1	Chain link fencing(50x50x4mm)	50
2	Vertical post of ISA 75X75X8 MM &ISA 50X50X6 MM	197
3	Concertena coil 600 mm diabundle	134
4	RBT barbed wire	33
5	40 x8 mm thick FI strip	197
6	Geotextile mat 3100 (200 m roll)	3
7	Geotextile mat 3100 (100 m roll)	2
8	Geotextile mat 3100 (120 m roll)	1
9	Geotextile mat PR24 (200 m roll)	6
10	Geotextile mat PR24 (20 m roll)	1
11	Geotextile mat 3400 (60 m roll)	1
12	Concrete weight for boya	2
3. FUEL STATION CONTROL ROOM		
1	Talk back field station	1
2	Display enclosure	1
3	45 W Flame proof LED Light fittings	4
4	Industrial emergency light	1 set
STORE ITEMS KEPT AT FUEL STATION CONTROL ROOM		
1	Bollards-30T - MULT jetty	2
2	Bollard Bolts- dia 32 mm	10
4. DG STATION COMPOUND		
1	Transformer -UNIPOWER OIL COOLED TRANSFORMER-CLASS A, SL. NO: UTPL/5640, 1250 KVA, HV 11000V ,LV-433, HV-65.61 A, LV 1666.8 A, 50 HZ	1
2	FRP hose box (750MMX 600MMX 250MM)	2
3	Compound wall LED light fittings 25 W	3
4	30 W LED fitting	4
5	36 W LED lights at Transformer area	2
6	MCP #15	1
7	Fire buckets (transformer area)	3
5. VCB PANEL ROOM		
1	VCB panel 11 KVA- Larsen & Toubro	1
2	LBS	1
3	UPS	1

4	RTCC panel	1
5	Earth Rod	1
6	HT Gloves	1 pair
7	Industrial emergency light	1 set
8	LED tube light 20 W	4
6. DG STATION BUILDING		
1	MV PANEL	1
2	SYN PANEL	1
3	APFC PANEL	1
4	POWER PANEL 1	1
5	MAIN LIGHTING PANEL	1
6	LDB3	1
7	LDB 4	1
8	PDB 1	1
9	Distribution panel Hitek	1
10	63 A 5 PIN Metal socket	1
11	Air circulator 180 W- HAVELLS	5
12	Horn loudspeaker 15 W	1
13	Talk back field station	1
14	DG set- Engine-CUMMINS INDIA,Engine serial no: 25430163(#1)/25430399(#2), QSN-14-G2, 6 cyl inline,4S , radiator cooled, 486 HP(363 KW)1500 RPM, Diesel sump capacity 500 L, Date of mfg : 23-09-2017(#1) /01-10-2017(#2)	2
15	DG set - Ac Generator - STAMFORD-, Type-HCI444F1, SI No: N17J437761/N17J437762, Salient pole self excited, 380 KVA, 1500 rpm,415 V, 3 PH, 528.7 A, IP 23 Isolator panel-POWERICA 380 KVA, SI No:01/PSM1/710250, 01/PSM1/710251, Type SPL	2
16	Battery PULSE ULTRA lite- 12 volt 65 AH -2 nos/ Exide xp1000-2 nos	4
17	Overhead Diesel tank - Capacity- 500 L (D 75 cm x L 125 cm)	1
18	LED Tube Lights- 20 W	22
19	Industrial emergency light-in rest room, Lighting panel room and DG room	3 set
20	Fire buckets	3
21	First Aid Kit box- in Lighting panel room and DG room	2
22	9 Kg Dry chemical powder extinguisher - M4/22, M8/22	2
7. TOILET-GENTS		
1	Shower with angle cock	1

2	Long body tap	1
3	Wash basin, fill up tap with angle cock	1
4	European closet with flush tank and angle cock	1
5	Health faucet with angle cock	1
6	Urinal with angle cock	2
7	LED Tube light -20 W	2
8	Sintex tank- 1000 l	1
8. TOILET-LADIES		
1	Shower with angle cock	1
2	Long body tap	1
3	Wash basin, fill up tap with angle cock	1
4	European closet with flush tank and angle cock	1
5	Health faucet with angle cock	1
6	LED Tube light -20 W	1
9. MULT APPROACH TRESTLE		
1	Lamp posts M1 to M10 with Flame proof LED light fitting- 90 W	10
2	Control Building side wall LED light fittings 25 W-left and right	8
3	FRP hose box (750MMX 600MMX 250MM)	5
4	PRV -Foam line-FAINGER LESER	1
5	MCP #5,#6,#7,#8,#11	5
6	Diesel tank 88 L with fittings	1
7	Diesel tank 480 L with fittings	3
8	Diesel tank 750 L with fittings	3
10. FIRE PUMP ROOM (Ground Floor)		
1	MCC panel (enclosing PLC- Allen Bradley)	1
2	Power distribution panel	1
3	Battery charging panel	1
4	UPS 2 KV (Supra)	1
5	Battery for UPS-Cummins Pulse ultra 2 X 12 v x 65 AH / Exide Powersafe plus 2 x 12 vx 42 AH	4
6	Exhaust fan	2
7	LED Tube Light fittings	20 sets
8	Horn loud speaker 15 W	1
9	Talk back field station	1
10	GSM dialler	1

11	Jockey pump- Kirloskar Brothers Ltd.-, 2017 April, Vertical turbine, RPM2900, Head 130.6 m, 144 m ³ /hr, 2017 make, VT275HL-4 stage	2
12	Jockey Motor- Kirloskar Electric co., M/c No: SL 16637-01 /16637-02 , 90 KW, RPM 2960, 3 ph induction, 415v, 50 Hz, AC	2
13	Foam transfer pump-Tushaco, Model: T1SH 1450.2 , Single screw bare pump , 250 RPM, 750 lpm@17bar, SI No: 1600537/1912,1913	2
14	Motor for foam transfer pump-Kirloskar, M/c No: SP 16665-01, 37 KW, 1474 RPM, 3PH, 415V, 50 Hz, AC	1
15	Gear box for Electrically driven foam pump-ELECON Input 1500 rpm, output 250 rpm, SI No: H57979	1
16	Diesel Engine for foam pump- Greaves cotton Ltd, 3G11T, 3 cyl, 4S, Turbocharged, 72 HP(52 KW) at 2200 RPM, SI No: 1208031701125, Mfg. 24/01/2017	1
17	Gear box for Engine driven foam pump -ELECON, Input 2200 rpm, output 250 rpm, SI No: H57703	1
18	Foam filling pump-KOEL domestic self priming pump, 0.5 hp, 25x25mm, SI No: DD1840046649, Model No:MM1.2525.05.1.12	1
19	Pressure switch for Fire Pump and Jockey pump	10
20	Fire pump Engine-Cummins India, 480 hp at 1800 rpm, 6 cyl vertical turbo charged, NTA855-F , Engine serial no: 25402749 - mfg. feb 2017-#1) , 25423690 - mfg. jan 2017 -#2) , 25423689 -mfg. jan 2017 -#3)	3
21	Fire pump - Kirloskar Brothers Ltd., vertical turbine, 245.438 kw, 91m head, 750m ³ /hr @91 m head, Impeller dia 425 mm, BHR42-22.5 DEG 2 stage , SI. No: 153B917001-#1-mfg. may 2017), SI. No: 153B917002-#2-mfg. may 2017), SI. No: 153B917003-#3-mfg. may 2017),	3
22	Gear box for 480 Engine- ELECON KAV225 , Speed ratio 1.2:1, Horizontal shaft speed 1800 rpm, Vertical shaft speed 1500 rpm, Oil grade- VG 220- 35-40 L, SI No: WHG H58547 UP-CW,WHG H58546 UP-CW,WHG H58545 UP-CW	3
23	Fire pump Engine- Cummins India, 680 hp at 1800 rpm, 6 cyl vertical turbo charged,KTA-19-F, Engine serial no: 25423911 -mfg. march 2017-#4) , 25423913 -mfg. march 2017-(#5) , 25423912 -mfg. march 2017-#6) with Lubrication pump- 0.75 kw, 1400 rpm, IP55	3
24	Fire pump - Kirloskar Brothers Ltd., vertical turbine, 385.365 kw, 141m head, 760m ³ /hr @141m head, Impeller dia- 430 mm BHR42-22.5 DEG 3 stage, SI. No: 153B917004 -#4- mfg. may 2017), SI. No: 153B917005 -#5- mfg. may 2017), SI. No: 153B917006 -#6- mfg. may 2017)	3
25	Gear box for 680 Engine- ELECON KAV250 ,Speed ratio 1.2:1, Horizontal shaft speed 1800 rpm, Vertical shaft speed 1500 rpm, Oil Grade- VG 220- 45 Litres, SI.No: WGH H58550 UP-CW,WGH H58548 UP-CW,WGH H58549 UP-CW	3

