



ADDITIONAL TERMS & CONDITIONS

TENDER NO. GeM tender no GeM/2026/B/7769534 dated 10.07.2026 closing on 20.07.2026

ITEM: Turnkey Design, Construction and Delivery (Composite Supply of Ship Under HSN Code 8901) of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel

TYPE OF TENDER: Open Tender in Two Bid System.

ADDITIONAL SERVICE LEVEL AGREEMENT (ASLA)

- DESCRIPTION & SCOPE OF SUPPLY:** Turnkey Design, Construction and Delivery (Composite Supply of Ship Under HSN Code 8901) of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel as per TSP No P25-12/1001 Dated 13.05.2026 and Scope Document No PSV/SoW/2026 Rev. A dated 09.07.2026 (Copy attached as a part of tender).
- Scope of work: Please refer TSP No P25-12/1001 Dated 13.05.2026 and Scope of work Document No PSV/SoW/2026 Rev. A dated 09.07.2026. The detailed technical scope of work is enclosed at Enclosure-10

3. PRE-QUALIFICATION CRITERIA:

3.1 Technical PQ Criteria as under:

- The determination of eligibility will take into account the Capability and Capacity of the participating Shipyard along with their past Experience in executing similar orders.
- It will be based on site inspection, examination of supporting documents and misc. other aspects, as deemed suitable by the MDL's team. MDL reserves the right to visit the Shipyard prior to technically qualifying their bids. The decision of the MDL's team in evaluation of the Shipyard would be firm and final. Further, time is the essence of this project, the bids of the participating Shipyard's would be liable for rejection in case of unsatisfactory / delayed response to the MDL's queries.
- The participating Shipyard should meet the following mandatory Pre-Qualification Criteria.**

- Capability:** The participating Shipyard shall be evaluated for their capability under the following criteria.

- Past Experience.** The participating Shipyard should have experience in Construction and delivery of self-propelled vessels built under IN / IACS on a turnkey basis. Following dimensions of Self-Propelled vessels successfully delivered by the Shipyard under IACS on a turnkey basis would be eligible for qualification.

Sl	Vessel Type	Qty (Min required)	Remarks
(i)	Self-Propelled - Length > 60 m	04	IN / IACS certified (In last 15 years)

- Shipbuilding Infrastructure.** The participating Shipyards should have their shipbuilding infrastructure commensurate for construction of PSV. This would comprise of, but not restricted to, gated Yard, slipway / dry-dock / ship-lift / floating dry dock, wet berths for outfitting, available depth of water, crange facility (in-house and could be augmented), workshop with machineries (press, roll, shearing, CNC cutting, pipe bending etc), and fabrication shops / space. Shipyard should mandatorily have the following as part of their infrastructure.



ADDITIONAL TERMS & CONDITIONS

TENDER NO. GeM tender no GeM/2026/B/7769534 dated 10.07.2026 closing on 20.07.2026

ITEM: Turnkey Design, Construction and Delivery (Composite Supply of Ship Under HSN Code 8901) of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel

TYPE OF TENDER: Open Tender in Two Bid System.

SI	Infrastructure	Dimension (L x B) (m)	Remarks
(i)	Shipbuilding Bay	150 x 40	
(ii)	Slipway / Slide way / Dry-dock	L > 90 m	Adequate water column for Ships launching draft of 3.5 m
(iii)	Wet Basin / Outfitting Bay	L > 100 m	Adequate water column for Ships draft of 3.5 m
(iv)	In-house operational Workshops for Steel cutting, steel Fabrication, pipe shops, paint booth, and Pipe Fabrication	As required	

ii. **Experience of Shipyard.**

The shipyard's experience of having constructed vessels during last 15 years ending till the tender closing date should be either of the following:

(a) Three contracts/orders of completed/delivered vessels each of not less than **Rs 88.53 Cr.**

OR

(b) Two contracts/orders of completed/delivered vessels each of not less than **Rs 110.67 Cr.**

OR

(c) One contract/order of completed/delivered vessels of not less than Rs **177.07 Cr.**

OR

(d) Cumulative completion of vessels of not less than **Rs 53.57 Cr** within continuous span of 12 months.

iii. **Legal Search Report:** *The bidders shall submit a Legal Search Report (LSR) of their premises towards the clear and marketable title of the builder over the complete infrastructure facilities with marking of their premises including stores, shops, dry berths, slipway, dry dock, waterfront etc. where PSV shall be constructed. Non-encumbrance certificate to be also submitted from the local lawyer at builder's location along with the technical offer. Please refer relevant clause in SOW.*

iv. **Functional Shipbuilding Departments.** Participating Shipyards should possess functional Shipbuilding departments. The assessment of functionality of these departments would be undertaken by MDL's team, based on site visit / evaluation of documentary records, availability of trained manpower and misc. other factors etc.

- (a) In-house detailed design capability
- (b) Planning department
- (c) QA and QC Department
- (d) Material procurement.



ADDITIONAL TERMS & CONDITIONS

TENDER NO. GeM tender no GeM/2026/B/7769534 dated 10.07.2026 closing on 20.07.2026

ITEM: Turnkey Design, Construction and Delivery (Composite Supply of Ship Under HSN Code 8901) of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel

TYPE OF TENDER: Open Tender in Two Bid System.

- v. **Human Resources.** Shipyard should have human resources available in-house or possess capability to mobilise them. Past experience in terms of below mentioned would be verified, against documentary records (for last 15 years).
- (a) Manpower mobilised during any 03 continuous months (during the past 15 years) should be more than 250 workers (in-house and subcontractors).
 - (b) Availability of labour accommodation within Shipyard premises or owned by Shipyard for more than 200 workers.
 - (c) Subcontractor base for undertaking works such as Steel, piping, cabling and painting etc would be evaluated.
- vi. **Capacity.** It is a considered opinion that along with the capability a participating Shipyard needs to have adequate capacity to undertake construction of vessels. The subject order for PSV, is on a lean production timeline. Any delay by participating Shipyard due to its capacity limitation, would imply delay in project delivery schedule. This may inter jeopardise MDL's future business line.
- vii. The capacity of the Shipyard would be evaluated based on the following parameters and not restricted to below. The decision of the evaluation committee / team would be final.
- (a) Current and future order book when compared with available infrastructure. Excess order by a Shipyard, beyond its capacity would delay the Subject project which has lean production timeline.
 - (b) Spare capacity in terms of infrastructure, space and resources for next 5 years. Decision of MDL would be considered binding.
 - (c) Performance of the Shipyard in their ongoing orders. Their performance and track record in time bound delivery of vessels / block construction work would be examined. Delay in delivery of the existing order would be considered negative and may be liable for rejection.
- viii. Shipyard shall not be under a declaration of ineligibility issued by Govt. of India / State govt. / Public Sector Undertakings etc. The Shipyards shall submit the following as a part of technical qualification.
- (a) Bidders' company profile and experience.
 - (b) Overview of Technical personnel deployed by the company
 - (c) List of personnel with designation, qualification and experience to determine bidders capabilities
 - (d) Company's registration certificate
 - (e) ISO standard certificate
 - (f) Factory licence
 - (g) Certificate of incorporation
 - (h) Registration certificate from local bodies of conducting business
 - (i) Bidder Shall not be under a declaration of ineligibility issued by the Govt. of India State Govt / Public Sector undertakings etc.
 - (j) MSME certificate if applicable.
 - (k) GST certificate.



ADDITIONAL TERMS & CONDITIONS

TENDER NO. GeM tender no GeM/2026/B/7769534 dated 10.07.2026 closing on 20.07.2026

ITEM: Turnkey Design, Construction and Delivery (Composite Supply of Ship Under HSN Code 8901) of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel

TYPE OF TENDER: Open Tender in Two Bid System.

- ix. **New Shipyards.** New Shipyards established by take-over of the existing / old Shipyards, in such cases their total experience of both the New and the old Shipyard would be considered. However, this would be restricted upto past 15 years only. This would also be subjected to document verification and satisfactory site inspection by MDL Team.

3.2 COMMERCIAL QUALIFICATION CRITERIA:

- a) The average annual financial turnover of the bidder during the last three years, ending 31st March of the previous financial year excluding the calendar year of tendering should be at **Rs. 32.14 Crore** as per the annual report (audited balance sheet and profit and loss account) of the relevant period, duly authenticated by a Chartered Accountant/Cost Accountant in India. Bidder shall upload the audited balance sheet along with profit/loss account for the last three years.
- b) Bidders Shop and establishment registration certificate or registration certificate from registrar of firms or certificate of incorporation from Registrar of Companies or any other valid document that confirms the firm's status. (Not required for permanent registered vendors with MDL)
- c)

3.3 Non-compliance/Non-submission of above conditions at para 3.1 & 3.2 render the bid liable for rejection

- a. **Start-Ups:** The condition of prior turnover and prior experience is relaxed only for all Start-ups recognised by Department for Promotion of Industry and Internal Trade (DPIIT) subject to meeting of quality & technical specifications. Start-ups may be MSMEs or otherwise. (Start-ups shall be given 100% relaxation in prior turnover and prior experience **subject to meeting of quality & technical specifications.**)
- b. **MSEs:** MSEs shall be given relaxation of prior turnover and prior experience subject to meeting of quality and technical specifications. (100% relaxation of prior turnover and prior experience **subject to meeting of quality and technical specifications.**)
- c. Start-Ups and MSEs shall upload at least one documentary evidence in support meeting quality and technical specification (Viz. Work / Purchase Order, Work Completion Certificate/ Proof of payment with Tax Invoice / Store Receipt and Acceptance Report or any other evidence that confirms that the work is completed which is issued by the party for whom the work is done).

Note:

- i. MDL reserves the right to demand for a hardcopy of any of the above documents and any other related documents, if required. Bidders shall comply with the same.



ADDITIONAL TERMS & CONDITIONS

TENDER NO. GeM tender no GeM/2026/B/7769534 dated 10.07.2026 closing on 20.07.2026

ITEM: Turnkey Design, Construction and Delivery (Composite Supply of Ship Under HSN Code 8901) of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel

TYPE OF TENDER: Open Tender in Two Bid System.

- ii. MDL reserves the right to verify the authenticity of the documents submitted / claims made by the bidder wherever felt necessary.
- iii. The date of Order/Contract can be older but completion period shall be within last 15 years ending till the original tender closing date.
- iv. If any cash transaction included in turnover (statement of profit & loss), the same will not be considered for turnover value.
- v. The bidders need to scan and upload supporting documentary evidence in support of the Qualification Criteria viz. Work order, work completion certificate issued by the party for whom the work is done. The Work Order/s not supported by Work Done Certificate/s will not be considered for qualification criteria. The concerned HOD or TNC has a right to verify /cause verification of authenticity of the said document whenever felt necessary.
- vi. The work executed by the bidder for their in-house or capital use will not be considered for the purpose of bidder's experience or completion of similar works.
- vii. All the qualifying documents indicated in the tender shall be strictly in the name of bidding firm. Qualifying documents submitted in the name of other than bidding firm will not be considered for bidding firm's qualification.
- viii. Bidder is required to submit information in the form of the table for the orders, which qualify them as per the above criteria, as the information in the tabular form shall hasten the technical scrutiny

4. **ALTERNATIVE MECHANISM BY WAY OF EARMARKING EXCLUSIVE AND CAPTIVE INFRASTRUCTURE FACILITIES FOR THE PSV PROJECT:**

As per the MDL's existing commercial convention, MDL's production partner is required to submit 100% irrevocable Bank Guarantee against the milestone based payments that would be released to the builder as per MDL's outsourcing contract. With an intent to enable participating Shipyards with ease in Shipbuilding activities, it is proposed to adopt an alternative mechanism by way of earmarking exclusive and captive infrastructure facilities for the PSV project at the builder's premises to MDL. This can include stores, dry berths, waterfront, slipway, shops etc. leased out to MDL. The steps to be undertaken while adopting this approach.

The cost towards leasing procedure as detailed at Clause 3 note (c) of SOW shall be borne by the builder. Further the lease charges shall be kept as nominal charge of Rs 1.

Please refer relevant clause in Scope of work Document No PSV/SoW/2026 Rev. A dated 09.07.2026.

5. **EARNEST MONEY DEPOSIT (EMD) / BID SECURITY: Rs 10,00,000.00/-**

EMD shall be submitted as per GEM Terms & condition. EMD exemption is as per GEM conditions. In addition to that, EMD is exempted for following:

- a) Bidders registered with MDL. To qualify for EMD exemption, firms should necessarily submit valid copy of the Registration Certificate issued by MDL, for the tendered items for which the offer is being submitted, in Part-I offer/bid. Firms in the process of obtaining MDL registration/ in the process of renewal of MDL registration will not be considered for EMD exemption.



ADDITIONAL TERMS & CONDITIONS

TENDER NO. GeM tender no GeM/2026/B/7769534 dated 10.07.2026 closing on 20.07.2026

ITEM: Turnkey Design, Construction and Delivery (Composite Supply of Ship Under HSN Code 8901) of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel

TYPE OF TENDER: Open Tender in Two Bid System.

- b) Firms registered with Mazagon Dock Shipbuilders Limited (MDL). (The vendor who are permanently registered under **PR-material /service group "1402055 – Fabrication of Ferrous"** in MDL, only for them EMD is exempted. Other vendors who are permanently registered under different group in MDL have to submit the EMD as stipulated in tender) To qualify for EMD exemption, firms should necessarily submit VALID copy of the Registration Certificate issued by MDL, for the items for which the offer being submitted, in Part-I offer/bid. Firms in the process of obtaining MDL registration will not be considered for EMD exemption.
- c) EMD shall be submitted by way of NEFT / Demand Draft / Pay order / Bank Guarantee / Insurance Surety Bond / e-Bank Guarantee in favour of MAZAGON DOCK SHIPBUILDERS LIMITED, payable at Mumbai from the list of Banks approved by SBI / Canara Bank published on MDL website. Crossed DD / Pay Order issued by Co-operative banks however may be considered to be accepted and the bid would be considered accordingly.
- d) In case of EMD transmitted through SWIFT, it shall be the responsibility of the bidder that he directs the receiving banker to forward the message duly authenticated to the concerned commercial executive mentioned in the tender.
- e) Green Channel Status vendors qualify for EMD exemption. Such firms shall submit valid copy of the green channel certificate issued by MoD for the items for which the offer is being submitted in Part-I offer/bid. Firms in process of obtaining this certificate will not be considered for EMD exemption.
- f) For making online payment please follow the following steps:
- Go to www.mazagondock.in
 - Click on Online payment tab available on home page
 - 4 options viz. Career, Tender, Security, Scrap / Disposal will be available.
 - Click on the respective tab and make the payment online using Debit cards, Credit Cards, Net banking, BHIM/UPI etc. after filling the required details.
- g) Bidders are requested to upload the scanned image of EMD online along with the bid. If bidders are submitting the Bank Guarantee, they are requested to inform us the address, Tel. No., Fax No. of the issuing Bank and forward the original of the scanned copy of EMD enclosed in a envelope addressed to HOD (Outsourcing), 6th floor, Service Block, North Yard, Mazagon Dock Shipbuilders Limited, Mumbai-400010, super scribing Tender No & Tender date by Speed Post/Registered Post/Courier Service/Hand Delivery to reach the office of HOD(Outsourcing) within **seven days** from the Tender closing date. The date of BG should not be later than the tender closing date.
- Timely submission of the EMD is the responsibility of the bidders and no reasons / excuses in this regard will be entertained by MDL. Bids without EMD will not be considered
- h) **In case the Indigenous Bidders intends to submit Bank Guarantee towards EMD, the Bank Guarantee should be e-Bank Guarantee or Structural Financial Messaging System Bank Guarantee (SFMS BG). In this regard refer ASLA clause 11: "Bank Guarantee(Important Note)**
- i) **EXEMPTION FROM SUBMISSION OF EMD**



ADDITIONAL TERMS & CONDITIONS

TENDER NO. GeM tender no GeM/2026/B/7769534 dated 10.07.2026 closing on 20.07.2026

ITEM: Turnkey Design, Construction and Delivery (Composite Supply of Ship Under HSN Code 8901) of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel

TYPE OF TENDER: Open Tender in Two Bid System.

a)	Exemption from submission of EMD shall be allowed as per GEM GTC.
b)	Firms registered with Mazagon Dock Shipbuilders Limited (MDL). (The vendor who are permanently registered under any PR-material /service group " PR-material /service group "1402055 – Fabrication of Ferrous" ", in MDL, only for them EMD is exempted. Other vendors who are permanently registered under different group in MDL have to submit the EMD as stipulated in tender) To qualify for EMD exemption, firms should necessarily submit VALID copy of the Registration Certificate issued by MDL, for the items for which the offer being submitted, in Part-I offer/bid. Firms in the process of obtaining MDL registration will not be considered for EMD exemption.
c)	Micro and Small Enterprises who are manufacturer or Service Provider and give specific confirmation to this effect at the time of bid submission and whose credentials are validated online through Udyam Registration (as validated by Government from time to time) and through uploaded supporting documents.
d)	Start-ups as recognized by Department of Industrial Policy and Promotion (DIPP).
e)	State & Central Government of India Departments & Public Sector Undertakings.
f)	Firms registered with NSIC under its "Single Point Registration Scheme".
g)	Common/Deemed DPSU registered vendors qualify for EMD exemption
h)	Green Channel Status vendors
i)	Benefits of EMD exemption may not be extended to the MSE firm registered with Major Activity as " Trading ".

j) **Refund of EMD:** Refund of EMD in all the cases shall be without interest as stated below

- EMD will be refunded to the technically rejected bidders within 15 days from the date of approval of price bid opening and remaining Techno commercially qualified bidders after placement of order on the successful bidder within 30 days from the date of order placement.
- The returned / refunded EMD would be interest free.
- EMD of successful bidders may be converted into performance security or refunded on receipt of performance security B.G. as called



ADDITIONAL TERMS & CONDITIONS

TENDER NO. GeM tender no GeM/2026/B/7769534 dated 10.07.2026 closing on 20.07.2026

ITEM: Turnkey Design, Construction and Delivery (Composite Supply of Ship Under HSN Code 8901) of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel

TYPE OF TENDER: Open Tender in Two Bid System.

for in the contract on the basis of written communication from the Commercial Executive.

d) In the event of cancellation of tender, the EMD will be refunded /returned to all the bidders.

k) **Forfeiture of EMD:** EMD shall be forfeited in the following cases:

a) Bidder withdraws, amends, impairs or derogates from the tender, agreed conditions of TNC / PNC in any respect within the period of validity of his offer.

b) Non-acceptance of order

l) **All other terms related to EMD will be as per GeM guideline.**

6. **BID REJECTION CRITERIA:** -

6.1 CATEGORICAL REJECTION CRITERIA :-

The following conditions / deviations are non-negotiable and therefore any bid falling under these conditions/ deviations shall be summarily rejected.