26	HOT crane 5 ton capacity Single Girder, Make: Indef Hercules hoists ltd-2017, Sl. No:P1718000005, Size: span 7.85 M X height of lift 5.817 M X travel length 50 M	1
27	Battery 12 volt, 180 AH, EXIDE XP1800 - 7 NoS / EXIDE GOLD 180 R- 1 NO: /Cummins Pulse ultra plus with SMPS charger - 24VX 32 AH SI NO: 1J01100274, 1I01100236 E214- 2 Nos for FIRE PUMP ENGINES	10
28	Battery 12 volt, 88 AH, EXIDE XP880 for FOAM PUMP ENGINE	2
29	Battery charger for Foam pump Engine -OUTPUT 12 VDC, 10 A, INPUT 230 VAC with BOOST, FLOAT and BATT REV indication, Model-BCW-1210, Mfg.Yr. 09/2019, Shavison Electronics Pvt. Ltd.	1
30	Battery charger for Fire pump Engine -INPUT 230 VAC, 4.5 A, 50/60 Hz, OUTPUT 24 VDC, 20 A with BOOST, FLOAT and BATT REV indication, Model-BCD-2420, Mfg.Yr. 08/2020, Shavison Electronics Pvt. Ltd. SI No: 200800016,200800022, 200800023, 200800029,200800033, 200800034,	6
31	Fire bucket	3
32	First Aid Kit box	1
33	9 Kg Dry chemical powder extinguisher- M9/22, M19/22	2
11. 1ST FLOOR-FOAM TANK ROOM AND OFFICE		
1	SS Foam tank 20520 L with fittings- SS316L	2
2	Foam concentrate in Tank 1 and Tank 2 in litres	3100 x 2 = 6200 l
3	Chain pulley block- 3.2 ton	1
4	Horn loudspeaker 15 W	1
5	Air circulator- 180 W-Havells - in dining room	2
6	Multi sensor detector-white	6
7	Electronic sounder-red	1
8	MCP #9	1
9	Fire Escape hydrant with hose reel	1
10	FRP hose box (750MM X 600MM X 250MM)	1
11	LED Tube Light fittings at Foam tank area	8 sets
12	Aluminium 2 step ladder- 10 ft	1
13	Aluminium Movable platform-6 ft	1
14	UPS 6 KV (Supra)	1
15	SMF-VRLA Battery for UPS- AMARON Quanta 12 V 65 AH Model-12AL065	10
16	False Ceiling Lights (big)	13
17	False ceiling lights (small)	10

12. FIRST FLOOR- COMMON TOILET		
1	Shower with angle cock	1
2	Long body tap	1
3	Wash basin, fill up tap with angle cock	1
4	European closet with flush tank and angle cock	1
5	Health faucet with angle cock	1
6	Urinal with angle cock	2
7	Exhaust fan	1
8	LED tube lights	3
13. FIRST FLOOR-LOCKER ROOM-		
1	IFSC (International shore connection)1 No.to be fitted in line by M/s Hitek	2
2	Composite hose 80 NB X 6 M	1
3	Ball valve 100 NB , #300	4
4	Collar 300 NB	4
5	Pyro-protect brand Fire hose 63 MM X 15 M –To be placed in Hose box by M/s Hitek	4
6	Hydrant valve Single headed outlet Size:75 mm inlet x 63 mm outlet, IS 5290 Type A (Gun metal)-To fitted in line by M/s Hitek	75
7	Gun metal branch with nozzle-To be fitted in line by M/s Hitek	2
8	Talk back field station	1
9	Horn loud speaker flameproof 15W	1
10	Multi sensor detector-white	3
11	Fire alarm panel sounder-red	1
12	Pr gauge (range 0-30 kg/cmsq)-FWL-To be fitted in line by M/s Hitek	24
13	Pr gauge (range 0-25 kg/cm sq) -To be fitted in line by M/s Hitek	14
14	Pr gauge (range 0-21 kg/cm sq) -To be fitted in line by M/s Hitek	26
15	Pr gauge (range 0-14 kg/cm sq) -To be fitted in line by M/s Hitek	4
16	Tool box	2
16.1	Double end spanner 6x7	2
16.2	Double end spanner 8X9	2
16.3	Double end spanner 10x11	1
16.4	Double end spanner 12x13	2
16.5	Double end spanner 14x15	2
16.6	Double end spanner 16x17	2

16.7	Double end spanner 17x19	2
16.8	Double end spanner 18x19	2
16.9	Double end spanner 20x22	2
16.10	Double end spanner 21x23	1
16.11	Double end spanner 22x24	2
16.12	Double end spanner 25x28	2
16.13	Double end spanner 30x32	2
16.14	Hammer	2
16.15	Adjustable spanner	2
16.16	Pipe Wrench	2
16.17	Screw Driver	2
17	Diesel Engine spares	1 lot
18	F lever	6
19	LED tube lights- 20 W	2
14. SECOND FLOOR-CONTROL ROOM		
1	MCP #10	1
2	Air conditioner- Voltas Inverter AC- 183V DZU, Model-4502368/2018 with remote	1
3	Public address system panel with Panasonic phone(KX-DT543)	1
4	Main Fire Alarm panel	1
5	Mimic panel	1
6	Siren accept panel	1
7	Remote Tower Monitor control panel	1
8	Hook release Interface with server- Trelleborg Marine Systems	1
9	Hook release control station-Trelleborg Marine Systems	1
10	Weather Station	1
11	Current & Wave Sensor, Tide Sensor, Laser Sensor, Display Unit.	1
12	Monitor DELL- SVC Tag- BCHZ692 Express service code: 24700394342 -S/N:CN-04TFPN-72872-634-AAKB-A02	1

13	Wireless keyboard and mouse	1
14	Micro PC Desktop- DELL OptiPlex 3040	1
15	Printer - Canon Laser Multi function printer- Image class MF241d- print,scan,copy,duplex	1
16	Table and chair	1
17	VHF Base station -Motorola , Model : AZM28JNN9RA2AN , Equip type: XiR M8668i VHF, SI No:511TTP2178	1
18	Power supply for Base station - AXIOM, BM 100B, 13.5 V, 10 A	1
19	Walkie talkie with charging unit- MOTOROLA- Model No: AZH56JDN9RA1AN, SI No: 871TUV725, 871TUV819, 871TUPZ403, Equipment type: XIR P8668I VHF, 7.4 V rechargeable lithium ion battery, 2900 mAh, SI No: 5000024163DB, 5000024276F4, 5000024389E0	3
20	VHF Base station Antenna-Kenstel, Model KF 150-6, Freq 145-155 MHz, Gain 6 dB, Jan 2018	1
21	Multi sensor detector-white	1
22	Siren 3 km range	1
23	Weather station-Trelleborg Marine Systems	1
24	Solar Aviation lamp	1
25	Water tank 1000 l	2
26	LED tube lights- 20 W	3
27	LED light 25 W Crompton	
28	Stair case LED Tube lights- 20 W	9

15.MULT JETTY

1	Talk back field station-1 berth+1 operator room	2
2	Horn loud speaker 15 W	2
3	Gas detector #1,#2,#3	3
4	Flame sensor #3,#4,#5	3
5	Flame proof LED Flood light on cross over -150 W	4
6	Lamp posts M11,M12,M17 with Flame proof LED light fittings-90W	3
7	Flameproof LED light fittings in operator room-45 W	3
8	Emergency Eye and face wash fountain and safety shower	1
9	Jumbo curtain nozzle- 6000 LPM, 150 NB, 7.8 kg/cmsq, 2017 make	2
10	MCP #2,#3	2
11	Water tank 200 L	1
12	Ground water monitor 3000 LPM(AIR FOAM MONITOR)-AAAGFM750	2

13	FRP hose box (750MMX 600MMX 250MM)	2
14	MVWS spray nozzle (k64) for Under deck dia 15	72
16. BD(1/2)		
1	FRP hose box (750MMX 600MMX 250MM)	1
2	Horn loud speaker 15 W	1
3	MCP #1	1
4	Laser sensor Enclosure	1
5	Jumbo curtain nozzle-6000 LPM	1
6	Flame sensor #1,#2	2
7	Tower curtain nozzles 15 NB	3
8	Local control panel	1
9	Tower Monitor 6000 lpm-Water Foam Monitor(S	1
10	Tower Monitor 6000 lpm-Water Monitor	1
11	QRMH 3,4- Trelleborg Marine Systems, SWL 100 TON X 3	2
12	Lamp posts M13,M14 with Flame proof LED light fittings	2
13	Flame proof 90 W LED fitting	1
17. WALKWAY BD(1/2) to MD2		
1	Lamp posts with LED light fittings-25 W	5
18. MD2		
1	FRP hose box (750MMX 600MMX 250MM)	1
2	Display Board-Trelleborg Marine Systems	1
3	QRMH 2 -Trelleborg Marine Systems ,SWL 100 TON X 3	2
4	Lamp post M15 with Flame proof LED light fitting-90 W	1
19. WALKWAY MD2 to MD1		
1	Lamp posts with LED light fittings-25 W	3
20. MD1		
1	QRMH 1 -Trelleborg Marine Systems,SWL 100 TON X 3	1
2	Lamp post M16 with Flame proof LED light fitting- 90 W	1
21. BD(3/4)		
1	FRP hose box (750MMX 600MMX 250MM)	1