6.1.1. Bids/Offer received other than GEM portal.

6.1.2. Bids received without EMD (other than those who are exempted from payment of EMD).

6.1.3. Bidders who are debarred under PPP MII order 2017, GeM, CPPP including Tender holiday issued by MDL.

6.2 LIABLE FOR REJECTION CRITERIA :-

Non-compliance/non-acceptance to any of the terms and conditions of the tender shall render the bid liable for rejection;

6.3 Equal time and opportunity for submission of deficient techno commercial documents and clarification shall be given to the bidders. Bidders are required to submit such documents/ clarifications within the duration / date stipulated by MDL failing which their bids will be rejected.

6.4 Bidders are requested to ensure that only relevant documents complete in all respect as indicated in the tender should be attached with their offer. The first page of every uploaded set of scanned document shall be an index of its contents.

6.5 MDL reserves the right to seek clarification / deficient documents from all the bidders quoted against the tender

7. **DELIVERY PERIOD/COMPLETION SCHEDULE:** Delivery to be completed with 28 months from the date of order. For detailed delivery schedule please refer TSP No P25-12/1001 Dated 13.05.2026 and Scope Document No PSV/SoW/2026 Rev. A dated 09.07.2026. (Copy attached as a part of tender)

8. **PRE-BID MEETING: Not applicable**

9. **ON-LINE SUBMISSION OF BIDS IN TWO-BID SYSTEM:**

9.1 On-line Offer (e-bid) must be uploaded in two parts, Part-I Techno-commercial bid & Part-II price bid, on the Government e Marketing site GeM. Offer in any other form will not be considered. Part- I: **Online Techno-commercial bid will be opened on the tender opening date/extended opening date shall contain the following:-**



ADDITIONAL TERMS & CONDITIONS

TENDER NO. GeM tender no GeM/2026/B/7769534 dated 10.07.2026 closing on 20.07.2026

ITEM: Turnkey Design, Construction and Delivery (Composite Supply of Ship Under HSN Code 8901) of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel

TYPE OF TENDER: Open Tender in Two Bid System.

i.	Scanned image of EMD-BG/ Insurance Surety Bond Online Remittance as stipulated in clause 6 for EMD Clause The original of the above of EMD-BG/ Insurance Surety Bond/ Demand Draft etc, shall be forwarded to GM (OTS) / HOD (OTS) in sealed envelope super scribing Tender Enquiry No. and Due date, so as to reach <u>within 7 MDL working Days</u> from the tender closing date, addressed as below: GM(OTS), 5th floor, Reclamation Building, East Yard, Mazagon Dock Shipbuilders Ltd. Dockyard Road, Mumbai - 400010.
ii.	Scanned image of Integrity Pact:-The original of Integrity Pact shall be forwarded to GM (OTS) / HOD (OTS) in sealed envelope super scribing Tender Enquiry No. and Due date as addressed as below: GM(OTS), 5th floor, Reclamation Building, East Yard, Mazagon Dock Shipbuilders Ltd. Dockyard Road, Mumbai - 400010
iii.	Bidder should also upload scanned copies of following in the Prescribed Formats: a) Tender Enquiry TEF/ Additional Service Level Agreement (ASLA) Acceptance Format b) General Conditions of Contract (GCC) acceptance format The above documents shall be; duly stamped, signed & filled 'Accepted OR Not Accepted' as applicable for each of the clause. Normally deviations to the tender terms are discouraged. However, if the bidder has any deviations, the same should be filled in above formats mentioning the deviation against the relevant Tender clause no., failing which it will be construed that all clauses of Tender inquiry & GCC appearing against the tender are understood by you and are fully acceptable to you. In the event bidder has no deviations, he should submit following forms mentioning 'Accepted'. Any deviations mentioned elsewhere in the offer other than in said Forms will not be considered.
iv.	Copy of Blank rate sheet clearly indicating 'Quoted/ Not-Quoted', also indicating the percentage % of applicable taxes/duties and HSN/SAC number against each of the listed, duly stamped & signed, should be uploaded.
v.	Audited balance sheet with auditors reports and profit & Loss statement for FY 2022-23, 2023-24 and 2024-25.



ADDITIONAL TERMS & CONDITIONS

TENDER NO. GeM tender no GeM/2026/B/7769534 dated 10.07.2026 closing on 20.07.2026

ITEM: Turnkey Design, Construction and Delivery (Composite Supply of Ship Under HSN Code 8901) of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel

TYPE OF TENDER: Open Tender in Two Bid System.

vi.	Undertaking of CONFLICT OF INTEREST as per tender clause 32 on Firm's letterhead.
vii.	Bidder should upload scanned copy of tax and duties certificate (e.g. GST registration) for which they are registered. Scanned image of Valid GST Registration Certificate (All pages).
viii.	Duly filled Declaration Certificate for Local content in Enclosure-9. (Bidders submitting incomplete local content certificate or not indicating / not specifying the local content percentage or/ and location of local value addition in the declaration certificate will be liable for rejection)
ix.	Declaration by bidder for Restrictions under rule 144(xi) of General Financial Rules GFRs, (2017) on firm's letterhead Enclosure-7
x.	scanned Copies of work Orders, Work Completion Certificates, and Performance reports for the job executed, in support of Similar Work as mentioned
xi.	Bidders Shop and establishment registration certificate or registration certificate from registrar of firms or certificate of incorporation from Registrar of Companies or any other valid document that confirms the firm's status.
xii.	GEM Seller Id
xiii.	Copies of valid UDYAM Registration
xiv.	Copies of valid Start-Up Registration and Approval certificates (if any)
xv.	Scanned image of PAN card.
xvi.	RTGS/ NEFT - Mandate Authorization Form Enclosure-4
xvii.	Bidders registered with MDL should scanned and upload valid Registration Certificate issued by MDL.

9.2 Part- II (Price Bid):



ADDITIONAL TERMS & CONDITIONS

TENDER NO. GeM tender no GeM/2026/B/7769534 dated 10.07.2026 closing on 20.07.2026

ITEM: Turnkey Design, Construction and Delivery (Composite Supply of Ship Under HSN Code 8901) of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel

TYPE OF TENDER: Open Tender in Two Bid System.

- i. **Bidder shall quote the Lump Sum price in the GEM which will be on all-inclusive basis i.e. including GST, Manpower, duties, local levies/ consumables etc. However, the applicable taxes/duties & levies will be indicated separately in the rate sheet. Illustration of Rate sheet format is as per Annexure B.**

Note: In case of error in the aggregate values, the individual service-wise quoted rates will be considered.

- ii. Prices for the tendered services/ Items and applicable Taxes and duties are to be quoted by entering the same online. Timely submission of the e-bids is responsibility of the bidders and no reasons / excuses in this regard will be entertained.

9.3 Opening of Techno-Commercial e-Bid (Part-I): Techno-Commercial e-bid (Part-I) will be **opened** online on the tender opening date or extended tender opening date or next working day if opening date happens to be holiday declared by MDL. The participant bidder can also check the status online from their locations by logging on GEM website.

9.4 Opening of Price e-Bid (Part-II): After completion of Techno-commercial scrutiny, intimation for price e-bid opening will be communicated only to techno-commercially accepted bidders. Bidder (s) to note that such intimation may be given at a short notice by Fax, E-mail or even by telephone only to techno-commercially accepted bidder(s). Techno-commercially qualified bidders can also witness opening of price bids online from their locations by logging on GEM Portal.

10. **WARRANTY/GUARANTEE:** For detailed warranty/Guarantee clause please refer TSP No P25-12/1001 Dated 13.05.2026 and Scope Document No PSV/SoW/2026 Rev. A dated 09.07.2026. (Copy attached as a part of tender)

11. **PERFORMANCE SECURITY (PERFORMANCE BANK GUARANTEE CUM SECURITY DEPOSIT)/E-PBG:** Performance Security for an amount equal to 3% of the order value (excluding taxes, duties) payable in Indian Rupees shall be submitted within 25 days of the award of contract. Please refer relevant clause mentioned in Scope Document No PSV/SoW/2026 Rev. A dated 09.07.2026. All other terms and condition related to PSB shall be as per GeM.

BANK GUARANTEE (IMPORTANT NOTE):-

The Bidders must submit the irrevocable Electronic Bank guarantee (e-BG) OR Structural Financial Messaging System Bank Guarantee (SFMS BG).

- 1) Mandatory Requirement: -

Whenever a bidder submits SFMS BG, the bidder will mandatorily be required to submit letter from issuing bank that it is unable to issue NeSL (National e-Governance Service Ltd) based e-BG as on date. Such letter should accompany the SFMS BG.



ADDITIONAL TERMS & CONDITIONS

TENDER NO. GeM tender no GeM/2026/B/7769534 dated 10.07.2026 closing on 20.07.2026

ITEM: Turnkey Design, Construction and Delivery (Composite Supply of Ship Under HSN Code 8901) of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel

TYPE OF TENDER: Open Tender in Two Bid System.

2) IFSC CODE:-

While submitting the Structural Financial Messaging System Bank Guarantee (SFMS BG). IFSC: ICIC0000393 shall be used.

3) Authenticity of SFMS BG:

Bidder shall get SFMS BG issued from SFMS enabled Bank as allowed by MDL in tender conditions. Bank shall issue the Bank Guarantee through SFMS system and send SFMS message to MDL's Bank confirming the authenticity of Bank Guarantee. Bidder will be required to submit SFMS BG towards performance Bond along with SFMS delivery report/message copy which has been transmitted to MDL's bank by BG issuing bank through SFMS system.

4) Stamp Paper/Franking Receipt:

The SFMS BG will have to be given on non-judicial stamp paper/ with franking receipt e-stamping as per stamp duty applicable at the place from where the bid has emanated. The non-judicial stamp paper/ franking receipt e-stamping should be either in the name of the issuing bank or the bidder.

5) Receipt of SFMC BG

The Original SFMS BG in physical form towards Bid security/Performance Warranty security (along with SFMS delivery report / message copy which has been transmitted by issuing bank through SFMS system to beneficiary's i.e MDL's Bank) should reach to the designated MDL office on or before due date.

6) Mandatory Requisite Information:

SFMS BG will not be acceptable unless details of the same is transmitted to the MDL's Bank through SFMS platform. Its bidder's responsibility to ensure that BG issuing bank send the BG advice correctly in the form of message format 760 COV vis SFMS (Structured Financial Messaging System) as provided by RBI while capturing all requisite fields including Beneficiary Account Name, Bank Name. Bank Account Number, IFSC Code etc.

7) Non Acceptance of BG:

In case of any error by the Bidder/contractor or BG issuing Bank while capturing the requisite field details / format or non-receipt of confirmation of BG through SFMS 760COV message format, the bidder/contractor shall be responsible for non-acceptance of the SFMS Bank Guarantee.

8) Amendment in BG:

For any amendment of SFMS BG, message 767COV through SFMS should be used.

12. **TAXES & DUTIES:** The items/service-wise rates quoted in the Rate sheet should exclude Taxes and Duties. Bidder should indicate Taxes and Duties as applicable separately in the same Rate sheet, at the space provided for, which will be paid extra based on tax invoice to the extent applicable. Bidder shall indicate GST no. and HSN/SAC no (8901) separately & the percentage of the applicable taxes in blank Price Bid submitted in Part I (Techno



ADDITIONAL TERMS & CONDITIONS

TENDER NO. GeM tender no GeM/2026/B/7769534 dated 10.07.2026 closing on 20.07.2026

ITEM: Turnkey Design, Construction and Delivery (Composite Supply of Ship Under HSN Code 8901) of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel

TYPE OF TENDER: Open Tender in Two Bid System.

Commercial Bid) as well as in Part-II Price Bid. GeM terms & condition related to taxes & duties are applicable.

13. **MODIFICATIONS TO THE BID:** As per GeM terms & conditions.

14. **ELECTRONIC REVERSE AUCTION:**

Reverse Auction shall be applicable to this tender. Methodology of Reverse auction will be as per GEM PORTAL. This GeM bid will be taken to Reverse Auction post technical evaluation as per GeM terms & conditions on H1 elimination basis.

15. **RANKING OF BIDS & DETERMINATION OF L-1 BIDDERS:**

Techno-Commercially Qualified Lowest Bidder as evaluated by GeM will be considered for the placement of order for entire tender quantity. Bidders have to quote their price, applicable taxes as per rate sheet available on GeM Portal.

16. **PAYMENT TERMS:**

- a) Advance payment is not applicable for this tender.
- b) For detailed payment terms & payment schedule please refer relevant clauses mentioned in Scope Document No PSV/SoW/2026 Rev. A dated 09.07.2026. ARTICLE-III: CONTRACT PRICE AND PAYMENT TERMS of SOW (Copy attached as a part of tender).
- c) **Part/Stage Payment:** Stage-wise payment is acceptable based on completion of stage payment as per milestone as indicated in TSP & SOW.

PAYMENT MODE AND DOCUMENTS FOR PAYMENTS FOR INDIAN BIDDERS (GOODS):

- (a) All the payments to indigenous bidders due shall be made through Real Time Gross Settlement (RTGS) / National Electronic Fund Transfer (NEFT) by MDL. For details please refer Scope Document No **PSV/SoW/2026 Rev. A dated 09.07.2026"**
ARTICLE-III: CONTRACT PRICE AND PAYMENT TERMS of SOW.
 - (i) Suppliers invoice.
 - (ii) PO copy with amendments if any
 - (iii) Confirmation of receipt and verification of Bank Guarantee for Advance Payment, Performance security as the case may be.
- (b) The Contract Price shall be paid by the Buyer to the Builder in installments as follows, subject to the Builder providing Corporate Guarantee (in the form of Indemnity Bond).



ADDITIONAL TERMS & CONDITIONS

TENDER NO. GeM tender no GeM/2026/B/7769534 dated 10.07.2026 closing on 20.07.2026

ITEM: Turnkey Design, Construction and Delivery (Composite Supply of Ship Under HSN Code 8901) of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel

TYPE OF TENDER: Open Tender in Two Bid System.

Stage no	Payment Stages	Payment as % of Contract Value	Remarks
1	Steel Procurement	6%	On contract signing, Firm has to submit Performance Security (Performance Bank Guarantee cum Security Deposit) of 3% of Contract Value as per Tender valid up to completion of Guarantee Period. Receipt of Steel Ordered for the Project (On Pro rata basis on receipt of every 300 Tons steel for the Project)
2	Basic Design	3%	On acceptance of basic design by MDL. The list of basic drawings shall be finalised during contract signing. 50% stage payment shall be released after acceptance of 50% basic drawing by MDL and remaining 50% stage payment shall be released after acceptance of balance 50% basic drawing by MDL.
3	PO Placement of Major Equipment	10%	On Order of Main Equipment (Except Main engine). List of Major Equipment will be finalised during Contract Signing.
4	Unit Fabrication	10%	Pro rata for every 200 Tons fabrication after dry survey.
5	Keel Laying	5%	Provided the maximum blocks fabricated, inspected and accepted by class and buyer's representative are at least 20% of Steel Weight
6	Erection	5%	Pro rata for every 300 tons erection after dry survey
7	Delivery Receipt of Major Equipment	10%	On despatch of Main Equipment finalised during Contract Signing.
8	Lowering & Installation of Major Equipment & Main Engine	5%	On lowering & installation of major equipment, main engine finalised during Contract Signing.



ADDITIONAL TERMS & CONDITIONS

TENDER NO. GeM tender no GeM/2026/B/7769534 dated 10.07.2026 closing on 20.07.2026

ITEM: Turnkey Design, Construction and Delivery (Composite Supply of Ship Under HSN Code 8901) of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel

TYPE OF TENDER: Open Tender in Two Bid System.

Stage no	Payment Stages	Payment as % of Contract Value	Remarks
9	Launching of the Vessel	22%	The major equipment like generator engines, propulsion system, methanol fuel supply system, bow thrusters, Fi-Fi pumps, ballast pumps and cargo pumps are in place and 100% super structure and deck house blocks to be erected and ballast tank / under water hull painting is complete
10	Completion of Basin Trials	5%	After Successful Completion of Basin Trials
11	Completion of Sea Trials	9%	Successful completion of Main Diesel Engine Dock / Quay trials and on submission of stage completion signed by surveyor of the classification society.
12	Delivery	10%	On acceptance of Vessel by SCI
		100%	

The stage payments shall be paid within Thirty (30) Business Days after the date of builder's submission of original certificate of the stage completion signed by the surveyor of the Classification society, the builder and the buyer's representative, subject to the Builder meeting defined conditions. The business days referred to in this Contract means the working days, which shall exclude Saturdays, Sunday and the Bank holidays in Mumbai.

- (c) **Currency:-** All payments under this Contract, made by the Buyer, to the Builder or vice-versa, shall be made in **INDIAN RUPEES**. Exchange Rate Variation is not applicable
- (b) **Alternate MSME vendor payment through TReDS:** TReDS is a digital platform to help MSMEs to address their financial needs for facilitating the financing of trade receivables from buyers, through multiple financiers. TReDS is governed by the Reserve Bank of India under the Payment and Settlement Systems Act, 2017 and the Factoring Regulations Act, 2011. Under the TReDS initiative, at present, RBI has given licenses to three participants (A.TREDS Ltd, RXIL, M1 Xchange). MDL is registered for TReDS online platform. At TReDS, auctioning of invoices at competitive and transparent environment is done by financiers based on Buyer's credit profile. MSE bidders desirous to receive payments through TReDS platform may avail the facility if they are already registered on TReDS platform or by registering on any one of the service provider. Contact details of TReDS platform service providers are to be indicated. MSE bidders upon successful delivery shall submit their invoices along with the mandated enclosures at MDL, central receipt section. MSE vendors, desirous to receive payments through a



ADDITIONAL TERMS & CONDITIONS

TENDER NO. GeM tender no GeM/2026/B/7769534 dated 10.07.2026 closing on 20.07.2026

ITEM: Turnkey Design, Construction and Delivery (Composite Supply of Ship Under HSN Code 8901) of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel

TYPE OF TENDER: Open Tender in Two Bid System.

particular TReDS platform must submit their TReDS details along with the invoice at MDL, central receipt section. Upon receipt and acceptance of the supplied material and receipt of invoices with the mandated enclosures, MDL shall process the invoice for payment on that particular TReDS platform. Any unfinanced invoices / invoices of MSE bidders seeking payment from MDL directly shall be processed as per the standard payment terms agreed in PO / contract.

- (d) **E Invoice:** Wherever GST is applicable, payment will be released against e-Invoice, or Invoice accompanied with Vendor's Self Declaration that " We do not fall under the category of registered persons notified under Rule 48(4) of the Central GST Rules, 2017 and we are not required to comply with e-Invoicing provisions under GST Act, as our aggregate turnover in any preceding financial year from 2017-18 onwards has not exceeded Rs. 5 Crores as per GST act"

17. **EXCHANGE RATE VARIATION (ERV)** : Not applicable.

18. **NON-DISCLOSURE AGREEMENT:**

Non- disclosure agreement not required for bidding purpose. Bidder has to submit NDA post placement of order for issuance of drawings /documents.

This Non-Disclosure Agreement to be executed on a non-judicial stamp paper of INR 500.00.

The Specifications, drawings, work instructions and protocols such issued shall be on returnable basis, without reproduction/retention of the copies at the bidder's end.

Procedure for collection of All drawings, document & Work Instructions, design requirement etc as applicable will be done by Planning Dept. (PSV), only during execution of contract, on submission of "Non-Disclosure Agreement" in the prescribed format (in original) to PE(Plg-PSV)

If firm required drawings for their reference/bidding purpose, they can visit Planning PSV along with original instrument of NDA.

19. **PURCHASE PREFERENCE TO MAKE IN INDIA 2017** :- Applicable. As per GeM

20. **MODE OF DISPATCH:** Vessels shall be delivered by the Builder to the Buyer free and clear of all liens, claims, mortgages and other encumbrances whatsoever, in clean and seaworthy condition ready for service in all respects, afloat and clear of obstruction, safe and secure, at the Builder's quay at Mumbai, India, within 28 Months from the date of the contract becoming effective; (Contractual Delivery date) subject, however, to the provisions relating to permissible delays and extension of the time of delivery of the Vessel under this Contract. Builder shall give a notice to the Buyer specifying the scheduled delivery date of the Vessel at least thirty (30) calendar days prior thereto. This shall be followed by ten (10) calendar days of firm notice. please refer TSP No P25-12/1001 Dated 13.05.2026 and Scope Document No PSV/SoW/2026 Rev. A dated 09.07.2026. (Copy attached as a part of tender)

21. **INSPECTION:** please refer TSP No P25-12/1001 Dated 13.05.2026 and Scope Document No PSV/SoW/2026 Rev. A dated 09.07.2026.

22. **LIQUIDATED DAMAGES (LD):** For detailed LD terms please refer TSP No P25-12/1001 Dated 13.05.2026 and Scope Document No PSV/SoW/2026 Rev. A dated 09.07.2026. (Copy attached as a part of tender).



ADDITIONAL TERMS & CONDITIONS

TENDER NO. GeM tender no GeM/2026/B/7769534 dated 10.07.2026 closing on 20.07.2026

ITEM: Turnkey Design, Construction and Delivery (Composite Supply of Ship Under HSN Code 8901) of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel

TYPE OF TENDER: Open Tender in Two Bid System.

23. BREACH OF OBLIGATION WITH RESPECT TO BID SUBMITTED:

In case of breach of any obligation mentioned under, the bidder shall be disqualified/debarred from the bidding process for a period of one year from the date of notification:

- (i) Bidder has withdrawn/modified/amended/impaired/derogated from the tender during the period of bid validity.
- (ii) Bidder fail or refuses to execute the contract upon notification of acceptance of bid by the purchaser during the period of bid validity.

24. INTEGRITY PACT (IP):

The Integrity pact essentially envisages the agreement between prospective vendors / bidders & buyers committing the person/officials of both the parties not to exercise any corrupt influence on any aspects of the contract. Only those vendors/bidders who enter into such an integrity pact with the buyer would be competent to participate in the bid. Therefore, non-acceptance and non-submission of IP by the vendors/bidders shall liable for rejection. The format of integrity Pact is enclosed with tender documents. IP shall be submitted on plain paper. The 'Integrity pact' dully filled as per enclosed format to be submitted along with the offer. **Bidders to ensure that each page of IP shall be duly ink signed with company seal/stamp.**

25. INDEPENDENT EXTERNAL MONITORS (IEM):

The following Independent External Monitors (IEMs) will have the power to access the entire project document and examine any complaints received by him. In case of any change in IEMs it will be informed accordingly.

For any administrative enquires and clarification on tender, bidders shall contact Commercial Dealing Executive. In case of issues related to Integrity Pact (IP) please contact Independent External Monitor (IEM) whose details are as below:

- i) Shri M.N.Krishnamurthy, IPS (Retd.) Email ID: krishnamurthymn19@gmail.com
- ii) Shri Deepak Kashyap, IRTS (Retd) Email id : deepakkashyapnd02@gmail.com

26. BOOK EXAMINATION CLAUSE:

In case it is found to the satisfaction of the BUYER that the seller has engaged an Agent or paid commission or influenced any person to obtain the contract as described in clauses relating to Agents/Agency commission and penalty for use of undue influence, the seller, on a specific request of the buyer shall provide necessary information/Break-up data/inspection of the relevant financial documents/information.

27. PROGRESS MONITORING & REVIEW MECHANISM:

The required dates are indicated in tender. On placement of order a kick off meeting is to be held in MDL to chalk out the sequence and priority of the activities and the deliverables in line with the prevailing construction status of the ship. Please refer relevant clause in SOW Doc no: PSV/SoW/2026 - Rev A dated 09.07.2026.

28. PUBLIC GRIEVANCE CELL:

A Public Grievance Cell has been set up in the Company. Members of public having complaints or grievances are advised to contact above Authorities on Wednesday between 10.00 hours and 12.30 hours in office at 3rd Floor, Mazdock house, Mazagon Dock



ADDITIONAL TERMS & CONDITIONS

TENDER NO. GeM tender no GeM/2026/B/7769534 dated 10.07.2026 closing on 20.07.2026

ITEM: Turnkey Design, Construction and Delivery (Composite Supply of Ship Under HSN Code 8901) of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel

TYPE OF TENDER: Open Tender in Two Bid System.

Shipbuilders Ltd or send their complaints / grievances to Public Grievance Cell in writing for redressal. Telephone No. is 022- 23738368.

29. **LAND BORDER:**

a) This clause is applicable from a country which shares a land border with India" for the purpose of this Order means: -

- i. An entity incorporated, established or registered in such a country; or
- ii. A subsidiary of an entity incorporated, established or registered in such a country; or
- iii. An entity substantially controlled through entities incorporated, established or registered in such a country; or
- iv. An entity whose *beneficial* owner is situated in such a country; or
- v. An Indian (or other) agent of such an entity; or
- vi. A natural person who is a citizen of such a country; or
- vii. A consortium or joint venture where any member of the consortium or joint venture falls under any of the above

b) Bidders from a country sharing land border with India shall Mandatorily requires registration with registration Committee by the Department for promotion of Industry and Internal Trade (DPIIT). Registration shall not be applicable for the bidders from those country to which the Government of India has extended Line of credit or in which the government of India is engaged in development project.

c) Bidder shall comply orders issued by ministry of Finance department of expenditure Vide OM 6/18/2019- PPD dated 23 July 2020 & 24 July 2020 and OM No F.7/10/2021/-PPD(1) dated 23.02.2023.

d) Please refer relevant clause mentioned in GeM

30. **RIGHT TO REJECT ANY OR ALL BIDS:**

MDL reserves its right to accept or reject any or all Bids, abandon/ cancel the Tender process, and issue another tender for the same or similar Goods/Services at any time before the award of the contract. It would have no liability to the affected Bidder or Bidders or any obligation to inform the affected Bidder or Bidders of the grounds for such action(s).

31. **CANCELLATION OF PROCUREMENT PROCESS/ REJECTION OF ALL BIDS/RE-TENDER:**

If competition is lacking, then in such cases lack of competition shall not be determined solely on the basis of the number of Bidders. Even when only one Bid is submitted, the process may be considered valid provided following conditions are satisfied:

- a) The procurement was satisfactorily advertised and sufficient time was given for submission of bids.
- b) The qualification criteria were not unduly restrictive; and
- c) Prices are reasonable in comparison to market values The decision to cancel the procurement and reasons for such a decision shall be communicated to all bidders that participated in the procurement process. During Re-tendering, all participated bidders of earlier tender shall be informed.

32. **CONFLICT OF INTEREST AMONG BIDDERS/ AGENTS:**

A bidder shall not have conflict of interest with other bidders. Such conflict of interest can lead to anti-competitive practices to the detriment of MDL's interests. The bidder found to have a conflict of interest shall be disqualified. A bidder may be considered to have a conflict of interest with one or more parties in this bidding process, if:



ADDITIONAL TERMS & CONDITIONS

TENDER NO. GeM tender no GeM/2026/B/7769534 dated 10.07.2026 closing on 20.07.2026

ITEM: Turnkey Design, Construction and Delivery (Composite Supply of Ship Under HSN Code 8901) of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel

TYPE OF TENDER: Open Tender in Two Bid System.

- (i) they have controlling partner (s) in common; or
- (ii) they receive or have received any direct or indirect subsidy/ financial stake from any of them; or
- (iii) they have the same legal representative/agent for purposes of this bid; or
- (iv) they have relationship with each other, directly or through common third parties, that puts them in a position to have access to information about or influence on the bid of another Bidder; or
- (v) Bidder participates in more than one bid in this bidding process. Participation by a Bidder in more than one Bid will result in the disqualification of all bids in which the parties are involved. However, this does not limit the inclusion of the components/ sub-assembly/ Assemblies from one bidding manufacturer in more than one bid.
- (vi) In cases of agents quoting in offshore procurements, on behalf of their principal manufacturers, one agent cannot represent two manufacturers or quote on their behalf in a particular tender enquiry. One manufacturer can also authorise only one agent/dealer. There can be only one bid from the following: 1. The principal manufacturer directly or through one Indian agent on his behalf; and 2. Indian agent on behalf of only one principal.
- (vii) Bidder or any of its affiliates participated as a consultant in the preparation of the design or technical specifications of the contract that is the subject of the Bid;
- (viii) In case of a holding company having more than one independently manufacturing units, or more than one unit having common business ownership/management, only one unit should quote. Similar restrictions would apply to closely related sister companies. Bidders must proactively declare such sister/ common business/ management units in same/ similar line of business

Note: The undertaking by the bidders for above para (Conflict of Interest among Bidders/ Agents) shall be submitted/uploaded along with Part I bid.

33. **CORRIGENDUM TO TENDER DOCUMENT:**

Before the deadline for submitting bids, MDL may update, amend, modify, or supplement the information, assessment or assumptions contained in the Tender Document by issuing a corrigendum. The corrigendum shall be published in the same manner as the original Tender Document. Without any liability or obligation, the Portal may send intimation of such corrigendum to bidders who have downloaded the document under their login. However, the bidders' responsibility is to check the website(s) for any corrigendum. Any corrigendum thus issued shall be considered a part of the Tender Document. To give reasonable time to the prospective bidders to take such corrigendum into account in preparing their bids, MDL may suitably extend the deadline for the bid submission, as necessary. After MDL makes such modifications, any Bidder who has submitted his bid in response to the original invitation shall have the opportunity to either withdraw his bid or re-submit his bid superseding the original bid within the extended time of submission.

34. **CONTACTING MDL DURING THE EVALUATION:**

If a Bidder needs to contact MDL for any reason relating to this tender and/ or its bid, it should do so only in writing or electronically. Any effort by a Bidder to influence MDL during the processing of bids, evaluation, bid comparison or award decisions shall be construed as a violation of the Code of Integrity, and bid shall be liable to be rejected as nonresponsive in addition to other punitive actions for violation of Code of Integrity as per the Tender Document

35. **CARTEL FORMATION/POOL RATES:**



ADDITIONAL TERMS & CONDITIONS

TENDER NO. GeM tender no GeM/2026/B/7769534 dated 10.07.2026 closing on 20.07.2026

ITEM: Turnkey Design, Construction and Delivery (Composite Supply of Ship Under HSN Code 8901) of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel

TYPE OF TENDER: Open Tender in Two Bid System.