2	Horn loud speaker 15 W	1
3	MCP #4	1
4	Laser sensor Enclosure	1
5	Jumbo curtain nozzle-6000 LPM	1
6	Flame sensor #6,#7	2
7	Tower curtain nozzles 15 NB	3
8	Local control panel	1
9	Tower Monitor 6000 lpm,11bar 6"ANSI 300FF-Water Foam Monitor(SILVANI)	1
10	Tower Monitor 6000 lpm,11bar 6"ANSI 300FFlpm-Water Monitor(SILVANI)	1
11	QRMH 5,6-Trelleborg Marine Systems, SWL 100 TON X 3	2
12	Lamp posts M18,M19 with Flame proof LED light fittings- 90 W	2
13	Flame proof 90 W LED fitting	1
22. WALKWAY BD(3/4) to MD3		
1	Lamp posts with LED light fittings-25 W	5
23. MD3		
1	FRP hose box (750MMX 600MMX 250MM)	1
2	QRMH 7 -Trelleborg Marine Systems ,SWL 100 TON X 3	2
3	Lamp post M20 with Flame proof LED light fitting-90 W	1
24. WALKWAY MD3 to MD4		
1	Lamp posts with LED light fittings-25 W	3
25. MD4		
1	Current and wave sensor- Trelleborg Marine Systems	1
2	Tide sensor -Trelleborg Marine Systems	1
3	QRMH8- Trelleborg Marine Systems, SWL 100 TON X 3	2
4	Lamp post M21 with Flame proof LED light fitting-90 W	1
26. ITEMS TO BE SHIFTED TO MULT STORE ROOM		
1	75 kg wheeled dry chemical powder extinguisher	12
2	50 Kg wheeled dry chemical powder extinguisher	2
3	9 Kg Dry chemical powder extinguisher (ABC type)	18
4	4.5 Kg CO2 type fire extinguisher	9
5	Foam type extinguisher (9 L)	5

6	Foam type extinguisher (50 L)	2
7	Pyroprotect brand Fire hose 63 MM X 15 M	70
8	Pyroprotect brand Fire hose 63 MM X 7.5 M	2
9	Gun metal branches with nozzles	36
27. FIRE WATER LINES - cemented (8 mm thick) , wall thickness 6.35 mm		Approx. Length in M
1	450 mm Tower & hydrant line header with valves	318
2	350 mm line from pumps to header with Gate valves and NRV's , Barge jetty/Booster area hydrant line through FP room, Tower monitor line from service platform start to BD's	103
3	300 mm hydrant line from MULT trestle to DG station with valves (including line to booster area)	292
4	Underground 300 mm hydrant line to DG station (at Fuel storage area, DG station and Manifold 1)	74
5	250 mm tower line from BD's to tower monitor's , hydrant line for MULT Jumbo Curtain and U/DECK with Gate valves and DV's	163
6	200 mm drain line from 450 mm header line , U/D line with Gate valves, DV's and double hydrant post	10
7	150 mm Jockey line to header, MULT hydrant posts, hydrant line from BD's to MD's , fuel station and DG station with valves and double hydrant posts	323
8	100 mm hydrant line to FEH and IFSC with Gate valves and DV's	17
9	80 mm SS engine cooling lines and FEH line with valves with valves and DV's	59
10	50 mm SS engine cooling lines, tower curtain line and drain line at BD(1/2) with valves	51
11	25 mm SS engine cooling lines	36
12	SS Under deck berth protection lines (network)	-
28. Foam line-SS		Approx. Length in M
1	100 mm Foam line from Foam tank to Foam pump and from Foam pump to Mult approach trestle with Gate valves & NRV's	38
2	80 mm Foam line from Mult approach trestle to Service platform	101
3	50 mm Foam return line and inline balance proportionator line at BD1/2, BD3/4	109
4	25 mm Foam filling line with tank fittings, Foam line to Ground water /foam monitors at Mult	77.5
29. UTILITY LINE-MULT		Approx. Length in M
1	150 mm Potable water line valves (galvanized carbon steel A 53 GR-B #150)	250

2	80 mm Potable water line with IFSC	7
30. FUEL OIL LINE		Approx. Length in M
1	80 mm Fuel oil line from Filling point to UG tanks with valves and fittings(CS #150 API 5L GR-B)	17
2	40 mm Fuel oil line from UG tank to DG set tanks and FP tanks with valves and fittings (CS #150 API 5L GR-B)	322
3	Underground 40 mm Fuel oil line in front of Fuel storage area and DG station	52
4	25 mm Fuel oil return line to UG tanks and Fuel oil distribution line to FP Diesel sub tanks and Engines with valves and fittings (CS #150 API 5L GR-B)	130

LIST OF VALVES, NRVs etc in FUEL OIL LINE- Common Facilities			
SL NO:	Description	QNTY	LOCATION
1	80 mm #150 Ball valve	3	Fuel tank inlet-3
2	80 mm #150 Y type strainer	1	Fuel station-1
3	40 mm #150 Ball valve	12	Fuel station -2, outside left/ right-2, DG sub tank -1, FP Diesel sub tank inlet-7
4	40 mm , #150 NRV	2	Fuel station-2
5	25mm , #150 Ball valve	3	PRV line to tank-3
6	15 mm , #150 Gate valve	21	FP Diesel sub tank drain-7 , FP sub tank level guage -7 , Diesel engine inlet-7
7	15 mm, # 150 Ball valve	2	Fuel station pressure gauge point-2
8	PRV dia 25 mm set@ 5 kg/cm ²	1	Fuel station-1
LIST OF VALVES, NRVs ,DVs IN FIRE WATER/FOAM LINE- Common Facilities			
SL NO:	Description	QNTY	LOCATION
1	450 mm dia , #150	3	HYDRANT TO TOWER INTER CONNECTION-1, MULT TRESTLE-2
2	350 mm dia , #150	6	FP1,FP2,FP3,FP4,FP5,FP6
3	300 mm dia , #150	6	FP ROOM TO MULT JN-1,MULT JN TO MANIFOLD1-1, MANIFOLD1 TO BOOSTER AREA-1, MULT JN TO FUEL STATION-1, DG ROOM TO MANIFOLD 2 -2

4	250 mm dia , #150	8	JC1,JC2,JC3,JC4, BD1,BD2-BEHIND DV FOR WATER FOAM AND WATER MONITORS(4)
5	200 mm dia , #150	3	U/DECK LINE-1,FP ROOM SIDE DRAIN-2
6	150 mm dia , #150	27	MULT APPROACH TRESTLE-4, JOCKEY-2, FP SIDE PATH-1, SERVICE PLATFORM GROUND MONITOR-2, SP HYDRANT-2, HYDRANTS FOR - BD(1/2),BD(3/4),MD2,MD3 - 4, , MULT JN TO MANIFOLD1-1, MANIFOLD1-4, FUEL STORAGE AREA-2, MULT JN TO FUEL STORAGE-2,FUEL STORAGE TO DG ROOM-1 + DG ROOM-2 = TOTAL 27
7	100 mm dia , #150	8	MULT IFSC- 1, FEH-1, FOAM PUMP INTAKE LINE -2, FOAM PUMP DELIVERY -2, FOAM TANK DELIVERY-2
8	80 mm dia , #150	13	ENGINE COOLING LINE-12, FOAM LINE TO MULT TURNING-1
9	50 mm dia , #150	6	DRAIN LINE AT BD1-1,FOAM RECIRCULATION LINE-1, FOAM TANK INLET-2, FOAM TANK DRAIN-2
10	40 mm dia , #150	1	FOAM LINE ISOLATION VALVE TO BARGE JETTY
11	25 mm dia	6	TO GROUND WATER FOAM MONITORS -OF-SERVICE PLATFORM -2 + FOAM TANK BOTTOM FOR LEVEL GUAGE-4
12	15 mm dia	2	FOAM TANK LEVEL GUAGE DRAIN POINT-2
13	NRV 350 mm , #150	6	FP1,FP2,FP3,FP4,FP5,FP6
14	NRV 150 mm , #150	4	JOCKEY LINE-4
15	NRV 100 mm , #150	2	FOAM PUMP DELIVERY-2
16	DELUGE VALVE 200 MM, #150	9	TOWER MONITOR LINE-4,JC - 4 ,U/DECK-1
17	Solenoid operated valve-MULT(Flow control valve-Rotex))	11	MULT-TOWER MONITOR LINE-4, JC - 4 , U/DECK-1,Foam line-2
18	Y TYPE strainers 100 MM , #150	2	Foam pump line-2
19	Y TYPE strainers 80 MM, #150	6	Fire pump -6
20	Inline balance proportionator	2	BD(1/2)-1, BD(3/4)-1

Valves in Fresh water line- Common Facilities

Sl No.	Description	Qty	Location
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1	150 mm #150 Gate valve	1	at MULT bridge jn.
2	80 mm #150 Gate valve for IFSC	1	at Service platform
3	25 mm #150 Gate valve	2	at rest room side and shower

APPENDIX-3

MULT NON-LPG INVENTORY LIST		
Sl No:	Non- LPG Cargo handling facilities	Qty
1.MULT ROAD		
1	90 W Flame proof LED Street lights	12
2	90 W LED Light fitting on Barge cross over	1
3	45 W flame proof LED fitting on Barge cross over	1
4	MCP #16 (at Bargejn)	1
2. MANIFOLD 1		
1	Electric Reciprocating Air compressor - Kirloskar Pneumatic co.ltd,SI No: REC003884,Single stage, 2 cyl, dia 250mm, Reciprocating, Balanced, Opposed piston type, Horizontal, Non-lubricated, water cooled, Model:1HA2T-730 rpm, output pressure-3kg/cm ² , Free Air Delivery-625 CFM(17.69m ³ /min), Motor- 75 KW, 415 V, 50 HZ, 1500 RPM	1
2	Compressor After cooler-Kirloskar Pneumatic co.ltd (SI no: 788, Design pr 5.5 kg/cm ² shell)with safety valve	1
3	Air Receiver tank -Kirloskar Pneumatic co.ltd, 1000 L , SI No : R18061120 with safety valve(max. working pr 7 KG/CM ² ,SI No : 1805052) and pr. Gauge(0-17.5 kg/cm ² Fiebig)	1
4	Air Dryer, Kirloskar Pneumatic Company, Model No: KRD1000, SI No: 0033 ,Capacity-27.9 m ³ /min, 415 V, Working pr. 16 bar- Refrigerated type, Pressure dew point- 3-7 degree C	1
5	Starter cum Control panel, SI No: CEPL/16/2018-19	1
6	Sintex tank 500 L	1
7	Water pump- Crompton -MINI SAPPHIRE 2, 0.5 hp, 25x25mm,	1
8	Gas detector #4,#5	2
9	Flame sensor #8,#9	2
10	Horn loudspeaker 15 W	1
11	Talk back field station	1
12	Display enclosure	1
13	Remote PLC panel	1
14	Nitrogen cylinder 80 L	3
15	Pressure regulator for N2 cylinder (set@1.6 kg/cm ²)	1
16	Compound wall LED light fittings- 90 W	6
17	Flame proof LED light fittings -45 W	12
18	Pig receiver	2
19	PRV -Pig receiver fitting (set@ 2.5 kg/cm ²)-FAINGER LESER	2
20	Pr.Transmitter on Pig receiver and product line (0-16 kg/cm ²)	4
21	Pig signaller-Flag type,Setting 1450 psi	2
22	Temperature transmitter on BO line	1
23	TRV- product line (set@ 18 kg/cm ²)-FAINGER LESER	2
24	FRP hose box (750MMX 600MMX 250MM)	4
25	Slop tank 20 KL (CS to IS 2062 GR B with external FRP coating) with fittings	1

26	Slop pump with motor and gear box-ROTO PUMPS- SI No: GH181381, GH181383 , 20 m ³ /hr , 2.5 bar,25MH, rpm 405,4.69kw / Motor- Crompton Greaves ,3 ph induction, IP55,Ex"d", 5.5 kw (7.5 hp), 415V, 10.6 A, M/C No: BEG7-5F4DJ, 110 kg ,Temp class 4 / Gear box-Radicon , SI No: M221450,M221452, 5.5 KW, Oil gr 460, O/P rpm 405, ratio 3.58	2
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3. MANIFOLD 2

1	Electric Reciprocating Air compressor - Kirloskar Pneumatic co.ltd, SI No: REC003885, Single stage, 2 cyl, dia 250mm, Reciprocating,Balanced, Opposed piston type,Horizontal,Non-lubricated,water cooled, Model:1HA2T- 450 rpm,output pressur- 3kg/cm ² , Free Air Delivery-385 CFM(10.9M ³ /min). Motor- 45KW, 415 V, 50 HZ, 1500 RPM	1
2	Compressor After cooler-Kirloskar Pneumatic co.ltd (SI no: 787, Design pr 5.5 kg/cm ² shell)with safety valve	1
3	Air Receiver tank -Kirloskar Pneumatic co.ltd, 1000 L , SI No: R18061119 with safety valve(max. working pr 5 KG/CM ² ,SI no: 1712101) and pr. Gauge(0-17.5 kg/cm ² Fiebig)	1
4	Air Dryer,Kirloskar Pneumatic Company,Model No: KRD 600, SI No:0033,Capacity-27.9 m ³ /min, 415 V, Working pr. 16 bar- Refrigerated type, Pressure dew point- 3-7 degree C	1
5	Starter cum Control panel	1
6	Sintex tank 500 L	1
7	Water pump- Crompton-MINI SAPPHIRE 2, 0.5 hp, 25x25 mm	1
8	Gas detector #7,#8	2
9	Flame sensor #11,#12	2
10	Horn loudspeaker 15 W	1
11	Talk back field station	1
12	Display enclosure	1
13	Remote PLC panel	1
14	Nitrogen cyliner 80 L	3
15	Pressure regulator for N2 cylinder (set@1.6 kg/cm ²)	1
16	Compound wall LED light fittings-90 W	6
17	Flame proof LED light fittings- 45 W	12
18	Pig receiver	2
19	PRV- Pig receiver fitting (set@ 2.5 kg/cm ²)-FAINGER LESER	2
20	Pr.Transmitter on Pig receiver and product line (0-16 kg/cm ²)	4
21	Pig signaller-Flag type,Setting 1450 psi	2
22	Temperature transmitter on BO line	1
23	TRV- product line (set @ 18 kg/cm ²)-FAINGER LESER	2
24	FRP hose box (750MMX 600MMX 250MM)	4
25	Slop tank 20 KL (CS to IS 2062 GR B with external FRP coating) with fittings	1

26	Slop pump with motor and gear box - ROTO PUMPS - SI No: GH181380 , GH181382, 20 m ³ /hr , 25MH, 4.69 KW, 2.5 bar, 405 rpm / Motor-Crompton Greaves, 3 ph induction Ex"d", 5.5 kw(7.5 hp),1450 rpm, 10.6 A , IP 55, 110 kg, M/C No: BEG7.5F4DJ,Temp class 4 / Gear box- Radicon , SI No: M221449, M221451, 5.5 kw, O/P rpm -405, ratio 3.52, oil grade 460	2
27	Hose pipe 300 NB X 5 M-for both manifolds (2 Nos per line)	8
28	Hose pipe 250 NB X 6 M- for service platform (3 Nos per line)	6
29	Hose pipe 200 NB X 6 M-for barge jetty (3 Nos per line)	6
4. BARGE APPROACH TRESTLE		
1	Lamp posts B1 to B6 with Flameproof LED light fittings-90 W	6
2	FRP hose box (750MMX 600MMX 250MM)	3
3	Flow meter-Model UFM, SI no:18803339,18803343; Range- 0-1200 m ³ /hr (external clamp type non- protruding)	2
4	MCP #17,#18,#19	3
5. BARGE JETTY		
1	Emergency Eye and face wash fountain and safety shower	1
2	Water tank-200 L	1
3	LED Light fitting in operator room-45 W	3
4	Gas detector #9,#10	2
5	Flame sensor #13,#14,#15,#16	4
6	FRP hose box (750MMX 600MMX 250MM)	2
7	Ground water foam monitor 3000 LPM (AIR FOAM MONITOR)- AAAGFM750	2
8	MCP #20,#21,#22,#23	4
9	Horn loud speaker 15 W	2
10	Talk back field station-1 on jetty/1 inside operator room	2
11	Jumbo curtain nozzle 1000 LPM, 80 NB, 5.5 kg/cmsq, 2017 make	2
12	Stripper pump with motor and gear box -ROTO PUMPS- 5 m ³ /hr, 3 BAR , 30 MH, 1.13 kw , 447 RPM, SI No: GH181466 GH181469 / Gear box - 1.5 kw, ratio 3.21 , O/P rpm 447, oil grade 460, SI No: M221459 M221462 / Motor-Crompton Greaves, 3 PH Induction motor ,Ex "d", 1.5 KW, rpm 1415 , A 3.26, IP 55, 40 KG, M/C No:BEC2F4DJ	2
13	Pr transmitter in stripper line- 1 IN/1 OUT (0-16 kg/cm ²)	2
14	Slop oil line sight flow glass (SFG)	1
15	Slop tank 2 KL (CS to IS 2062 GR B with external FRP coating) with fittings	1
16	Slop pump with motor and gear box - ROTO PUMPS - SI No: GH181433 , GH181434, 5m ³ /hr , 38MH,1.41 KW, 3.8 bar, 367 rpm / Motor-Crompton Greaves,3 ph induction Ex"d",2.2kw(3 hp),1430 rpm, 4.55 A , IP 55, 54 kg, M/C No: BED3F4CJ,Temp class 4 / Gear box- Radicon , SI No: M221455, M221456,2.2 kw, O/P rpm -367, ratio 3.95, oil grade 460	2