It is possible that sometimes a group of bidders quote the same rate against a tender. Such pool/cartel formation is against the basic principle of competitive bidding and defeats the very purpose of an open and competitive tendering system. Such and similar tactics to avoid/control true competition in a tender leading to "Appreciable Adverse Effect on Competition" (AAEC) have been declared as an offence under the Competition Act, 2002, as amended by the Competition (Amendment) Act, 2007. Such practices should be severely discouraged with strong measures. In case of evidence of cartel formation, detailed cost analysis may be done by associating experts if necessary. Besides, suitable administrative actions can be resorted to, such as rejecting the offers, reporting the matter to trade associations, the Competition Commission or NSIC, etc., and requesting them, inter-alia, to take suitable strong actions against such firms. New firms may also be encouraged to get themselves registered for the subject goods to break the monopolistic attitude of the firms forming a cartel. Purchaser may debar the tenderers indulging in cartel formation/collusive bidding/bid rigging for a period of two years from participation in the tenders of the Purchaser.

36. **CONTACT DETAILS FOR QUERIES:**

In case of any clarifications regarding tender condition/TSP/specification, bidders are requested to contact the following person, before the closing date of the tender.

Technical	Ms. Sapna Dipu AGM/PIC(PSV)	+91 22 23763141	sdipu@mazdock.com
	Cdr. Yogesh Mahani DGM(PSV)	+91 22 23763214	ymahani@mazdock.com
Commercial	Mr. Prashant Pimple DGM(OTS)	+91 22 23763351	pspimple@mazdock.com
	Sagar Shende CM(C-PSV)	+91 22 23762750	sushende@mazdock.com

37. We look forward to receive your most competitive and reasonable offer against this tender.

Yours faithfully,

For MAZAGON DOCK SHIPBUILDERS LIMITED

Section-III Enclosures: -

Enclosure-1	General Conditions of Contract (GCC) for Goods and Services
Enclosure-2	Integrity Pact(IP)Format
Enclosure-3	Performance Security (PS) Bank Guarantee Format
Enclosure-4	RTGS format
Enclosure-5	Details for Remittance towards PS
Enclosure-6	Official Secret Act 1923

Enclosure-7	Land border declaration format
Enclosure-8	Non-Disclosure Agreement
Enclosure-9	Format for Declaration for local content (PPP) by local suppliers
Enclosure-10	TSP No P25-12/1001 Dated 13.05.2026 and Scope Document No PSV/SoW/2026 Rev. A dated 09.07.2026. (Copy attached as a part of tender)



ADDITIONAL TERMS & CONDITIONS

TENDER NO. GeM tender no GeM/2026/B/7769534 dated 10.07.2026 closing on 20.07.2026

ITEM: Turnkey Design, Construction and Delivery (Composite Supply of Ship Under HSN Code 8901) of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel

TYPE OF TENDER: Open Tender in Two Bid System.

Enclosure-11	Rate Sheet
--------------	------------

Enclosure-1

General Conditions of Contract (GCC) for Goods and Services

The word 'Purchaser' refers to MAZAGON DOCK SHIPBUILDERS LIMITED, (MDL), a Company registered under the Indian Companies Act, 1913 and it includes its successors or assignees. The word 'Bidder' (including the term 'tenderer', 'consultant', 'vendor' or 'service provider' in certain contexts) means any legal entity such as firm(s) of Proprietorship / Partnership Firm / Limited Liability Partnership / Private Limited / Limited company / Society registered under Society's Act / Statutory Bodies/ Consortium/ Joint Venture etc. participating in a procurement process.

The word 'Owner' means the person or authority with whom Mazagon Dock Shipbuilders Limited (Purchaser) has contracted to carry out work in relation to which orders are placed by the Purchaser on the Bidder/Supplier/Contractor under this contract for supply or manufacture of certain items and would include Department of Defence Production, Ministry of Defence, Government of India, the Indian Navy, the Coast Guard and any other specified authority.

1. Tenets of Interpretation:

Unless where the context requires otherwise, throughout the contract:

- (i) The heading of these conditions shall not affect the interpretation or construction thereof.
- (ii) Writing or written includes matter either whole or in part, in digital communications, manuscript, typewritten, lithographed, cyclostyled, photographed, or printed under or over signature or seal or digitally acceptable authentication, as the case may be.
- (iii) Words in the singular include the plural and vice-versa.
- (iv) Words importing the masculine gender shall be taken to include other genders, and words importing persons shall include any company or association or body of individuals, whether incorporated or not.
- (v) Terms and expression not herein defined shall have the meanings assigned to them in the contract Act, 1872 (as amended) or the Sale of Goods Act, 1930 (as amended) or the General Clauses Act, 1897 (as amended) or of INCOTERMS, (current edition published by the International Chamber of Commerce, Paris) as the case may be.
- (vi) Any reference to 'Goods' shall be deemed to include the incidental Works/ Services also.
- (vii) Any generic reference to GCC shall also imply a reference to TEF as well.
- (viii) In case of conflict, provisions of TEF shall prevail over those in GCC.
- (ix) Any reference to 'Contract' shall be deemed to include all other documents (inter-alia GCC, TEF).
- (x) Any reference to any legal Act, Government Policies or orders shall be deemed to include all amendments to such instruments, from time to time, till date.
- (xi) Fall Clause shall be expressly applicable in the case of Rate Contract.

2. Language of Contract:

Unless otherwise stipulated in TEF, the contract shall be written in the Official Language or English. All correspondence and other contract documents, which the parties exchange, shall



ADDITIONAL TERMS & CONDITIONS

TENDER NO. GeM tender no GeM/2026/B/7769534 dated 10.07.2026 closing on 20.07.2026

ITEM: Turnkey Design, Construction and Delivery (Composite Supply of Ship Under HSN Code 8901) of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel

TYPE OF TENDER: Open Tender in Two Bid System.

also be written/ translated accordingly in that language. For purposes of interpretation of the contract, the English documents/ translation shall prevail.

3. **Governing Laws and Jurisdiction:**

3.1 **Governing Laws and Jurisdiction:**

- (i) This Contract, its meaning and interpretation, and the relation between the Parties shall be governed by the Laws of India for the time being in force.
- (ii) Irrespective of the place of delivery, or the place of performance or the place of payments under the contract, the contract shall be deemed to have been made at the place from which the Purchase Order/Contract/Letter of Intent has been issued. The courts of such a place shall alone have jurisdiction to decide any dispute arising out or in respect of the contract.

3.2 **Changes in Laws and Regulations**

Unless otherwise stipulated in the contract, if after the last deadline for the bid submission (Techno-commercial), any law, regulation, ordinance, order or bye-law having the force of law is enacted, promulgated, abrogated, or changed in India (which shall be deemed to include any change in interpretation or application by the competent authorities) that subsequently affects the Delivery Date and/ or the contract Price, then such Delivery Date and/ or Contract Price shall be correspondingly increased or decreased, to the extent that the contractor has thereby been affected in the performance of any of its obligations under the contract. Notwithstanding the foregoing, such additional or reduced cost shall not be separately paid or credited if the same has already been accounted for in the price adjustment provisions where applicable.

4. **Confidentiality, Secrecy and IPR Rights:**

- (i) **IPR Rights:** All deliverables, outputs, plans, drawings, specifications, designs, reports, and other documents and software submitted by the contractor under this Contract shall become and remain the property of MDL and subject to laws of copyright and must not be shared with third parties or reproduced, whether in whole or part, without MDL's prior written consent. The contractor shall, not later than upon termination or expiration of this Contract, deliver all such documents and software to MDL, together with a detailed inventory thereof. The contractor may retain a copy of such documents and software but shall not use it for any commercial purpose.
- (ii) **Confidentiality:** All documents, drawings, samples, data, associated correspondence or other information furnished by or on behalf of MDL to the contractor, in connection with the contract, whether such information has been furnished before, during or following completion or termination of the contract, are confidential and shall remain the property of MDL and shall not, without the prior written consent of MDL neither be divulged by the contractor to any third party, nor be used by him for any purpose other than the design, procurement, or other services and work required for the performance of this Contract. If advised by MDL, all copies of all such information in original shall be returned on completion of the contractor's performance and obligations under this contract.
- (iii) **Secrecy:** If the Contract declares the subject matter of this Contract as coming under the Official Secrets Act, 1923 or if the contract is marked as "Secret", the contractor shall take all reasonable steps necessary to ensure that all persons employed in any connection with the contract, have acknowledged their



ADDITIONAL TERMS & CONDITIONS

TENDER NO. GeM tender no GeM/2026/B/7769534 dated 10.07.2026 closing on 20.07.2026

ITEM: Turnkey Design, Construction and Delivery (Composite Supply of Ship Under HSN Code 8901) of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel

TYPE OF TENDER: Open Tender in Two Bid System.

responsibilities and penalties for violations under the Official Secrets Act and any regulations framed thereunder.

(iv) **Obligations of the contractor:**

- a) Without MDL's prior written consent, the contractor shall not use the information mentioned above except for the sole purpose of performing this contract.
- b) The contractor shall treat and mark all information as confidential (or Secret – as the case may) and shall not, without the written consent of MDL, divulge to any person other than the person(s) employed by the contractor in the performance of the contract. Further, any such disclosure to any such employed person shall be made in confidence and only so far as necessary for such performance for this contract.
- c) Notwithstanding the above, the contractor may furnish to its holding company or its Subcontractor(s) such documents, data, and other information it receives from MDL to the extent required for performing the contract. In this event, the contractor shall obtain from such holding company/ Subcontractor(s) an undertaking of confidentiality (or secrecy – as the case may be) similar to that imposed on the contractor under the above clauses.
- d) The obligation of the contractor under sub-clauses above, however, shall not apply to information that:
 - (i) the contractor needs to share with the institution(s) participating in the financing of the contract;
 - (ii) now or hereafter is or enters the public domain through no fault of Contractor;
 - (iii) can be proven to have been possessed by the contractor at the time of disclosure and which was not previously obtained, directly or indirectly, from MDL; or
 - (iv) otherwise lawfully becomes available to the contractor from a third party that has no obligation of confidentiality.
- e) The above provisions shall not in any way modify any undertaking of confidentiality (or Secrecy – as the case may be) given by the contractor before the date of the contract in respect of the contract/ the Tender Document or any part thereof.
- f) The provisions of this clause shall survive completion or termination for whatever reason of the contract.

5. **Permits, Approvals and Licenses:**

Whenever the supply of Goods and incidental Works/ Services requires that the contractor obtain permits, approvals, and licenses from local public authorities, it shall be the contractor's sole responsibility to obtain these and keep these current and valid. Such requirements may include but not be restricted to export licence or environmental clearance if required. If requested by the contractor, MDL shall make its best effort to assist the contractor in complying with such requirements in a timely and expeditious manner, without any dilution of the Contractor's responsibility in this regard.

6. **Transfer of Title of Goods:**



ADDITIONAL TERMS & CONDITIONS

TENDER NO. GeM tender no GeM/2026/B/7769534 dated 10.07.2026 closing on 20.07.2026

ITEM: Turnkey Design, Construction and Delivery (Composite Supply of Ship Under HSN Code 8901) of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel

TYPE OF TENDER: Open Tender in Two Bid System.

- (i) Unless otherwise stated in the contract, notwithstanding any inspection and approval by the Inspecting Officer on the contractor's premises, or any payments made to the contractor, property in the Goods (and resultant rights and liabilities) shall not pass on to MDL until the Goods have been received, inspected, and accepted by the consignee. The Goods and every constituent part thereof, whether in the possession or control of the contractor, his agents or servants or a carrier, or the joint possession of the contractor, his agents or servants and MDL, his agents, or servants, shall remain in every respect at the risk of the contractor, until their actual delivery to a person stipulated in the contract as the interim consignee for despatch to the consignee. The Contractor shall be responsible for all loss, destruction, damage, or deterioration of or to the Goods from any cause whatsoever while the Goods after approval by the Inspecting Officer are awaiting despatch or delivery or are in the course of transit from the contractor to the consignee or, as the case may be, interim consignee. The Contractor shall alone be entitled and responsible for making claims against any carrier in respect of non-delivery, short delivery, mis-delivery, loss, destruction, damage, or deterioration of the Goods entrusted to such carrier by the contractor for transmission to the consignee or the interim consignee as the case may be.
- (ii) Provided that where, under the terms of the contract, the Goods are required to be delivered to an interim consignee for despatch to the consignee, the Goods shall be at MDL's risk after their delivery to the interim consignee.

7. **Extension of Delivery Period**

- (i) If at any time during the currency of the contract, the contractor encounters conditions hindering timely delivery of the Goods and performance of incidental Works/ Services, he shall promptly inform MDL in writing about the same and its likely duration. He must make a request to MDL for an extension of the delivery schedule. On receiving the contractor's communication, MDL shall examine the situation and, at its discretion, may agree to extend the delivery schedule, with or without liquidated damages and with and without denial clause by issuing an amendment to the contract.
- (ii) **Conditions for Extension of Delivery Period:** When the period of delivery is extended due to unexcused delay by the contractor, the amendment extending the delivery period shall, inter alia, be subject to the following conditions:
 - a. **Liquidated Damages:** MDL shall recover from the contractor, under the provisions of this clause, liquidated damages on the Goods and incidental Works/ Services, which the contractor has failed to deliver within the delivery period stipulated in the contract.
 - b. **Denial Clause:**
 - (i) No increases in price on account of any statutory increase in or fresh Imposition of GST, customs duty or on account of any other taxes/ duty/ cess/ levy), leviable in respect of the Goods and incidental Works/ Services stipulated in the said contract which takes place after the original delivery date, shall be admissible on such of the said Goods, as are delivered after the said date; and
 - (ii) Notwithstanding any stipulation in the contract for an increase in price on any other ground, including price variation clause or foreign exchange rate



ADDITIONAL TERMS & CONDITIONS

TENDER NO. GeM tender no GeM/2026/B/7769534 dated 10.07.2026 closing on 20.07.2026

ITEM: Turnkey Design, Construction and Delivery (Composite Supply of Ship Under HSN Code 8901) of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel

TYPE OF TENDER: Open Tender in Two Bid System.

variation, or any other variation clause, no such increase after the original delivery date shall be admissible on such goods delivered after the said date.

- (iii) Nevertheless, MDL shall be entitled to the benefit of any decrease in price on account of reduction in or remission of GST, customs duty or on account of any other Tax or duty or any other ground as stipulated in the price variation clause or foreign exchange rate variation or any other variation clause which takes place after the expiry of the original delivery date.

(iii) **Liquidated damages:** Please refer the relevant clauses of TSP & SOW

8. Defaults, Breaches & Termination of Contract:

(i) Termination due to Breach, Default, and Insolvency

a. **Defaults and Breach of Contract:** In case the contractor undergoes insolvency or receivership; neglects or defaults, or expresses inability or disinclination to honour his obligations relating to the performance of the contract or ethical standards or any other obligation that substantively affects MDL's rights and benefits under the contract, it shall be treated as a breach of Contract. Such defaults could include inter-alia:

(i) **Default in Performance and Obligations:** If the contractor fails to deliver any or all of the Goods or fails to perform any other contractual obligations (including Code of Integrity or obligation to maintain eligibility and Qualifications based on which contract was awarded) within the period stipulated in the contract or within any extension thereof granted by MDL.

(ii) **Insolvency:** If the contractor being an individual or if a firm, any partner thereof, shall at any time, be adjudged insolvent or shall have a receiving order or order for the administration of his estate made against him or shall take any proceeding for composition under any Insolvency Act for the time being in force or make any conveyance or assignment of his effects or enter into any assignment or composition with his creditors or suspend payment or if the firm be dissolved under the Partnership Act, or

(iii) **Liquidation:** if the contractor is a company being wound up voluntarily or by order of a Court or a Receiver, Liquidator or Manager on behalf of the Debenture-holders is appointed, or circumstances shall have arisen which entitle the Court or Debenture-holders to appoint a Receiver, Liquidator or Manager.

b. **Notice for Default:** As soon as a breach of contract is noticed, a show-cause 'Notice of Default' shall be issued to the contractor, giving two weeks' notice, reserving the right to invoke contractual remedies. After such a show-cause notice, all payments to the contractor would be temporarily withheld to safeguard needed recoveries that may become due on invoking contractual remedies.

c. **Terminations for Default:**

(i) Notice for Termination for Default: In the event of unsatisfactory resolution of 'Notice of Default' within two weeks of its issue as per sub-clause above, MDL if so decided, shall by written Notice of Termination for Default sent to the contractor, terminate the contract in whole or in part, without compensation to the contractor.



ADDITIONAL TERMS & CONDITIONS

TENDER NO. GeM tender no GeM/2026/B/7769534 dated 10.07.2026 closing on 20.07.2026

ITEM: Turnkey Design, Construction and Delivery (Composite Supply of Ship Under HSN Code 8901) of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel

TYPE OF TENDER: Open Tender in Two Bid System.