17	TRV-product line (set@ 18 kg/cm ²)-FAINGER LESER	2
18	Pig launcher	2
19	PRV- Pig launcher fitting (set@ 2.5 kg/cm ²)-FAINGER LESER	2
20	Pr transmitter on Pig launcher and product line (0-16 kg/cm ²)	4
21	Temp transmitter in BO line	1
22	Lamp posts B7 to B13 with Flame proof LED light fittings-90 W	7

6. MULT APPROACH TRESTLE

1	Flow meter- Model UFM, SI no:18803340,18803337; Range -0-1200 m ³ /hr (external clamp type non- protruding)	2
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7. FIRST FLOOR-LOCKER ROOM

1	IFSC (International shore connection)2 No.sto be fitted in line by M/s Hitek	3
2	Flexible hose 25 NB x 6 M	4
3	Flexible hose 80 NB x 6 M	2
4	Flexible hose 100 NB x 6 M	2
5	Pipe cleaning Pig	2
6	PIG stopper rod	2

8. MULT JETTY

1	Pig launcher	2
2	PRV- Pig launcher fitting (set@ 2.5 kg/cm ²)-FAINGER LESER	2
3	Pr transmitter on Pig launcher and product line (0-16 kg/cm ²)	4
4	Temp transmitter on BO line	1
5	Pr transmitter in stripper line- 1 in/1 out (0-16 kg/cm ²)	2
6	Slop oil line sight flow glass (SFG)	1
7	Slop tank 4 KL (CS to IS 2062 GR B with external FRP coating) with fittings	1
8	Slop pump with motor and gear box - ROTO PUMPS - SI No: GH181343 , GH181344, 10 m ³ /hr , 3.26 KW, 60MH , 6 bar, 367 rpm / Motor-Crompton Greaves, 3 ph induction Ex"d", 3.7 kw (5 hp) , 1450 rpm, 7.47 A , IP 55, 73 kg, M/C No: BEE5F4CJ , Temp class 4 / Gear box- Radicon , SI No: M221453, M221454, 3.7 kw, O/P rpm -367, ratio 3.95, oil grade 460	2
9	Stripper pump with motor and gear box -ROTO PUMPS- SI No: GH181467, GH181468, 5 m ³ /hr 30 MH, 3 bar, 1.13 KW,RPM 447 / Motor-Crompton Greaves, 3 ph induction Ex"d", 1.5kw (2 hp) , 1415 rpm, 3.26 A , IP 55, 40 kg, M/C No: BEC2F4DJ,Temp class 4 / Gear box SI No: M221460, M221461, 1.5 kw, oil grade 460, O/P rpm 447, gear ratio 3.21	2
10	TRV - Product line (set@ 18 kg/cm ²)-FAINGER LESER	2

9. PRODUCT LINE-MULT JETTY

Approx.
Length in
M

1	ND 300 mm WO line with valves and fittings (CS #300 API 5L GR B , Wall thickness 9.53 MM,OD 323.9, ID 304.8)	257
2	ND 300 mm BO line INSULATED with valves and fittings (CS #300 API 5L GR B , Wall thickness 9.53 MM,OD 323.9, ID 304.8)	253
3	100 mm rain water/spillage line to slope tank with valves	1
4	80 mm drain line to stripper pump with valves and fittings	14
5	50 mm Pig launcher drain to stripper pump with valves and NRV's, TRV line , Stripper pump delivery line to slop tank with valves and fittings and Slop return line with valves and NRV'S to Manifold1	286
10.PRODUCT LINE-MANIFOLD 1		Approx. Length in M
1	100 mm Pig receiver drain line to slope tank with valves and NRV's	44
2	80 mm drain line to slop tank line and slop transfer line to outside with valves	33
3	50 mm TRV overflow to slop tank line with valves and fittings	5
11. PRODUCT LINE-BARGE JETTY		Approx. Length in M
1	ND 300 mm WO line with valves and fittings(CS #300 API 5L GR B , Wall thickness 9.53 MM ,OD 323.9, ID 304.8)	229
2	ND 300 mm BO line INSULATED with valves and fittings(CS #300 API 5L GR B , Wall thickness 9.53 MM , OD 323.9, ID 304.8)	223
3	100 mm rain water/spillage line to slope tank with valves	14
4	80 mm drain line to stripper pump with valves and fittings	13
5	50 mm Pig launcher drain to stripper pump with valves and NRV's, TRV line , Stripper pump delivery line to slop tank with valves and fittings and Slop return line with valves and NRV's to Manifold2	318
12. PRODUCT LINE-MANIFOLD 2		Approx. Length in M
1	100 mm Pig receiver drain line to slope tank with valves and NRV's	31
2	80 mm drain line to slop tank and Slop transfer line to outside with valves	31
3	50 mm TRV overflow to slop tank line with valves and fittings	5
13. UTILITY LINE-MULT		Approx. Length in M
1	150 mm Compressed air line with valves (galvanized carbon steel A 53 GR-B #150)	250
2	80 mm Compressed air line	7
3	25 mm Nitrogen line with valves and fittings (carbon steel ERW A 106 GR-B #150)	302
4	Underground 25 mm Nitrogen line inside Manifold 1	11
14. UTILITY LINE- BARGE		Approx. Length in M

1	150 mm Potable water line with valves (galvanized carbon steel A 53 GR-B #150)	146
2	100 mm Compressor line with valves (galvanized carbon steel A 53 GR-B #150)	246
3	80 mm Potable water line with IFSC and Compressed air line	4
4	25 mm Nitrogen line with valves and fittings (carbon steel ERW A 106 GR-B #150)	253
5	Underground 25 mm Nitrogen line inside Manifold 2	11
15. FIRE WATER LINES - cemented (8 mm thick) , wall thickness 6.35 mm		Approx. Length in M
1	300 mm hydrant line from DG station to Barge jetty with valves	324
2	250 mm line in BARGE JETTY with Gate valves	119
3	200 mm hydrant line to Manifold 2 with Gate Valves and Double hydrant posts	50
4	150 mm line in Manifolds and BARGE jetty with valves and double hydrant posts	180
5	80mm barge jumbo curtain line with valves and DV's	10
16. Foam line SS		Approx. Length in M
1	40 mm Foam line to Barge jetty	629
2	40 mm Underground Foam line to Barge jetty in front of Fuel storage area and DG station	52
3	25 mm Foam line at Barge jetty	6.5

LIST OF VALVES,DVs etcIN FIRE WATER/FOAM LINE- Non LPG			
SL NO:	Description	QNTY	LOCATION
1	250 mm dia , #150	1	BARGE JETTY ENTRANCE-1
2	200 mm dia , #150	1	BARGE JN TO MANIFOLD2-1
3	150 mm dia , #150	16	DG ROOM TO BARGE JN-4, BARGE JN TO MANIFOLD2-1, MANIFOLD2- 4,BARGE APPROACH TRESTLE -3, BARGE JETTY-4 TOTAL=16
4	100 mm dia , #150	2	BARGE IFSC- 2
5	80 mm dia , #150	2	BARGE JC3,JC4-2

11	Temperature transmitter	1		1		1		1		4
		PIG RECEIVER				PIG LAUNCHER				
1	100 mm, #300 Globe valve - on pig receiver/launcher top for compressed air	1	1			1	1			4
2	80 mm, #300 Globe valve - on pig receiver/launcher top for compressed air			1	1			1	1	4
3	25mm Gate valve on pig receiver/launcher top for PRV and N2 line connection	3	3	3	3	3	3	3	3	24
4	15mm, #300 Ball valve for Pr transmitter and Pr gauge	2	2	2	2	2	2	2	2	16
5	PRV dia 25 mm set@2.5 kg/cm ² , #300	1	1	1	1	1	1	1	1	8
6	Pr transmitter (0-16 kg/cm ²), #300	1	1	1	1	1	1	1	1	8
7	Pig signaller #300 Flag type	1	1	1	1					4
		PIG RECEIVER DRAIN				PIG LAUNCHER DRAIN				
1	100 mm #150 Gate valve	1	1	1	1					4
2	100 mm NRV #150	1	1	1	1					4
3	50 mm #300 Gate valve					1	1	1	1	4
4	50 mm NRV #300					1	1	1	1	4
		PRODUCT LINE DRAIN LINE								
1	80 mm #300 Ball valve					1	1	1	1	4
2	80 mm #150 Ball valve	1	1	1	1					4

3	15 mm Ball valve for product hose drain			1	1	1	1	4
TRV OVER FLOW LINE								
1	TRV dia 15mm X 20 mm, #300 set@18 kg/cm ²	1	1	1	1	1	1	8
2	50 mm #300 Ball valve	1	1	1	1	1	1	8
3	50 mm #150 Ball valve	1	1	1	1	1	1	8
SLOP TANK								
1	100 mm #300 Ball valve	1 -drain line- slop tank inlet	1 -drain line- slop tank inlet	2 -rain water/ spillage	2 -rain water/ spillage			6
2	80 mm #150 Ball valve	3 slop pump outlet	3 slop pump outlet					6
3	80 mm NRV #150	2	2					4
4	50 mm #300 Gate valve			1 before SFG- slop tank inlet line	1 after SFG-slop tank inlet line			2
5	50 mm #300 Ball valve				2-slop pump outlet to manifold			2
6	50 mm NRV #150			2 -slop pump outlet line	2- slop pump outlet line			4
7	50 mm #150 Ball valve	1-slop return line -tank inlet	1-slop return line -tank inlet	2-slop pump outlet to manifold				4
8	15 mm Ball valve for Pr gauge	1	1	1	1			4
9	Sight flow glass			1	1			2
STRIPPER LINE								
1	80 mm #300 Ball valve			2 IN	2 IN			4
2	80 mm Y type strainer #300			2 IN	2 IN			4
3	50 mm #300 Ball valve			2 OUT	2 OUT			4

4	50 mm NRV #300			2 OUT	2 OUT	4
5	15 mm Ball valve to Pr transmitter			2 -(in/out)	2 -(in/out)	4
6	Pressure transmitter (0-16 kg/cm ²),#300			2 -(in/out)	2 -(in/out)	4
COMPRESSOR LINE						
1	150mm #150 Globe valve	2		1		3
2	100 mm #150 Globe valve		2		1	3
FRESH WATER LINE						
1	150 mm #150 Gate valve		1(barge bridge jn)			1
2	80 mm #150 Gate valve for IFSC				1 at barge jetty	1
3	25 mm #150 Gate valve				2 (rest room side and shower)	2
NITROGEN LINE						
1	25 mm #150 Globe valve	3 (1 to booster area)	2	1	1	7
2	Pressure regulator set@1.6 kg/cm ²	1	1			2

MAINTENANCE PROGRAM OF THE TERMINAL

GENERAL:

- (i) The maintenance of the whole systems of the Terminal shall be carried out as per OEMs Manuals, the relevant IS and standard guidelines of NFPA/ OISD guidelines as applicable.
- (ii) Maintenance of Terminal primarily aims at keeping the Terminal & equipment under the scope of the Contractor in efficient and reliable operating conditions, minimizing the downtime during operation so as to ensure their maximum availability and productivity.
- (iii) The contractor's scope covers deployment of different maintenance teams comprising of engineers, supervisors, technicians, skilled / semi-skilled workmen for efficient and effective preventive, predictive and corrective maintenance during the term of the contract.
- (iv) The maintenance of machine / system / equipment shall be done by the Contractor in accordance with recommendation of Original Equipment Manufacturer and taking into account the current status of system / machinery / equipment by following sound engineering practice and Industry Standards. The Contractor shall follow the maintenance practice/activities as under.
- (v) It is responsibility of the O&M Contractor to make available all the required tools, equipments and other facilities required for carrying out the maintenance and repair works of various equipments and Systems available at the Terminal. Maintenance/repair works shall not be delayed on account of lack of appropriate tools & tackles.

(A) Preventive Maintenance:

The Contractor shall carry out the Preventive Maintenance of the equipment/ systems / units attached as Appendix-2 & 3 as per OEMs maintenance Schedule and shall maintain the records as per the formats approved by Cochin Port Authority.

(B) Corrective Maintenance/Breakdown Maintenance:

During operation if any abnormalities/ defects/faults are observed and in case of failures of components occurs resulting in breakdown of the equipment, the Contractor shall attend problems then and there so as to restore operation within the bare minimum time by repairing otherwise by replacement.

(C) Shutdown Maintenance:

For undertaking the major maintenance activities, planning shall have to be done by the Contractor in advance and in consultation with the Engineer-in-charge of Cochin Port Authority so as to make the best use of the idle period. The Contractor shall properly plan for execution of maintenance activities during non-operational time of systems/equipments.

(D) Condition Monitoring:

- (i) Inspection of all equipment shall be carried out by the Contractor before and after operation of the Terminal in accordance with maintenance manual of individual equipment / manufacturer's recommendation. The Contractor shall carry out condition monitoring while the equipment is in service or when the equipment is under shut down maintenance for some other reason and assessment along with visual inspection.
- (ii) The Contractor shall prepare a check list in order to ensure correct and proper inspection. Inspection and condition monitoring shall also include use of inspection equipment and testing devices to determine the extent of defect at the cost of the Contractor. Action shall be taken on the observations during inspection and condition monitoring.

(E) Periodic Inspection by OEMs:

The Contractor shall arrange periodic inspection of the following equipments through OEMs.

- (i) Fire Pump Engines
- (ii) Foam Pump Engines
- (iii) Electricals (Relays, Transformers, both LT & HT Breakers, Switch Gear Panels
etc.
- (iv) Fire Alarm & Detection System
- (v) Compressor unit

Periodic inspection of above equipments by the concerned OEMs shall be arranged by the Contractor as and when advised by the Employer to assess the healthiness of the systems and make suitable recommendations to maintain the equipments/systems in good order. The inspection report of OEMs, to be submitted to the Employer, shall contain present condition, recommendations covering the works to be carried out, spares to be replaced and stock/ inventory to be maintained for smooth operation & maintenance.

Payments towards such inspection shall be paid by the Contractor to the OEMs which will be re-imbursed by the Employer on production of supporting documents.

(F) Annual maintenance Contracts:-

The contractor shall enter into Comprehensive Annual Maintenance Contract with the OEMs/OEM's Authorised service centres for the equipments viz. (i) Trelleborg Marine system and (ii) DG sets & associated PLC System (iii) All PLCs and Control Panels/Systems (iv) Fire Monitors during the tenure of Contract, to ensure uninterrupted operation of above critical equipments. AMC's shall be entered by the Contractor with the above OEMs within a period of two weeks from the date of issue of award of O&M Contract by Cochin Port Authority.

Payments towards AMC charges shall be paid by the Contractor to the OEMs which will be re-imbursed by the Employer on production of supporting documents.

(G) Safety Interlocks:- During the operation of Terminal, all field devices, safety devices and monitoring devices shall be maintained in good working order and set as per the designed parameters. These settings along with Terminal operational limits shall not be tampered/ or modified under any circumstances. All machines/systems shall be operated with the adequate number of man power. Similarly, operation of machine /equipment /system /subsystem shall not be carried out in abnormal condition (s) and by compromising with safety of machines. Normally bypassing of field devices and monitoring devices are not permissible and if such by-passing is done in extreme emergency situations, the relevant details shall be recorded. The Terminal shall be operated consistently with the operational limits, safety and Good Industry Practice.

(H) Operational Pre-checks: Before and during operation of Terminal, observance of basic rules of operation, systematic and careful inspection of the individual parts of the system and equipment, pre-checking the functions of all sub-systems and components at appropriate time are essential and to be ensured. The checks have to be made strictly in accordance with the check lists and documented for the concerned machine/equipment.

(I) Competency of Personnel operating/maintaining the Facilities:- In order to have safe operation/maintenance of the facilities, the concerned personnel should be conversant with the functional requirement and control philosophy of system(s) & equipment and should be capable of recording the events / incidents during operation/maintenance, noting the parameters & maintain the log books at the respective stations as per the scheduled requirement and instructions issued by Cochin Port Authority from time-to-time. The engineers / supervisors attached to operation/maintenance must be conversant with the technology of various systems, equipment and machines. They have to co-ordinate with the operating personnel for smooth operation. They have to be vigilant & should promptly respond to any operational/maintenance requirements.

(J) Lubrication/Greasing:

The Contractor shall prepare and implement the lubrication/greasing schedule of all machines and system/units. Proper lubrication/greasing of all the moving parts of the equipment/units/system is the responsibility of the contractor and any breakdown due

to above shall be treated as a default on the part of contractor. Records on greasing/lubrication done shall be maintained by the Contractor.

(K) Maintenance of Earthing System:

The Contractor has to check and maintain the Earthing System of various equipments of the Terminal/Sub-station on monthly/Quarterly/half yearly basis as applicable as per OEMs requirements.

(L) Cable Maintenance:

The Contractor shall maintain the cables spread around the Terminal and shall ensure proper dressing of the cables through cable trays and cable trenches.