- (ii) Such termination shall not prejudice or affect the rights and remedies, including under sub-clause below, which have accrued and/ or shall accrue to MDL after that.
- (iii) Unless otherwise instructed by MDL, the contractor shall continue to perform the contract to the extent not terminated. All warranty obligations, if any, shall continue to survive despite the termination.

d. **Contractual Remedies for Breaches/Defaults or Termination for Default:** If there is an unsatisfactory resolution within this period, MDL shall take one; or more of the following contractual remedies.

- (i) Temporary withhold payments due to the contractor till recoveries due to invocation of other contractual remedies are complete.
- (ii) Call back any loaned property or advances of payment, if any, with the levy of interest at the prevailing rate (MIBID - Mumbai Interbank Bid Rate).
- (iii) Recover liquidated damages and invoke denial clause for delays.
- (iv) Encash and/ or Forfeit performance or other contractual securities.
- (v) Prefer claims against insurances, if any.
- (vi) Terminate contract for default, fully or partially including its right for Risk-and-Cost Procurement as per following sub-clause.
- (vii) **Risk and Cost Procurement:** In addition to termination for default, MDL shall be entitled, and it shall be lawful on his part, to procure Goods same to those terminated, with such terms and conditions and in such manner as it deems fit at the "Risk and Cost" of the contractor. Such 'Risk and Cost Procurement' must be contracted within one year from the breach of Contract. The Contractor shall be liable for any loss which MDL may sustain on that account provided the procurement, or, if there is an agreement to procure, such agreement is made. The Contractor shall not be entitled to any gain on such procurement, and the manner and method of such procurement shall be in the entire discretion of MDL. It shall not be necessary for MDL to notify the contractor of such procurement. It shall, however, be at the discretion of MDL to collect or not the security deposit from the firm/ firms on whom the contract is placed at the risk and cost of the defaulted firm.
Note: Regarding the Goods which are not readily available in the market and where procurement difficulties are experienced, the period for making risk procurement shall be nine months instead of six months provided above.
- (viii) Initiate proceedings in a court of law for the transgression of the law, tort, and loss, not addressable by the above means.

9. **Closure of Contract:**

The contract shall stand closed upon successful performance of all obligations by the firm, including completion of warrantee obligations and final payment. If no claim is received within 03 years from last supplies/services, then no claim shall be entertained thereafter.

10. **Communication and language for documentation**



ADDITIONAL TERMS & CONDITIONS

TENDER NO. GeM tender no GeM/2026/B/7769534 dated 10.07.2026 closing on 20.07.2026

ITEM: Turnkey Design, Construction and Delivery (Composite Supply of Ship Under HSN Code 8901) of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel

TYPE OF TENDER: Open Tender in Two Bid System.

Any letter, facsimile message, e-mail intimation or notice sent to the Bidder/Supplier/Contractor at the last known address mentioned in the offer / order shall be deemed to be valid communication for the purpose of the order/contract. Unless stated otherwise by the purchaser, Language for communication and all documentation shall be same, which the Purchaser has used, in the tender enquiry.

11. Preservation and maintenance:

Should any material require any preservation till its final installation/fitment, the detailed procedure (Long term and short term) for the same as also the time of interval after which the state of preservation needs to be reviewed is to be stated by the Bidder/Supplier/Contractor.

Further the de-preservation prior to the material/equipment being commissioned and the maintenance procedure together with its periodicity is also to be indicated by the Bidder / Supplier / Contractor.

12. Freight and insurance. Bidder shall quote for 'Door Delivery to Purchaser,' all charges towards door delivery viz. transport, Insurance charges etc. shall be borne by the Bidder / Supplier / Contractor.

13. Demurrage (Applicable for Goods): Storage, and Demurrage, fines etc. charges will be payable by the Bidder / Supplier / Contractor for all shipments in case of improper documentation, wrong declarations, error in weight measurements, packing list, invoice, late receipt of documents etc. i.e. for reasons which are not attributable to the purchaser.

14. Cancellation of tender

The Purchaser reserves the right to cancel/withdraw the tender in toto or part and or award the contract / order in full or part without assigning any reason whatsoever and without thereby incurring any liability to the affected Bidder or Bidders or any obligations to inform the affected Bidder or Bidders of the grounds for MDL action.

15. Purchaser's property.

All property (such as materials, drawings, documents etc.) issued by the Purchaser or any other individual or firm on behalf of the Purchaser in connection with the contract shall remain confidential, being the property of the Purchaser and the Bidder/Supplier/Contractor shall undertake to return all such property so issued and will be responsible for any or all loss thereof and damage thereto resulting from whatever causes and shall reimburse the Purchaser the full amount of loss and damage. On completion of work in any compartment / location of the purchaser's premises, the Bidder/Supplier/Contractor must ensure that the place is left in a reasonably clean state and all scrap is transferred to nearby scrap-bins.

16. Rejection of Materials: -If the Goods, or any portion thereof of the equipment found defective / rejected, the Supplier / Contractor shall collect the same from MDL's Stores, all incidental charges being borne by him (inclusive of Custom duty, if payable), within 30 days from the date of intimation to the Supplier / Contractor of such rejection. If not collected within 30 days, MDL shall recover storage charges @ 1 % per month maximum up to 5% of cost of rejected items. MDL reserves the right to dispose off the



ADDITIONAL TERMS & CONDITIONS

TENDER NO. GeM tender no GeM/2026/B/7769534 dated 10.07.2026 closing on 20.07.2026

ITEM: Turnkey Design, Construction and Delivery (Composite Supply of Ship Under HSN Code 8901) of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel

TYPE OF TENDER: Open Tender in Two Bid System.

rejected items at the end of a total period of six months in any manner to the best advantage to MDL and recover consequential damages maximum up to order value

17. **Risk purchase**

If the equipment / article / service or any portion thereof be not delivered / performed by the scheduled delivery date / period, any stoppage or discontinuation of ordered supply / awarded contract without written consent by Purchaser or not meeting the required quality standards the Purchaser shall be at liberty, without prejudice to the right of the Purchaser to recover Liquidated Damages / penalty as provided for in these conditions or to any other remedy for breach of contract, to terminate the contract either wholly or to the extent of such default. Amounts advanced or part thereof corresponding to the undelivered supply shall be recoverable from the Contractor / Bidder at the prevailing bank rate (Benchmark Prime Lending Rate (BPLR) by SBI) of interest.

The Purchaser shall also be at liberty to purchase, manufacture or supply from stock as it deems fit, other articles of the same to make good such default and/or in the event of the contract being terminated, the balance of the articles of the remaining to be delivered there under. Any excess over the purchase price, cost of manufacture or value of any articles supplied from the stock, as the case may be, over the contract price shall be recoverable from the Bidder / Supplier / Contractor.

18. **Recovery-adjustment provisions:**

Payment made under one order shall not be assigned or adjusted to any other order except to the extent agreed upon in writing by the Purchaser. During the currency of the contract, if any sum of money is payable by the Bidder / Supplier / Contractor the same shall be deducted from any sum then due or thereafter may become due to the Bidder / Supplier / Contractor under the contract or any other contract with the Purchaser.

19. **Indemnification**

The Bidder / Supplier / Contractor, his employees, licences, agents or Sub-Supplier / Sub-contractor, while on site of the Purchaser for the purpose of this contract, indemnifies the Purchaser against direct damage and/or injury to the property and/or the person of the Purchaser or that of Purchaser's employees, agents, Sub-Contractors / Suppliers occurring and to the extent caused by the negligence of the Bidder / Supplier / Contractor, his employees, licensees, agents or Sub-contractor by making good such damages to the property, or compensating personal injury and the total liability for such damages or injury shall be as mutually discussed and agreed to.

20. **Transfer of suppliers / contractor's rights:**

The Bidder / Supplier / Contractor shall not either wholly or partly sell, transfer, assign or otherwise dispose of the rights, liabilities and obligations under the contract between him and the Purchaser without prior consent of the Purchaser in writing.

21. **Subcontract and right of purchaser**

The Bidder / Supplier / Contractor under no circumstances undertake or subcontract any work / contract from or to any other Sub-contractor without prior written approval of the Competent Authority of Purchaser. In the event it is found that such practice has been indulged in, the contract is liable to be terminated without notice and the Bidder / Supplier / Contractor is debarred all from



ADDITIONAL TERMS & CONDITIONS

TENDER NO. GeM tender no GeM/2026/B/7769534 dated 10.07.2026 closing on 20.07.2026

ITEM: Turnkey Design, Construction and Delivery (Composite Supply of Ship Under HSN Code 8901) of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel

TYPE OF TENDER: Open Tender in Two Bid System.

future tender enquiries / work orders. However, in no circumstances a contractor is permitted to subcontract any part of the contract to the bidders who had quoted for the concerned tender.

22. **Patent rights** The Bidder / Supplier / Contractor shall hold harmless and keep the Purchaser indemnified against all claims arising as a result of infringement of any patent / copy rights on account of manufacture, sale or use of articles covered by the order.

23. **Agents/Agency Commission:**

The seller confirms and declares to the buyer that the seller is the original manufacturer or authorized distributor/stockiest of original manufacturer of the goods referred to in this contract and has not engaged any individual or firm, whether Indian or foreign whatsoever, to intercede, facilitate or in any way to recommended to the Buyer or any of its functionaries, whether officially or unofficially, to the award of the Contract / Purchase order to the Seller; nor has any amount been paid, promised or intended to be paid to any such individual or firm in respect of any such intercession, facilitation or recommendation.

The Seller agrees that if it is established at any time to the satisfaction of the Buyer that the present declaration is in any way incorrect or if at a later stage it is discovered by the Buyer that the Seller has engaged any such individual/firm, and paid or intended to pay any amount, gift, reward, fees, commission or consideration to such person, party, firm or institution, whether before or after the signing of this Contract / Purchase order, the Seller will be liable to refund that amount to the Buyer.

The seller will also be debarred from participation in any RFQ/Tender for new projects/program with Buyer for a minimum period of five years.

The buyer will also have a right to consider cancellation of the Contract either wholly or in part, without any entitlement or compensation to the Seller who shall in such event be liable to refund all payments made by the buyer in terms of the Contract along with interest at the rate of 2% per annum or 6% whichever is higher above LIBOR (London Inter Bank Offer Rate) (for foreign vendors) and base rate of SBI plus 2% (for Indian Vendors).

The Buyer will also have the right to recover any such amount from any contracts concluded earlier with Buyer.

24. **Use of undue influence / corrupt practices:** The Bidder / Supplier / Contractor undertakes that he has not used corrupt practices or used any undue influence which is not admissible as per Indian law to obtain contract/order or in doing any business with the purchaser.

If found that Bidder / Supplier / Contractor is involved in such wrong practices, then Purchaser is entitled to cancel the contract/s and all or any other contracts and then to recover from the Bidder / Supplier / Contractor the amounts of any loss arising from such contracts' cancellation, including but not limited to imposition of penal damages, forfeiture of Performance security, encashment of the Bank Guarantee and refund of the amounts paid by the Purchaser.

25. **Immunity of Government of India clause:** It is expressly understood and agreed by and between M/s. (Bidder / Supplier / Contractor) and Mazagon Dock Shipbuilders Limited, Dockyard Road, Mumbai - 400 010 (MDL) is entering into this Agreement



ADDITIONAL TERMS & CONDITIONS

TENDER NO. GeM tender no GeM/2026/B/7769534 dated 10.07.2026 closing on 20.07.2026

ITEM: Turnkey Design, Construction and Delivery (Composite Supply of Ship Under HSN Code 8901) of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel

TYPE OF TENDER: Open Tender in Two Bid System.

solely on its own behalf and not on the behalf of any person or entity. In particular, it is expressly understood and agreed that the Government of India is not a party to this Agreement and has no liabilities, obligations or rights hereunder. It is expressly understood and agreed that MDL is an independent legal entity with power and authority to enter into contracts solely in its own behalf under the applicable of Laws of India and general principles of Contract Law. The (Bidder / Supplier / Contractor) expressly agrees, acknowledges and understands that MDL is not an agent, representative or delegate of the Government of India. It is further understood and agreed that the Government of India is not and shall not be liable for any acts, omissions and commissions, breaches or other wrongs arising out of the contract. Accordingly, (Bidder / Supplier / Contractor) hereby expressly waives, releases and foregoes any and all actions or claims, including cross claims, impleader claims or counter claims against the Government of India arising out of this contract and covenants not to sue Government of India in any manner, claim, cause of action or thing whatsoever arising of or under this Agreement.

26. Export Licence (Applicable for Goods and Services)

The export licenses that may be required for delivery of the various items/equipment to MDL shall be arranged by the Bidder / Supplier / Contractor from the concerned authorities in their country without any time and cost implications on the Purchaser

27. Banned or de-listed contractors / suppliers.

The Bidder / Supplier / Contractor declares that they being Proprietors / Directors / Partners have not been any time individually or collectively blacklisted or banned or de-listed by any Government or quasi Government agencies or PSUs. If a bidder's entities as stated above have been blacklisted or banned or de-listed by any Government or quasi Government agencies or PSUs, this fact must be clearly stated and it may not necessarily be a cause for disqualifying him.

28. Duty of personnel of supplier/contractor

MDL being a Defence Public Sector Undertaking, Bidder / Supplier / Contractor undertakes that their personnel deployed in connection with the entrusted work will not indulge in any activities other than the duties assigned to them.

29. Dispute resolution mechanism and arbitration

(a) Dispute resolution mechanism(DRM)

i) Any dispute/differences between the parties arising out of and in connection with the contract shall be settled amicably by mutual negotiations at HoS/HoD level.

ii) In case of non-settlement by (i) above, if at any time, before, during or after the contract period any unsettled claim, dispute or difference arose between the parties, upon or in relation to or in connection with or in any way touching or concerning this tender/agreement/order/contract, the same shall be referred to the concerned Functional Director.

The Functional Director shall then nominate an Executive of the rank of General Manager whom he thinks fit and competent or a Committee of Executives who/which shall then scrutinise the claims/disputes that have been referred to the concerned functional Director and make efforts for amicable settlements by mutual discussions/negotiations.



ADDITIONAL TERMS & CONDITIONS

TENDER NO. GeM tender no GeM/2026/B/7769534 dated 10.07.2026 closing on 20.07.2026

ITEM: Turnkey Design, Construction and Delivery (Composite Supply of Ship Under HSN Code 8901) of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel

TYPE OF TENDER: Open Tender in Two Bid System.

iii) In case no amicable settlement is arrived by (ii) above within a period of three months, then the contractor shall approach Public Grievance Cell and address the disputes as per the provisions made under the relevant clause of the contract.

iv) In case the issues/disputes do not get settled within a period of six months from the date of submission of the dispute to the Grievance Cell, then the contractor may invoke Arbitration Clause of the contract.

(b) Arbitration (Applicable for Goods and Services)

Unresolved disputes/differences, if any, shall then be settled by arbitration. The Arbitration proceedings shall be conducted at Mumbai, India, in English Language, under the Arbitration and Conciliation Act, 1996.

MDL prefers to have arbitration through Institutes such as Indian Council of Arbitration (ICA)/ICA-DR, with the mutual consent of the parties.

In case of unresolved difference/dispute between the Purchaser and Supplier, being Central Public Sector Enterprises/Central Govt. departments, the disputes shall be resolved firstly through mutual discussion or through the empowered agencies of the Govt. or through arbitration by reference by either party to the department of Public Enterprises, as per extant guidelines. If disputes/differences remain unresolved/unexecuted, the same shall be referred first to the Cabinet Secretariat and then, if necessary to the PMO.

Any changes to arbitration clause must be vetted by HOD (Legal) before incorporation in contract/PO.

30. **Jurisdiction of courts:** All contracts shall be deemed to have been wholly made in Mumbai and all claims there under are payable in Mumbai City and it is the distinct condition of the order that no suit or action for the purpose of enforcing any claim in respect of the order shall be instituted in any Court other than that situated in Mumbai City, Maharashtra State, India i.e. courts in Mumbai shall alone have jurisdiction to decide upon any dispute arising out of or in respect of the contract.