(M) Maintenance of Batteries:-

All the batteries included in the Inventory List are to be properly maintained by the O&M Contractor. If any of the Batteries becomes unserviceable during the tenure of the Contract, the same has to be renewed with Batteries having the same rating, at the cost of the O&M Contractor.

(N) Procurement of spares, consumables and materials for attending various works as per the Scope of Work of O&M Contract.

(i) Procedure for availing the services of Original Equipment Manufacturer for attending breakdown repairs :-

Equipments and Systems viz. All the Fire Pumps & Engines (6 Nos.), Jockey Pumps & Motors (2 Nos.) and Foam Transfer Pumps (2 Nos.) with engine/ motor have not been included in the list of Equipments to be covered under AMC during the O&M Contract period. For these equipments, if it is absolutely necessary to engage service of OEM for rectification of breakdowns, the O&M Contractor shall engage OEM for defect rectification after obtaining prior approval of the Employer. Expenditure incurred towards engagement of OEM in such cases including the cost of spares used if any will be reimbursed by the Employer to the O&M Contractor subject to production of documentary evidence. Such reimbursement will not be applicable if in the opinion of OEM, the breakdown of such equipment has occurred as a result of improper maintenance carried out or due to an erroneous operation of the such equipment by the Employees of O&M Contractor.

Records of services availed from OEM for breakdown repairs shall be maintained by the Contractor at site.

(ii) Procurement of materials, spares etc. to execute the works:

Except as detailed at (i) above and as detailed under the heading “ Annual maintenance contract requirements for Critical Equipments”, procurement of all materials, spares and all other arrangements required for carrying out all the works as per the Scope of Work of O&M Contract shall be arranged by the Contractor at the quoted rate of O&M Contract.

The O&M Contractor is also required to carry out Civil maintenance/repair works including procurement of all materials required, at his cost & risk as detailed at PART-A: Manning, operation, maintenance and repairs of common facilities & services of the terminal, of Scope of Work of O&M Contract.

(iii) **Procedure for procurement of consumables for routine use/maintenance:-**

Supply of all Consumables required for carrying out the works as per the Scope of Work under the O&M Contract shall be purchased and stored by the Contractor at his cost and risk. Cost of such consumable items required for execution of O&M Contract shall be considered while quoting the rates for execution of O&M Contract.

Consumables include but not limited to Engine Oil, Grease, Lubricating Oils, Hydraulic Oil, Cotton Wastes, Diesel required for operating Diesel Engines of Fire Pumps, Foam Pumps, Air Filters, Lube Filters of various Engines, Cleaning liquids for housekeeping etc.

The Contractor shall keep records on procurement of Consumables and its consumption and such records shall be made available for periodical inspection of Employer.

Foam Compound (AFFF) required for the Fire Fighting operations through Tower and Base Monitors are currently available. Any replenishment of the same during the tenure of O&M Contract will be done by Cochin Port Authority on Port Account.

Fire extinguishers are currently filled with the consumables viz. Water, Foam and DCP as per requirement. Any subsequent filling of such consumables in the Fire Extinguishers shall be done by the Contractor with the prior approval of Cochin Port Authority and the actual expenditure incurred by O&M Contractor for replenishing of such consumable will be re-imbursed by Cochin Port on production of documentary evidence.

All repairs, maintenance, whenever required for the Fire Extinguishers are to be carried out by the O&M Contractor at his cost.

Man Power for Stores : The Contractor shall post one dedicated Store Keeper in General shift to monitor receipt of spares, consumables etc. and to maintain proper documentation on inventory and issue of stores as per the requirement of the Employer.

(O)Defect Rectification/Chipping /painting/Greasing etc. (General shift work)

- (i) Daily visual inspection has to be carried out to detect any defects/corrosion in the Steel structures, product lines, fire water lines, foam lines, mechanical and electrical fittings, electrical panels, electrical and communication cables etc. Defects noticed may be rectified within the shortest possible time.
- (ii) All the steel structures and pipe lines inside the terminal need proper maintenance painting to guard against corrosion. Staff may be deployed to carry out maintenance painting of the corroded areas as per the painting scheme

provided below. Contractor shall have to make thorough surface preparation before application of paint. Paints required for work shall be procured by the Contractor.

A. Surface Preparation: mechanical cleaning/wire brushing

B. Coating scheme:

Primer: Epoxy mastic high build primer - 1 Coat DFT- 135-150 μm

Finish Coat: Polysiloxane - 1 Coat DFT- 100-125 μm

Total Thickness -2 coats- DFT- 235- 275 μm

- (iii) Greasing/lubrication/servicing of all gate valves , hydrant valves, deluge valves, Mooring hooks, Monitors and other equipments are also to be carried out in General shift.

The contractor shall maintain a pool of General shift workers comprising of Motor Mechanics, Fitters, Electrician (Total 3) to attend General shift maintenance activities. Multi Tasking Crew posted in shift shall also be utilised for maintenance activities of the Terminal. The Shift Engineer, (Graduate in Electrical/Electronics & Communication) shall be the responsible person for coordinating the maintenance activities of the Terminal.

- (P) Defects Reporting:- During operation/maintenance, if any abnormality, defect / fault are noticed on any system, the same shall be promptly communicated to the supervisors and remedial steps must be taken under intimation to the Engineer-in-charge of Cochin Port Authority. The contractor shall set a suitable mechanism for rectification of problems so that delay in operation can be avoided. Stoppages during operation, any type of abnormalities including adverse operating condition or characteristics, bypass of safety devices shall be recorded and same shall be intimated to Shift-in Charge / Engineer-in charge with follow-up

JOB DESCRIPTIONS, EDUCATIONAL QUALIFICATIONS AND EXPERIENCE REQUIREMENTS OF PERSONNEL

(1) Terminal O&M In-charge:-

The O&M Contractor shall designate, with the approval of Employer, one of the Personnel to serve as Terminal O&M in-charge, who shall be responsible for the administration, supervision, co-ordination and performance of the O&M Contractor's obligations under the Contract. The Terminal O&M in-charge shall be authorised to bind the Contractor for all purposes under this agreement, and notices, approval and consents given to or received from Terminal O&M in-charge shall have the same effect as if given to or received from the Contractor.

The Terminal O&M In-charge may delegate any powers, functions and authority to any other competent Personnel, and may at any time revoke the delegation. In the event of absence of the Terminal O&M In-charge from the Facilities, the Personnel, next in the hierarchy to the Terminal O&M in-charge, shall be (and shall be deemed to be authorised to be) responsible for discharging any powers, functions and authority of the Terminal O&M in-charge under this agreement during the period of such absence. The Terminal O&M in-charge shall not be removed or replaced except with the prior written approval of Employer, which consent shall not be unreasonably withheld.

Qualification: (i) B Tech in Mechanical Engineering with minimum five years experience in Mechanical Maintenance of equipments like Engines, Pumps etc. in a reputed organisation. Should also have managerial experience of minimum 5 years in a reputed organisation. **OR**

Marine Engineer with MEO Cl.II Certificate issued by DG Shipping, Government of India or equivalent with minimum 5 years sea service.

(2) Shift in-charge (Control Room Operations)

A Competent Person shall be posted as Shift in-charge of Operations at Control Room on round the clock basis who shall be responsible for controlling the Terminal operations during the shift. The responsibilities include but not limited to controlling/monitoring the berthing/unberthing of vessels, remote operation of mooring system, co-ordinating/leading the various operating wings viz. Fire Fighting, Mooring Team, Security etc. through VHF or other communication means, monitoring the Terminal functions with the aid of Trelleborg Marine System during cargo handling etc. Shift in-charge should ensure operational readiness of the Mooring system prior to vessel berthing/unberthing operations. Shift in-charge should have basic knowledge of cargo handling operations from the Ships. The Shift in-charge shall be responsible for communications with Terminal Operators and Port Authority on day to day operations in the absence of Terminal O&M in-charge.

Qualification: Should possess Certificate of Competency as Second Mate (FG) or higher issued by DG Shipping with minimum two years post qualification experience.

(3) Sub-Officer (Control Room Duty):

A Sub-Officer, who is the shift in-charge of Fire Section, to control and lead Fire crew of the Terminal and shall be posted in the Control Room under the Operations in-charge. The Sub-Officer shall be responsible for the operation of remote Fire Control Panel at Control Room

(4) Role of Supervisory Staff:- The shift in charge/Engineers/Supervisors of the Contractor associated with operation and maintenance of the Terminal shall plan & co-ordinate all the activities including pre-operational checks etc. While performing major repairs/maintenance works, there shall be proper communication with all the stake holders associated with Ship operations and should be done with the consent of Cochin Port Authority and M/s. IOCL as applicable.