31. **SAFETY:-**

The Contractor / Bidder must observe all safety precautions in connection with the work to be performed by him, his agents or labourers. In the event of any accident happening in our yard resulting in loss of lives or otherwise damaging any part of the property, the contractor shall be required to make good the loss to the Company and shall be responsible for all consequences that follow from the loss and / or injuries to the persons involved in such accidents. The standard of safety to be

observed in the Company shall be decided by the Executive-in-Charge Safety, or any Executive appointed for the purpose before the commencement of work in the yard. It will be essential for contractor to ascertain the standard precautions which contractor is required to observe in discharging his work as per the standards prevalent in MDL. The decision of MDL in matters concerning Safety shall be final and binding on the contractor. The Contractor / Bidder shall be required to provide his workmen with Boiler Suits of any suitable colour other than blue or white, with the Name of the Contractor in prominent letters on the boiler suits along with personal protection gears like safety shoes, hand gloves etc. workmen of the Contractor / Bidder must wear throughout their working while in the premises of MDL. Contractor's workmen working without safety gears are to be disallowed for work.

32. **Force Majeure.**



ADDITIONAL TERMS & CONDITIONS

TENDER NO. GeM tender no GeM/2026/B/7769534 dated 10.07.2026 closing on 20.07.2026

ITEM: Turnkey Design, Construction and Delivery (Composite Supply of Ship Under HSN Code 8901) of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel

TYPE OF TENDER: Open Tender in Two Bid System.

If at any time during the execution of the goods / service order, the performance in whole or in part by either Purchaser or and by the Bidder(s) / Supplier(s) / Contractor(s) is / are delayed by any reason of force majeure situations such as acts of civil war, civil commotion, sabotage, hostilities, war, fires, explosions, epidemics, natural calamities like floods, earthquakes, volcanoes, storms, acts of God and laws of respective governments or any other causes beyond the control of either parties, hereinafter referred to as "events", provided notice of the occurrence of such event/s is / are communicated by either party, to the other party within 21 days from the date of occurrence thereof, neither party shall by reason such events be entitled to terminate the contract nor shall either party have any claim for damages against the other in respect of such non-performance and or delay in performance of the contract / order. Executions on either side shall be resumed as soon as practicable after such event has come to an end or ceased to exist and the decision of Purchaser as to whether activities can resume or not, shall be conclusive and final. Occurrence of the events to be certified by Chamber of Commerce / Indian High Commission or Embassies / Government in that Country.

The performance in whole or in part under the captioned tender / contract is prevented or delayed by reason of any such event for a period exceeding sixty days either party may at its option terminate the contract / further processing of the tender. The relative obligations of both the parties remain suspended during the actual period of force majeure.

The Purchaser may extend the delivery schedule as mutually agreed, on receipt of written communication from the Bidder / Supplier / Contractor regarding occurrence of 'Force Majeure' conditions, but not exceeding six months from the scheduled delivery date. If the 'Force Majeure' conditions extend beyond this period, the Purchaser shall have the right to cancel the order without any financial implication to the Purchaser or on terms mutually agreed to.

33. Code of Integrity in Public Procurement

Procuring authorities (including indenter) as well as bidders, suppliers, contractors and consultants should observe the highest standard of ethics and should not indulge in the following prohibited practices, either directly or indirectly, at any stage during the procurement process or during execution of resultant contracts:

33.1 Corrupt practice

Making offers, solicitation or acceptance of bribe, rewards or gifts or any material benefit, in exchange for an unfair advantage in the procurement process or to otherwise influence the procurement process or contract execution.

33.2 Fraudulent practice

Any omission or misrepresentation that may mislead or attempt to mislead so that financial or other benefits may be obtained or an obligation avoided. This includes making false declaration or providing false information for participation in a tender process or to secure a contract or in execution of the contract.

33.3 Anti-competitive practice

Any collusion, bid rigging or anti-competitive arrangement, or any other practice coming under the purview of The Competition Act, 2002, between two or more bidders, with or without the knowledge of MDL, that may impair the transparency, fairness and



ADDITIONAL TERMS & CONDITIONS

TENDER NO. GeM tender no GeM/2026/B/7769534 dated 10.07.2026 closing on 20.07.2026

ITEM: Turnkey Design, Construction and Delivery (Composite Supply of Ship Under HSN Code 8901) of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel

TYPE OF TENDER: Open Tender in Two Bid System.

the progress of the procurement process or to establish bid prices at artificial, non-competitive levels.

33.4 Coercive practice

Harming or threatening to harm, persons or their property to influence their participation in the procurement process or affect the execution of a contract

33.5 Conflict of interest

Participation by a bidding firm or any of its affiliates that are either involved in the consultancy contract to which this procurement is linked; or if they are part of more than one bid in the procurement; or if the bidding firm or their personnel have relationships or financial or business transactions with any official of MDL who are directly or indirectly related to tender or execution process of contract; or improper use of information obtained by the (prospective) bidder from MDL with an intent to gain unfair advantage in the procurement process or for personal gain.

33.6 Obstructive practice

Materially impede MDL's investigation into allegations of one or more of the above mentioned prohibited practices either by deliberately destroying, falsifying, altering; or by concealing of evidence material to the investigation; or by making false statements to investigators and/or by threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation; or by impeding MDL's rights of audit or access to information



ADDITIONAL TERMS & CONDITIONS

TENDER NO. GeM tender no GeM/2026/B/7769534 dated 10.07.2026 closing on 20.07.2026

ITEM: Turnkey Design, Construction and Delivery (Composite Supply of Ship Under HSN Code 8901) of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel

TYPE OF TENDER: Open Tender in Two Bid System.

Enclosure-1

GENERAL CONDITIONS OF CONTRACT (GCC) ACCEPTANCE FORMAT

To,

MAZAGON DOCK SHIPBUILDERS LIMITED

OUTSOURCING DEPARTMENT.

GCC CLAUSE No.	BIDDER'S REMARK	GCC CLAUSE No.	BIDDER'S REMARK
	Acc/Dev		Acc/Dev
1		18	
2		19	
3		20	
4		21	
5		22	
6		23	
7		24	
8		25	
9		26	
10		27	
11		28	
12		29	
13		30	
14		31	
15		32	
16		33	
17			

COMPANY'S NAME & ADDRESS:

SIGNATURE:

DATE:

NAME:

DESIGNATION:

BIDDER'S COMPANY SEAL:

NOTE:

1. Bidder should carefully read the General Conditions of Contract (GCC) at ASLA clause 34 prior to filling up this acceptance format.
2. This format should be properly filled, signed and bidder shall upload the scanned copy of the same online.
3. Bidder(s) should indicate "ACC" for Accepted, "DEV" for Deviation Taken for each clause number in the above table.

Bidder(s) to attach Separate Sheet indicating all relevant details such as Number & description of the Clause, Reasons for Deviation and Alternative suggested for any deviations taken by them.



ADDITIONAL TERMS & CONDITIONS

TENDER NO. GeM tender no GeM/2026/B/7769534 dated 10.07.2026 closing on 20.07.2026

ITEM: Turnkey Design, Construction and Delivery (Composite Supply of Ship Under HSN Code 8901) of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel

TYPE OF TENDER: Open Tender in Two Bid System.

Enclosure-2

Integrity Pact (IP) Format

Mazagon Dock Shipbuilders Limited (MDL) hereinafter referred to as **"The Principal/Buyer"**

And.....hereinafter referred to as **"The Bidder/ Contractor"**

Preamble

The Principal/Buyer intends to award, under laid down organizational procedures, contract/s forThe Principal/Buyer values full compliance with all relevant laws of the land rules, regulations, economic use of resources and of fairness / transparency in its relations with its Bidder(s) and /or Contractor(s). In order to achieve these goals, the Principal/Buyer will appoint an Independent External Monitor (IEM), who will monitor the tender process and the execution of the contract for compliance with the principles mentioned above.

Section 1 - Commitments of the Principal/Buyer:

- | | | |
|-----|----|---|
| (1) | | The Principal/Buyer commits itself to take all measures necessary to prevent corruption and to observe the following principles: |
| | a) | No employee of the Principal/Buyer, personally or through family members, will in connection with the tender for, or the execution of a contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to. |
| | b) | The Principal/Buyer will during the tender process treat all Bidder(s) with equity and reason. The Principal/Buyer will in particular, before and during the tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential/additional information through which the Bidder(s) could obtain an advantage in relation to the tender process or the contract execution. |
| | c) | The Principal/Buyer will exclude from the process all known prejudiced persons. |
| | d) | The Principal/Buyer undertakes to scrupulously follow the tender containing Standard Terms & Conditions (STAC) and General Terms & Conditions (GT&C) in respect of procurement contracts for goods, services and civil works. |
| (2) | | If the Principal/Buyer obtains information on the conduct of any of its employees which is a criminal offence under the relevant Anti Corruption Laws of India, or if there be a substantive suspicion in this regard, the Principal/Buyer will inform the Chief Vigilance Officer, MDL and in addition can initiate disciplinary actions. |

Section 2 - Commitments of the Bidder(s)/Contractor(s):

- | | | |
|-----|-----|---|
| (1) | | The Bidder(s)/Contractor(s) commit himself to take all measures necessary to prevent corruption. He commits himself to observe the following principles during his participation in the tender process and during the contract execution. |
| | a) | The Bidder(s)/Contractor(s) will not, directly or through any other persons or firm, offer promise or give to any of the Principal/Buyer's employees involved in the tender process or the execution of the contract or to any third person any material or other benefit which he/she is not legally entitled to, in order to obtain in exchange any advantage or any kind whatsoever during the tender process or during the execution of the contract. |



ADDITIONAL TERMS & CONDITIONS

TENDER NO. GeM tender no GeM/2026/B/7769534 dated 10.07.2026 closing on 20.07.2026

ITEM: Turnkey Design, Construction and Delivery (Composite Supply of Ship Under HSN Code 8901) of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel

TYPE OF TENDER: Open Tender in Two Bid System.

b)	The Bidder(s)/Contractor(s) will not enter with other Bidders into any undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process.
c)	The Bidder(s)/Contractor(s) will not commit any offence under the relevant Anti-Corruption Laws of India; further the Bidder(s)/Contractor(s) will not use improperly, for purposes of competition or personal gain, or pass on to other, any information or document provided by the Principal/Buyer as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.
d)	The Bidder(s)/Contractor(s) of foreign origin shall disclose the name and address of the Agents/representatives in India, if any. Similarly, the Bidder(s)/Contractor(s) of Indian Nationality shall furnish the name and address of the foreign principals, if any. All payments made to the Indian Agent/representative have to be in Indian Rupees only. Further details as mentioned in the "Guidelines of Indian Agents of Foreign suppliers" shall be disclosed by the Bidders(s)/Contractor(s). Copy of the "Guidelines on Indian Agents of Foreign Suppliers" as annexed and marked as Annexure-A.
e)	The Bidder(s)/Contractor(s) will when presenting his bid, disclose any and all payments he has made, is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract.
f)	The Bidder (s)/Contractor(s), their agents, representatives shall not do such things so as to interfere with the procedures laid down in the Principal/Buyer's tender containing the Standard Terms and Conditions (STAC) and General Terms and Conditions (GT&C) in respect of procurement contracts for goods, services and civil works.
g)	The Bidder commits to refrain from giving any complaint directly or through any other manner without supporting it with full and verifiable facts.
(2)	The Bidder(s)/Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.

Section 3 - Disqualification from tender process and exclusion from future contracts:

	If the Bidder(s)/Contractor(s) before contract award or during execution of Contract has committed a transgression through a violation of Section 2, above or in any other form such as to put his reliability or credibility as Bidder(s) in question, the Principal/Buyer is entitled to disqualify the Bidder(s)/Contractor(s) from the tender process or to terminate the contract, if already signed for such reason, as per the procedure mentioned in the "Guidelines on Banning of business dealings" Copy of the "Guidelines on Banning of business dealings" is annexed and marked as Annexure-B.
1)	If the Bidder(s)/Contractor(s) has committed a transgression through a violation of Section 2 such as to put his reliability or credibility into question, the Principal/Buyer is entitled also to exclude the Bidder(s)/Contractor(s) from future contract award processes. The imposition and duration of the exclusion will be determined by the severity



ADDITIONAL TERMS & CONDITIONS

TENDER NO. GeM tender no GeM/2026/B/7769534 dated 10.07.2026 closing on 20.07.2026

ITEM: Turnkey Design, Construction and Delivery (Composite Supply of Ship Under HSN Code 8901) of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel

TYPE OF TENDER: Open Tender in Two Bid System.

		of the transgression. The severity will be determined by the circumstances of the case, in particular the number of transgressions, the position of the transgressors within the company hierarchy of the Bidder(s) and the amount of the damage. The exclusion will be imposed for a minimum of <u>six</u> months and maximum of <u>five</u> years, which may be further extended at the discretion of the Principal/Buyer.
	2)	A transgression is considered to have occurred, if the Principal/Buyer after due consideration of the available evidence, concludes that no reasonable doubt is possible.
	3)	The Bidder (s) accepts and undertakes to respect and uphold the Principal/Buyer's absolute right to resort to and impose such exclusion and further accepts and undertakes not to challenge or question such exclusion on any ground, including the lack of any hearing before the decision to resort to such exclusion is taken. This undertaking is given freely and after obtaining legal advice.
	4)	If the Bidder(s)/Contractor(s) can prove that he has restored/ recouped the damage caused by him and has installed a suitable corruption prevention system, the Principal/Buyer may revoke the exclusion prematurely.

Section 4 – Sanctions for Violation:

(1)	Any breach of the aforesaid provisions by the Bidder or any one employed by him or acting on his behalf (whether with or without the knowledge of the Bidder) or the commission of any offence by the Bidder or any one employed by him or acting on his behalf, as defined in Chapter IX of the Indian Penal Code, 1860 or the Prevention of Corruption Act 1988 or any other Act enacted for the prevention of corruption shall entitle the Principal/Buyer to take all or any one of the following actions, wherever required –
a)	To immediately call off the pre-contract negotiations without assigning any reason or giving any compensation to the Bidder. However, the proceedings with the other Bidder (s) would continue.
b)	The Earnest Money Deposit/Security Deposit/Performance Bond shall stand forfeited either fully or partially, as decided by the Principal/Buyer, and the Principal/Buyer shall not be required to assign any reason there for.
c)	To immediately cancel the contract, if already signed, without giving any compensation to the Bidder.
d)	To recover all sums already paid by the Principal/Buyer, in case of an Indian Bidder with interest thereon at 2% higher than the prevailing Base Rate of SBI, and in case of a Bidder from a country other than India with interest thereon at 2% higher than the LIBOR. If any outstanding payment is due to the Bidder from the Buyer in connection with any other contract for any other Defence stores, such outstanding payment could also be utilized to recover the aforesaid sum and interest.
e)	To en-cash the advance Bank Guarantee and Performance Bond/Warranty bond, if furnished by the Bidder, in order to recover the payments, already made by the Principal/Buyer, along with interest.
f)	To cancel all or any other contracts with the Bidder.
g)	To debar the Bidder from entering into any bid from Principal/Buyer for a minimum period of five years, which may be further extended at the discretion of the Principal/Buyer.



ADDITIONAL TERMS & CONDITIONS

TENDER NO. GeM tender no GeM/2026/B/7769534 dated 10.07.2026 closing on 20.07.2026

ITEM: Turnkey Design, Construction and Delivery (Composite Supply of Ship Under HSN Code 8901) of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel

TYPE OF TENDER: Open Tender in Two Bid System.

	h)	To recover all sums paid in violation of this Pact by Bidder(s) to any middleman or agent or broker with a view to securing the contract.
	i)	If the Bidder or any employee of the Bidder or any person acting on behalf of the Bidder, either directly or indirectly, is closely related to any of the officers of the Buyer, or alternatively, if any close relative of an officer of the Buyer has financial interest/stake in the Bidder's firm, the same shall be disclosed by the Bidder at the time of filing of tender. Any failure to disclose the interest involved shall entitle the Buyer to rescind the contract without payment of any compensation to the Bidder.
		The term 'close relative' for this purpose would mean spouse whether residing with the Principal/Buyer's employee/employees or not, but not include a spouse separated from the Principal/Buyer's employee/employees by a decree or order of a competent court; son or daughter or step son or step daughter and wholly dependent upon Principal/Buyer's employee/employees, but does not include a child or step child who is no longer in any way dependent upon the Principal/Buyer's employee/employees or of whose custody the Principal/Buyer's employee/employees has been deprived of by or under any law; any other person related, whether by blood or marriage, to the Principal/Buyer's employee/employees or to the Principal/Buyer's employee/employees wife or husband and wholly dependent upon Principal/Buyer's employee/employees.
	j)	The Bidder shall not lend to or borrow any money from or enter into any monetary dealings or transactions, directly or indirectly, with any employee of the Principal/Buyer, and if he does so, the Principal/Buyer shall be entitled forthwith to rescind the contract and all other contracts with the Bidder. The Bidder shall be liable to pay compensation for any loss or damage to the Principal/Buyer resulting from such rescission and the Principal/Buyer shall be entitled to deduct the amount so payable from the money(s) due to the Bidder.
	k)	In cases where Irrevocable Letters of Credit have been received in respect of any contract signed by the Principal/Buyer with the Bidder, the same shall not be opened.
(2)		The decision of the Principal/Buyer to the effect that a breach of the provisions of this Integrity Pact has been committed by the Bidder shall be final and binding on the Bidder, however, the same Bidder can approach the Monitor(s) appointed for the purposes of this Pact.