(5) Job profile, Educational Qualification, experience requirements of various Categories of Employees are furnished as below:-

Sl. No.	Designation	Educational Qualification	Experience
1	Safety Engineer	Should possess a Diploma in Mechanical Engineering or higher with Diploma or higher in Industrial Safety.	Should have minimum 2 years post qualification experience in Safety Departments of any of the Industrial Establishments / Ports etc.
2	Shift Engineer	Should possess B Tech in Electrical/Electronics& Communication Engineering.	Minimum 3 years experience in maintenance of PLC based Equipments/Machineries in an Industrial Establishment/Port etc.
3	Motor Mechanic	National Trade Certificate in the respective Trade	Two years
4	Electrician		Two years
5	Asst. Mechanical		
6	Asst. Electrical		
7	Fitter		Two years
8	Store Keeper	Degree in any discipline , Diploma or higher qualification Materials Management	
9	Multi-Tasking Crew	Matriculation	Good physique, knowledge of swimming.
10	House Keeping Staff	Matriculation	

FIRE SAFETY WING:

Placement of all Employees under Fire Safety Wing is subject to verification of their suitability for the job by the Employer. The Job requirements, qualifications, experience and physical standards of Employees of Fire Safety Wing are indicated below:-

S.No	Post	Qualification/upper age limit	Experience	Method of Selection
1.	Fire Officer (Terminal in-charge - Fire Safety) General Shift -1	Upper Age Limit: 45 years Qualification Graduate in Fire Engineering from National Fire Service, Nagpur (or)	N.A.	Interview by Employer Normal vision (Without lense or corrected with lens), No colour Blindness (Certificate of eye examination to be produced from a registered Ophthalmologist)
		Graduate in Fire & Safety Engineering from any UGC recognized university	02 years	Medical Fitness certificated from a registered medical practitioner to be produced at the time of interview

		(or)		
		Station Officers Course from National Fire Service College, Nagpur.	03 years	
2.	Sub Officer (Shift in charge – Fire Safety) Each shift -1(3 shift)	Upper Age Limit: 40 years 1)Successfully completed Sub Officer course from National Fire Service college, Nagpur 2) Should possess Light Motor Vehicle Driving license.	02 years	Interview by Employer Normal vision (Without lense or corrected with lense), No colour Blindness (Certificate of eye examination to be produced from a registered Ophthalmologist) Medical Fitness certificated from a registered medical practitioner to be produced
3.	Fireman- 4 in each Shift(3shift)	Upper Age limit: 30 years Matriculation Successful completion of certificate course on Basic Fire fighting training (course duration: at least one month) from a Govt. Organization / Institution approved by Government. Should possess Light Motor Vehicle Driving license.	02 years	Physical Examination : Minimum Requirement <u>Physical Standards</u> Height – 165 cm Weight – 50 kg Chest - normal 81 cm Expanded – 86 cm Expansion : 5 cm <u>Physical Endurance Test</u> 1. Pass in swimming test – 50 meters 2. Rope climbing 05 meters 3. Running test – 100 meters run with Fireman lift with in 01 minute. <u>Skill Test*</u> <u>Eye Test</u> 1. Normal Vision without glasses. 2. No Colour Blindness 3. (Certificate of eye examination to be produced from a registered Ophthalmologist) Medical Fitness certificated from a registered medical practitioner to be produced

Duties & Responsibilities of Fire officer

Overall in-charge of Fire & safety of the Terminal. To lead the crew (subordinates) for effective fire fighting in Emergencies. Responsible to carry out Testing & Maintenance of all Fire Fighting equipments & keeping records of the same with the assistance of subordinate staff as per relevant OISD Standard. Any untoward incident /Emergencies in the Terminal

shall be reported immediately to Fire control, port control & CFO and a Report to this effect should be submitted within 24 Hours of occurrence. Fire Fighting Equipments if any found defective to be reported and get it repaired /replaced by the concerned immediately. Fire Officer reports to CFO/FO (CoPA).

Duties and Responsibilities Sub Officer

Sub officer reports to Fire officer. Sub Officer is the shift in charge ie In charge of all the matters related to Fire Safety including Emergencies in the shift. Shall be posted in control room and is responsible for operation of Fire Control panel. Sub-Officer has to maintain the important document of Fire service ie . Occurrence book. All the activities of Fire Service should be entered in the occurrence book in chronological order and it should be produced on demand for checking. He also assist Fire officer in maintaining various records related to fire service and also act as per the instruction of Fire officer. To be available at the duty spot where he is posted till completion of duty hours. He should be able to perform and conduct various drills of Fire service including squad drill

Duties & Responsibilities of Fire man

Fireman reports to Sub officer /Fire officer. Fireman will be posted in shift duty. To attend Fire call & other Emergency calls. Stand by duties at Berth while discharge of cargo at Berth , during Bunkering operation & Hot work etc. To be available at the duty spot where he is posted till completion of duty hours. Should Perform fire service drills ie. hose drill , hydrant drill, ladder drill squad drill etc.Maintenance &Testing of Fire Fighting Equipments as per the instruction from his superior officers

Shall carry out work all works assigned to him by superiors if situation warrants

Technical Skills required for Fireman :

1. Laying & make up of Delivery hose 50 meters in length within one & half minute.
2. Skill to assemble & disassemble and carryout maintenance of Portable Fire Extinguishers & Hydrants
3. Ability to select appropriate extinguisher based on size and type of fire, safely carry and operate Portable Fire Extinguishers.
4. Should be aware of commonly used signals for conveying message in various drills of Fire service.
5. Ability to properly lift, connect & disconnect branch to hose and holding branch pipe.
6. Ability to perform Squad Drill.
7. The Firemen are required to report to Cochin Port within one week from the date of award of Contract to check and confirm that they are possessing the stipulated skills/standards, prior to actually deploying them at MULT. If it is found that any of the Fireman did not pass the above skill test/ standards will not be considered for posting at MULT . In such cases, the Contract has to send alternate Fireman to undergo tests to be conducted by the Employer. Prior to deploying the Firemen who have passed skill test are also required to undergo two weeks training at Cochin Port Fire Station.
8. All fire crew members shall be able to speak, read, and write English, knowledge of Malayalam (preferred)

Pattern of Uniform for each category

Sl. No.	Category	Dress Code

1	Fire Officer	Superior quality khaki trouser and shirt, Brown safety shoes, Shoulder Badge& Rank badge ,peak cap ,Safety helmet ,Brown leather Belt. Line yard (Brown) with thunder bolt, safety goggles Gum Boot, Rain coat, Name Plate.
2	Sub Officer	Superior quality khaki trouser and shirt, Brown safety shoes, Shoulder Badge& Rank badge ,peak cap ,Safety helmet ,Brown leather Belt. Line yard (Brown) with thunder bolt, safety goggles Gum Boot, Rain coat, Name Plate.
3	Fire man	The Contractor shall provide good quality PPE for Fire man of make mentioned in the HSE Manual & SOP for PPE as detailed in the table below. PPE register shall be maintained and updated by the Sub officer.
4	Motor Mechanic	Overall suit (Navy blue)
5	Electrician	Overall suit (Navy blue)
6	Asst. Mechanical	Overall suit (Navy blue)
7	Asst. Electrical	Overall suit (Navy blue)
8	Fitter	Overall suit (Navy blue)
9	Store Keeper	Overall suit (Navy blue)
10	GP Worker	Overall suit (Navy blue)
11	House Keeping Staff	Shirt and Trouser (Colour: As per Standard Practice)
Details of Personal Protective Equipments (PPE) for Fire Safety Personnel		
1	Fire Retardant overall (shall be single layered, flame retardant, with approval from EN / FM / NFPA standards)	
2	Safety Shoes Black	
3	Gum boot with steel toe	
4	Safety Helmet with ventilation, ratchet, sweat band, chin strap	
5	Safety goggles	
6	PT kit consisting of sports shoe, T-shirts and trousers	
7	Raincoat.	
Details of Personal Protective Equipments (PPE) for Workmen/Supervisors		
1	Safety Shoes Black	
2	Safety Helmet with ventilation, ratchet, sweat band, chin strap	
3	Safety Apron and goggles	
4	Reflective Safety Vests (net type) shall be provided to the categories of workmen as per their nature of duty.	
5	Work Vest for Mooring Crew	
6	Suitable type of Hand Gloves depending of their nature of duties	
7	Raincoat.	
Note: In case of damage to PPE, the contractor shall provide a new PPE to his workforce at his own cost. Contractor shall ensure the same by having spare stock of the PPEs.		

SCHEDULE OF SUPPLEMENTARY INFORMATION

The bidder shall submit following information relevant to the contract for smooth execution of the contract.

1. Manning and Deployment Plan of O&M Contractor along with their qualification and experience, for undertaking the contract as per the scope of work, if it differs from the Man Power Requirement indicated in the Tender;
2. Duties and responsibilities of each categories of Employees, if it differs from the job descriptions given in the tender document
3. Organization Structure/Hierarchy of O&M Contractor proposed to be deployed for manning, operation and maintenance of MULT Terminal.
4. Any other details /information like
 - a) Requirement of open space inside MULT terminal.
 - b) Other relevant information that has to be incorporated in the tender if any.