Section 5 - Previous Transgression:

(1)	The Bidder declares that no previous transgressions occurred in the last three years with any other company in any country conforming to the anti-corruption approach or with any other public sector enterprise in India that could justify his exclusion from the tender process.
(2)	If the bidder makes incorrect statement on this subject, he can be disqualified from the tender process or further action can be taken.

Section 6 - Equal treatment of all Bidders/Contractor(s)/Subcontractors:

(1)	The Bidder(s)/Contractor(s) undertake(s) to demand from all subcontractors a commitment in conformity with this integrity Pact, and to submit it to the Principal before contract signing.
-----	--



ADDITIONAL TERMS & CONDITIONS

TENDER NO. GeM tender no GeM/2026/B/7769534 dated 10.07.2026 closing on 20.07.2026

ITEM: Turnkey Design, Construction and Delivery (Composite Supply of Ship Under HSN Code 8901) of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel

TYPE OF TENDER: Open Tender in Two Bid System.

2)	The Principal/Buyer will enter into agreements with identical conditions as this one with all bidders, contractors and subcontractors.
(3)	The Principal/Buyer will disqualify from the tender process all bidders who do not sign this Pact or violate its provisions.

Section 7 - Criminal charges against violation Bidder(s)/Contractor(s)/ Subcontractor(s):

(1)	If the Principal/Buyer obtains knowledge of conduct of a Bidder, Contractor or subcontractor, or of an employee or a representative or an associate of a Bidder, Contractor or subcontractor which constitutes corruption or if the Principal has substantive suspicion in this regard, the Principal/Buyer will inform the same to the Chief Vigilance Officer, MDL.
-----	---

Section 8 - Independent External Monitor/Monitors:

(1)	The Principal/Buyer appoints competent and credible independent External Monitor for this Pact. The task of the Monitor is to review independently and objectively whether and to what extent the parties comply with the obligations under this agreement.
(2)	The Monitor is not subject to instructions by the representatives of the parties and performs his functions neutrally and independently. He reports to the Chairman & Managing Director of the Principal/Buyer.
(3)	The Bidder(s)/Contractor(s) accepts that the Monitor has the right to access without restriction to all project documentation of the Principal/Buyer including that provided by the Contractor. The Contractor will also grant the Monitor, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his project documentation. The same is applicable to Subcontractors. The Monitor is under contractual obligation to treat the information and documents of the Bidder(s)/Contractor(s)/Subcontractor(s) with confidentiality.
(4)	The Principal/Buyer will provide to the Monitor sufficient information about all meetings among the parties related to the Project provided such meetings could have an impact on the contractual relations, between the Principal/Buyer and the Contractor. The parties offer to the Monitor the option to participate in such meetings.
(5)	As soon as the Monitor notices, or believes to notice, a violation of this agreement, he will so inform the Management of the Principal/Buyer and request the Management to discontinue or take corrective action, or to take other relevant action. The Monitor can in this regard submit non-binding recommendations. Beyond this, the Monitor has no right to demand from the parties that they act in a specific manner, refrain from action or tolerate action. However, the Monitor shall give an opportunity to the Bidder(s)/Contractor(s) to present its case before making its recommendation to the Principal/Buyer.
(6)	The Monitor will submit a written report to the Chairman & Managing Director of the Principal within 8 to 10 weeks from the date of reference or intimation to him by the Principal/Buyer and, should the occasion arise, submit proposals for correcting problematic situations.
(7)	Monitor shall be entitle to compensation on the same terms as being extended to / provided to Independent Directors on the Board of Principal/Buyer.
(8)	If the Monitor has reported to the Chairman & Managing Director of the Principal,



ADDITIONAL TERMS & CONDITIONS

TENDER NO. GeM tender no GeM/2026/B/7769534 dated 10.07.2026 closing on 20.07.2026

ITEM: Turnkey Design, Construction and Delivery (Composite Supply of Ship Under HSN Code 8901) of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel

TYPE OF TENDER: Open Tender in Two Bid System.

a substantiated suspicion of an offence under relevant Anti-Corruption Laws of India and the Chairman & Managing Director of the Principal/Buyer has not, within the reasonable time taken visible action to proceed against such offence or reported it to the Chief Vigilance Officer, the Monitor may also transmit this information directly to the Central Vigilance Commissioner, Government of India.

(9) The word 'Monitor' would include both singular and plural.

Section 9 - Pact Duration:

This pact begins when both parties have legally signed it. It expires for the Contractor **12 months** after the last payment under the contract and for all other Bidders **06 months** after the contract has been awarded.

If any claim is made / lodged during this time, the same shall be binding and continue to be valid despite the lapse of this pact as specified above unless it is discharged / determined by Chairman & Managing Director of the Principal/Buyer.

Section 10 - Other provisions:

- (1) This agreement is subject to Indian Law, place of performance and jurisdiction is the Registered Office of the Principal/Buyer, i.e. Mumbai (For MDL). The Arbitration clauses provided in the main tender document/ contract shall not be applicable for any issue/dispute arising under this Integrity pact.
- (2) Changes and supplements as well as termination notices need to be made in writing. Side agreements have not been made.
- (3) If the Contractor is a partnership or a consortium, this agreement must be signed by all partners or consortium members.
- (4) Should one or several provisions of this agreement turn out to be invalid, the remainder of this agreement remains valid. In this case, the parties will strive to come to an agreement to their original intentions.

Section 11 - Fall Clause:

"The Bidder undertakes that it has not supplied/is not supplying similar products/ systems or subsystems at a price lower than that offered in the present bid in respect of any other Ministry/Department of the Government of India or PSU and if it is found at any stage that similar product/systems or sub systems was supplied by the Bidder to any other Ministry/Department of the Government of India or a PSU at a lower price, then that very price, with due allowance of elapsed time, will be applicable to the present case and the difference in the cost would be refunded by the Bidder to the Principal/Buyer, if the contract has already been concluded."

For & on behalf of
Mazagon Dockshipbuilders Limited

For & on behalf of
Bidder/Contractor

(Office Seal)

(Office Seal)

Place _____

Date _____

Witness 1:

Witness 2:

(Name & Address)

(Name & Address)



ADDITIONAL TERMS & CONDITIONS

TENDER NO. GeM tender no GeM/2026/B/7769534 dated 10.07.2026 closing on 20.07.2026

ITEM: Turnkey Design, Construction and Delivery (Composite Supply of Ship Under HSN Code 8901) of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel

TYPE OF TENDER: Open Tender in Two Bid System.

Enclosure-3

Performance Security (PS) Bank Guarantee Format

(ILLUSTRATIVE FORMAT)

(On Non-Judicial stamp paper of value Rs. 500/-. However, the value of stamp paper to be confirmed from Legal Department, MDL.)

IN CONSIDERATION OF MAZAGON DOCK SHIPBUILDERS LIMITED, a company incorporated under the Companies Act 1956 and having its registered office at Dockyard Road, Mumbai 400010 (hereinafter referred to as the "the Purchaser" which expression shall, unless it be repugnant or contrary to the subject or context thereof, be deemed to mean and include its successors and assigns) having placed an order on Messers a partnership firm/sole proprietor business/a company registered under the Companies Act, 1956 having its office at(hereinafter called " the Contractor/ Supplier" which expression shall, unless it be repugnant or contrary to the subject or context thereof, be deemed to mean and include its successors and assigns) vide order No..... dated..... (hereinafter called "the order" which expression shall include any amendments/alterations to "the order" issued by "the Purchaser") for the supply , delivery at site, installation and commissioning of certain equipment, item/services/civil works etc. as stated in the said Order and the Purchaser having agreed with the Contractor/Supplier to accept a Bank Guarantee in lieu of Performance Security payable under the said order for the fulfillment and performance of the said order, We, Bank having office at (hereinafter referred to as "the Bank" which expression shall include its successors and assigns) hereby agree to pay to the Purchaser without any demur on first demand an amount not exceeding Rs..... (Rupees.....only) being 5% (10% in case of Capital Procurement) of the order value against any loss or damage, costs, charges and expenses caused to or suffered by the Purchaser by reason of non performance and non-fulfillment or for any breach on the part of the Contractor / Supplier of any of the terms and conditions of the said order.

2. We, Bank further agree that the Purchaser shall be sole judge whether the said Contractor/Supplier has failed to perform or fulfil the said order in terms thereof or committed breach of any terms and conditions of the order and the extent of loss, damage, cost, charges and expenses suffered or incurred or would be suffered or incurred by the Purchaser on account thereof and we waive in the favour of the Purchaser all the rights and defences to which we as guarantors may be entitled to.

3. We, Bank further agree that the amount demanded by the Purchaser as such shall be final and binding on the Bank as to the Bank 's liability to pay and the amount demanded and the Bank undertake to pay the Purchaser the amount so demanded on first demand and without any demur notwithstanding any dispute raised by the Contractor/Supplier or any suit or other legal proceedings including arbitration pending before any court, tribunal or arbitrator relating thereto, our liability under this guarantee being absolute and unconditional.

4. We, Bank further agree with the Purchaser that the Purchaser shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said order/or to extend time of performance by the Supplier from time to time or to postpone for any time to time any of the powers exercisable by the Purchaser against the Contractor/ Supplier and to forbear to enforce any of the terms and conditions relating to the order and we shall not be



ADDITIONAL TERMS & CONDITIONS

TENDER NO. GeM tender no GeM/2026/B/7769534 dated 10.07.2026 closing on 20.07.2026

ITEM: Turnkey Design, Construction and Delivery (Composite Supply of Ship Under HSN Code 8901) of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel

TYPE OF TENDER: Open Tender in Two Bid System.

relieved from our liability by reason of any such variation or extension being granted to the Contractor/ Supplier or for any forbearance, act or omission on the part of the Purchaser or any indulgence by the Purchaser to the Contractor/Supplier or by any such matter or things whatsoever which under the law relating to sureties would have the effect of relieving us.

5. We, Bank further undertake not to revoke this guarantee during its currency except with the previous consent of the Purchaser in writing.

6. We, Bank also agree that the Bank's liability under this guarantee shall not be affected by any change in the constitution of the Contractor / Supplier or dissolution or winding up of the business of the contractor/ supplier.

7. Notwithstanding anything contained herein above:

i) Our liability under this guarantee shall not exceed Rs.....

ii) This Bank Guarantee shall be valid upto and including; and

iii) We are liable to pay the guarantee amount or any part thereof under this Bank Guarantee only and only if you serve upon us a written claim or demand on or before(validity + 60 days from the date of expiry of this guarantee).

8. This Guarantee shall be governed by Indian laws and the Courts at Mumbai, India shall have the exclusive jurisdiction.

IN WITNESS WHEREOF the Bank has executed this document on this.....day of

For Bank
(by its constituted attorney)

(Signature of a person authorised
to sign on behalf of "the Bank")



ITEM: Turnkey Design, Construction and Delivery (Composite Supply of Ship Under HSN Code 8901) of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel

TYPE OF TENDER: Open Tender in Two Bid System.

Enclosure-4

RTGS Format

(ILLUSTRATIVE FORMAT)

1. Supplier's / Vendor's Name:

[illegible]

2. Supplier's / Vendor's Name as per Bank Records:

[illegible]

3A. Supplier's Code					

--	--	--	--	--

3B. Supplier's PAN Number:

[illegible]

Quoting PAN No. in all the e-returns has become 100% mandatory w.e.f. 14-02-2008 hence, ensure to fill-up this and also send a photocopy of PAN duly self-attested. If there is any difference between the name given in the supplier's name and name given in the PAN card, then a note to explain the reason for the difference and the correlation between both.

4. Supplier's / Vendor's Complete Postal Address:

Door No.								Street :											
Location:								District:											
City:								State					PIN						

5. Supplier's / Vendor's E-mail ID:

[illegible]

6. Supplier's / Vendor's Telephone Number & Mobile Phone Number:

[illegible]

7. Name of the Bank:					

[illegible]

8. Bank (Branch) Postal Address:									

[illegible]

9. RTGS*/NEFT - Code of the Branch:**

[illegible][illegible]

RTGS* - "Real Time Gross Settlement", NEFT** - "National Electronic Fund Transfer". These "IFSC" Codes are unique numbers of each Branch - " Indian Financial Services Code". For some Branches both the codes are the same and some Banks, may maintain one Code No. for RTGS and another Code No. for NEFT. Hence, please fill-up both the rows, even if it is the same.

10. Nature of the Account: (Tick whichever is applicable & put 'x' mark for the balance two accounts)

Saving Bank Account:		Cash Credit Account:		Current Account:	
----------------------	--	----------------------	--	------------------	--

11. Bank Account Number of the Supplier: ©

[illegible]

© Fill up from the 1st column. For the balance left out blank columns, please mention 'x' mark.

We hereby declare that the particulars given above are correct and complete. If the transaction is delayed for reasons of incomplete or incorrect information, we would not hold MDL responsible.



ADDITIONAL TERMS & CONDITIONS

TENDER NO. GeM tender no GeM/2026/B/7769534 dated 10.07.2026 closing on 20.07.2026

ITEM: Turnkey Design, Construction and Delivery (Composite Supply of Ship Under HSN Code 8901) of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel

TYPE OF TENDER: Open Tender in Two Bid System.

Date: **Supplier's Seal:** **Authorized Signature of the Supplier:**

Certified that the particulars as per Serial Numbers 2, 7 to 11 are correct as per our records.

Date: **Bank's Stamp** **Authorized Signature of the Officer of the Bank.**

Note: Based on the Illustrative Format as above, the concerned Dealing Officer / HOD(C) may formulate / design the required forms / documents / tender enquiries / registers / STACS / proformas to suit to the requirements on case to case basis in line with the corresponding articles in Purchase Manual Volume-I.



ADDITIONAL TERMS & CONDITIONS

TENDER NO. GeM tender no GeM/2026/B/7769534 dated 10.07.2026 closing on 20.07.2026

ITEM: Turnkey Design, Construction and Delivery (Composite Supply of Ship Under HSN Code 8901) of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel

TYPE OF TENDER: Open Tender in Two Bid System.

Enclosure-5

Details for Remittance towards PS

1. **MDL'S BANK ACCOUNT DETAILS:**

NAME OF BANK A/C HOLDER: **MAZAGON DOCK SHIPBUILDERS LTD**

BANK AND BRANCH : **STATE BANK OF INDIA, COMMERCIAL BRANCH, FORT, MUMBAI-400023**

TYPE OF ACCOUNT : **CURRENT**

BANK ACCOUNT NO : **11079519138**

IFSC CODE : **SBIN0006070**

SWIFT CODE : **SBININBB101**

2. **DETAILS OF REMITTANCE TO MDL'S BANK ACCOUNT:**

(To be filled in by the vendors/firms making remittance of funds in MDL'S Bank Account)

Date of Remittance	Name of Firm	Vendor Code	MDL tender/ PO. Ref No.	Nature of Remittance viz. EMD/PS etc.	Amount Remitted (`)

Signature of Vendor/Representative

3. **SAP Parked Document No:** _____ **Date:** _____

(To be filled in by MDL's Commercial Executive)

Sr. No.2 and 3 above will be filled in by the Vendor and MDL commercial Executive respectively and the form forwarded to Treasury Section for posting of SAP Document to the respective Bank Account



ADDITIONAL TERMS & CONDITIONS

TENDER NO. GeM tender no GeM/2026/B/7769534 dated 10.07.2026 closing on 20.07.2026

ITEM: Turnkey Design, Construction and Delivery (Composite Supply of Ship Under HSN Code 8901) of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel

TYPE OF TENDER: Open Tender in Two Bid System.

Enclosure-6

Official Secret Act 1923 (ILLUSTRATIVE FORMAT)

SECTION 2(B) : "PROHIBITED PLACE"

It is defined as the place of any work of Defence Dockyard and other so belonging or occupied and used for the purpose of building, repairing, making or storing any ammunitions of war.

For the purpose of the above definition, sketch includes any photograph or other mode of representing any place or thing.

SECTION 3 : "PENALTIES FOR SPYING"

If any per unlawfully -

- a) approaches, inspects, passes over or is in the vicinity of any clear place; or
- b) make any sketches intended to be directly or indirectly useful to an enemy ; or
- c) obtains, collects, records or communicates to any other person any secret official code.

Shall be liable for imprisonment of 14 years in case of Defence Installation.

SECTION 4 : "COMMUNICATION WITH FOREIGN AGENTS"

If Any person has been in communication with or attempted to communicate with foreign agents regarding the vital information of any "PROHIBITED PLACE" would be guilty of violating the provisions of this Act.

SECTION 5 : "WRONGFUL COMMUNICATION OF INFORMATION"

If any person having in his possession or control any official document;

- a) Willfully communicates to any person, other than a person, who is authorised to communicate it.
- b) Used the information in his possession for the benefit of any foreign power.
- c) Retain in his possession when he has no power to retain it
- d) Fails to take reasonable care of it.

Shall be guilty of an offence under this Act.

SECTION 6 : "UNAUTHORISED USE OF UNIFORMS"

If any person for the purpose of gaining admission or of assisting any other person to gain admission to a "PROHIBITED PLACE" wears uniforms without lawful authority shall be guilty of offence under this Section.

SECTION 7 : "INTERFERING WITH OFFICERS OF POLICE"

No person in the vicinity of any "PROHIBITED PLACE" shall abstract any Police Officer engaged on guard, sentry or similar duty. If any person move in the provisions of this section, shall be punishable with imprisonment, which may extend up to 3 years.

SECTION 8 : "DUTY OF GIVING INFORMATION"

It shall be duty of every person to give on demand to a superintendent of Police or any other Police Officer not below the rank of Inspector, any information in his power relating to an offence under this Act.

If any person fails to give such information, shall be punishable with imprisonment to 3 years or fine or with both.

SECTION 9 : "INCITEMENT"



ADDITIONAL TERMS & CONDITIONS

TENDER NO. GeM tender no GeM/2026/B/7769534 dated 10.07.2026 closing on 20.07.2026

ITEM: Turnkey Design, Construction and Delivery (Composite Supply of Ship Under HSN Code 8901) of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel

TYPE OF TENDER: Open Tender in Two Bid System.

Any person who attempts to commit or debate the commission of an offence under this Act shall be punishable with the same punishment and be liable to be proceeded against in the same manner as if he had committed such offence.

SECTION 10 : "PENALTY FOR HARBOURING SPIES"

If any person whom he knows or has reasonable grounds for supposing to be person who is about to commit or who has committed offence under this Act shall be guilty of offence under this Section.

SECTION 11 : "SEARCH WARRANTS"

If a presidency Magistrate, Magistrate First Class or Sub-Divisional magistrate is satisfied with the information that there is reasonable ground for suspecting that an offence under this Act has been or is about to be committed, he may grant search warrant to any Police Officer to enter at any time any premises to force to search premises or the places.

Note: Based on the Illustrative Format as above, the concerned Dealing Officer / HOD(C) may formulate / design the required forms / documents / tender enquiries / registers / STACS / proformas to suit to the requirements on case to case basis in line with the corresponding articles in Purchase Manual Volume-I.



ADDITIONAL TERMS & CONDITIONS

TENDER NO. GeM tender no GeM/2026/B/7769534 dated 10.07.2026 closing on 20.07.2026

ITEM: Turnkey Design, Construction and Delivery (Composite Supply of Ship Under HSN Code 8901) of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel

TYPE OF TENDER: Open Tender in Two Bid System.

Enclosure-7

Format for Compliance Certificate w.r.t. Land Border Clause

Declaration of Compliance of Order (Public Procurement No.1, 2 & 3) dtd 23 Jul 2020 & 24 Jul 2020 on Restrictions under Rule 144 (xi) of the General Financial Rules (GFRs), 2017

This declaration must form part of all tenders & it contains general information and serves as a declaration form for all bidders. (Before completing this declaration, bidders must study the General Conditions, Definitions, Govt Directives applicable in respect of Public Procurement No.1, 2 & 3) dtd 23 Jul 2020 & 24 Jul 2020 and OM No F.7/10/2021/-PPD(1) dated 23.02.2023 on Restrictions under Rule 144 (xi) of the General Financial Rules (GFRs), 2017& prescribed tender conditions).

DECLARATION BY AUTHORISED SIGNATORY OF THE FIRM

I, the undersigned, (full names),
do hereby declare, in my capacity as
of M/s
.....(name
of bidder entity), that:

1) The facts contained herein are within my own personal knowledge.

2) I have read the Order (Public Procurement No.1, 2 & 3) dtd 23 Jul 2020 & 24 Jul 2020 and OM No F.7/10/2021/-PPD(1) dated 23.02.2023 on the subject of Restrictions under Rule 144 (xi) of the General Financial Rules (GFRs), 2017 regarding restrictions on procurement from a bidder of a country which shares a land border with India and comply to all the provisions of the Order

3) I certify that M/s
.....(name
of bidder entity) **is not from such a country or, is from such a country** (strike out whichever is not applicable). I hereby certify that this SUPPLIER fulfills all requirements in this regard and is eligible to be considered. [Where applicable, evidence of valid registration by the Competent Authority is attached]

4) I understand that the submission of incorrect data and / or if certificate / declaration given by M/s
.....(name
of bidder entity) is found to be false, this would be a ground for immediate termination and further legal action in accordance with law as per Clause 12 of the Public Order on Restrictions under Rule 144 (xi) of the General Financial Rules (GFRs), 2017

AUTHORISED SIGNATURE: _____

DATE:

Seal / Stamp of Bidder



ADDITIONAL TERMS & CONDITIONS

TENDER NO. GeM tender no GeM/2026/B/7769534 dated 10.07.2026 closing on 20.07.2026

ITEM: Turnkey Design, Construction and Delivery (Composite Supply of Ship Under HSN Code 8901) of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel

TYPE OF TENDER: Open Tender in Two Bid System.

Enclosure-8

NON DISCLOSURE AGREEMENT

THIS NON DISCLOSURE Agreement made at Mumbai, India on this _____ day of _____ 201_ between Mazagon Dock Shipbuilders Limited a company registered under the Companies Act, 1956 and having its registered office at Dockyard Road, Mumbai-400 010 (hereinafter referred to as "MDL") and _____ a company registered under the Companies Act, 1956 and having its registered office at _____ (hereinafter referred to as "_____").

MDL and _____ shall hereinafter be collectively referred to as "the Parties" and individually as "a Party".

WHEREAS

A*. MDL has floated a tender and is required to provide certain information to (name of the bidder) to prepare his bid and/or

AA **. The Parties are considering to enter into a _____ for which each Party shall provide information ("Disclosing Party") to the other Party ("Receiving Party") which at present is confidential and not in the public domain.

B. The Parties intend that the aforesaid information be kept confidential as between the Parties. The Parties undertake and declare that they shall not divulge, publish or reproduce the same before any party or person except in accordance with the terms of this Agreement.

NOW THEREFORE the Parties agree as follows:

1. As used in this Agreement (hereinafter referred to as the "Agreement") the term "Confidential Information" shall mean any technical, confidential, proprietary or trade secret information or data disclosed by the Disclosing Party in connection with the _____ to the Receiving Party including without limitation any written or printed documents, specifications for the vessel, plans, general arrangement plans, production schedules, drawings, samples, models, information regarding business operations, financial information, marketing strategies, either in writing or orally or any means of disclosing such Confidential Information that the Disclosing Party may elect to use prior to the execution or during the validity of this Agreement. The Receiving Party agrees that all Confidential Information shall be treated as absolute confidential and the Receiving Party shall not disclose to any person such information otherwise than in terms of this Agreement. The Receiving Party will impose a similar duty of confidentiality on any person to whom the Receiving Party is permitted to transfer such information in accordance with the terms hereof. For the purposes of this Agreement, the term "Receiving Party" shall mean and include its officers, employees, directors, agents, contractors, representatives, affiliated companies, successors and assigns.
2. Nothing in this Agreement may be construed as compelling the Disclosing Party to disclose any Confidential Information to the Receiving Party or to enter into any contractual relationships with the Receiving Party.
3. Any information or data in whatever form disclosed by the Disclosing Party to the Receiving Party and which (i) is clearly identified as Confidential Information by an appropriate and conspicuous marking or (ii) has been identified as Confidential Information at the time of disclosure shall be subject to the relevant terms and conditions of this Agreement. The Disclosing Party's decision whether any information disclosed by it under this Agreement is confidential or not shall be final and binding on the Receiving Party.
4. The Receiving Party hereby covenants that the Confidential Information received from the Disclosing Party shall:
 - (a) Be safely kept by the Receiving Party; the Receiving Party shall protect the Confidential Information with the same degree of care as the Receiving Party uses with its own



ADDITIONAL TERMS & CONDITIONS

TENDER NO. GeM tender no GeM/2026/B/7769534 dated 10.07.2026 closing on 20.07.2026

ITEM: Turnkey Design, Construction and Delivery (Composite Supply of Ship Under HSN Code 8901) of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel

TYPE OF TENDER: Open Tender in Two Bid System.

confidential information in order to prevent its disclosure, copy and / or its use (but in no event less than reasonable care) for purposes other than the Proposal.

- (b) Be only disclosed to, and used by, those employees or directors who have a need to know.
 - (c) Not be disclosed to a third party except those with a need to know provided they receive such information subject to the same restrictions as are contained in this Agreement.
 - (d) Be used by the Receiving Party directly or indirectly, solely for the purpose of considering, evaluating and effecting the tender/bid/contract.
5. The Receiving Party shall promptly upon requests by the Disclosing Party at any time return all copies of the Confidential Information communicated to it hereunder together with all copies and extracts made thereof and shall not retain any copies of the same, in any form whatsoever.
6. The Receiving Party shall have no obligations or restrictions with respect to:
- (a) Information publicly known through no wrongful act of the Receiving Party.
 - (b) Information rightfully disclosed by a third party without breach of this Agreement by the Receiving Party and which can be communicated without restriction.
 - (c) Information which was already known or which was independently developed by the Receiving Party (provided that the Receiving Party can demonstrate the same).
 - (d) Information, the disclosure of which the Disclosing Party authorizes in writing.
7. Nothing in this Agreement shall be construed as granting to the Receiving Party any patent, copyright or design license, or rights of use under similar intellectual property rights in respect of the Confidential Information.
8. The Receiving Party shall not without prior written consent of the Disclosing Party:
- (a) Disclose to any person, directly or indirectly:
 - i) The fact that the Confidential Information has been made available to the Receiving Party by the Disclosing Party or that the Receiving Party has inspected any portion of the Confidential Information; or
 - ii) The fact that any discussion or negotiation is taking place concerning the Proposal; or
 - iii) Any of the terms, conditions or other facts with respect to the Proposal, including the status thereof; or
 - (b) Make any private or public announcement or statement concerning or relating to the Proposal.
9. The Disclosing Party represents and warrants that save as otherwise notified in writing to the Receiving Party:
- (a) Disclosure of information by it to the Receiving Party does not infringe the rights of any third party nor is it under any restriction with regard to the disclosure of any information, and that where applicable, it has obtained all licenses and consents necessary to enable the lawful disclosure of information by it to the Recipient; and
 - (b) It is not aware of any restriction on the use of such information by the Receiving Party, save as provided in this Agreement.
 - (c) To the effect that the foregoing representations and warranties shall be deemed to be given at the date of this Agreement and after that date upon and in respect of each disclosure.
 - (d) The Disclosing Party makes no warranty or representation whatsoever as to the accuracy, completeness, suitability or adequacy of any information or as to the results obtained from it and assumes no responsibility in respect of the use of the information by the Receiving Party.
10. The Receiving Party shall indemnify and hold harmless the Disclosing Party from and against any action, claim or proceeding and any loss, damage, costs, expenses or liabilities arising out of any such action, claim or proceeding, brought by any third party pursuant to any



ADDITIONAL TERMS & CONDITIONS

TENDER NO. GeM tender no GeM/2026/B/7769534 dated 10.07.2026 closing on 20.07.2026

ITEM: Turnkey Design, Construction and Delivery (Composite Supply of Ship Under HSN Code 8901) of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel

TYPE OF TENDER: Open Tender in Two Bid System.

unauthorized disclosure or use of any information by the Receiving Party, or by any person for whom the Receiving Party is responsible under this Agreement, or pursuant to any breach of any undertaking, warranty or representation contained in this Agreement.

11. For the purposes of this Agreement 'Classified Information' shall mean information, documents and material of any kind which the respective Government i.e. Indian Government has given or caused to be given a security classification irrespective of whether the same is transmitted orally, electronically, in writing or by hand. Notwithstanding any other provision of this Agreement:
 - (a) Each Party hereto undertakes to follow security procedures prescribed for military purposes with respect to disclosure, receipt, production, use and handling of Classified Information.
 - (b) Any Classified Information, disclosed by one Party hereto shall be, whatever the method of disclosure be, identified by the Disclosing Party as Classified Information at the time of disclosure.
 - (c) The provisions of this Clause are to remain in full force and effect notwithstanding any termination by expiration or otherwise of this Agreement.
12. In the event the Receiving Party is required to disclose Confidential Information under any provision of law or upon an action, subpoena or order of a court of competent jurisdiction or of any requirement of legal process regulation or governmental order, decree, regulation or rule, the Receiving Party will immediately notify the Disclosing Party of its having received a request to so disclose (alongwith the terms and circumstances thereof), unless otherwise prohibited by law and consult with the Disclosing Party on action or steps to be taken in response to such request.
13. This Agreement represents the entirety of the agreement of the Parties relating to the disclosure of the Confidential Information and shall not be waived, amended or assigned by the Receiving Party except by prior written consent of the Disclosing Party. No failure or delay by any party in exercising any right, power or privilege hereunder shall operate as a waiver thereof nor shall any single or partial exercise of any right, power or privilege. The rights and remedies herein provided shall be cumulative and not exclusive of any rights or remedies provided by law.
14. This Agreement shall be valid for a period of _____(_____) years from the date of its execution between the parties. Notwithstanding the aforesaid, the obligations of Parties in connection with confidentiality under this Agreement shall survive in perpetuity.
15. The foregoing constitutes the entire Agreement between the Parties with respect to the subject matter hereof and supersedes and cancels any prior representation, understanding and commitment (whether oral and written) made between the Parties with respect to or in connection with any of the matter of things to which this Agreement applies.
16. This Agreement shall be governed by and shall be interpreted in accordance with the laws of India.
17. Any dispute arising in connection with or out of the validity, performance or the interpretation of this Agreement shall be finally settled by the competent jurisdiction in Mumbai.
18. The Receiving Party acknowledges that any breach of the terms and conditions of this Agreement may cause the Disclosing Party irreparable damage for which recovery of money damages would be inadequate. Therefore, the Receiving Party agrees that the Disclosing Party shall be entitled, in addition to any other remedies available to it, to seek injunctive relief and/or other equitable relief to prevent or restrain any breach by the Receiving Party or its employees/officials, or otherwise to protect its rights, under this Agreement.
19. Unless otherwise provided herein, all notices or other communications under or in connection with this Agreement shall be given in writing and may be sent by personal delivery or post or courier or facsimile at the address as specified herein below:



ADDITIONAL TERMS & CONDITIONS

TENDER NO. GeM tender no GeM/2026/B/7769534 dated 10.07.2026 closing on 20.07.2026

ITEM: Turnkey Design, Construction and Delivery (Composite Supply of Ship Under HSN Code 8901) of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel

TYPE OF TENDER: Open Tender in Two Bid System.

To MDL
Address:

Phone No.:

Fax:

E-mail:

To _____

Address:

Phone No.:

Fax No. :

E-mail:

Any such notice or other communication will be deemed to be effective if sent by personal delivery, when delivered, if sent by post, 4 (four) days after being deposited in the post and if sent by courier, one day after being deposited with the courier, and if sent by facsimile, when sent (on receipt of a confirmation to the correct facsimile number).

IN WITNESS WHEREOF, this Agreement is executed by authorized representatives of both the Parties in two (2) originals.

Signed by the within named
MDL

Signed by the within named

In the presence of

In the presence of

Note: The above Agreement is to be drawn up by the contractor on non-judicial stamped paper of value Rs.100/-, if it executed in Maharashtra. However, for other places stamp duty is to be levied as per Stamp Act of respective States. The value of stamp paper to be confirmed from Legal Department, MDL

* - A: Pre-submission of Bid

** - AA: Post Entering of Contract

In case any changes to format are desired by the supplier, same shall be approved as under –

- i) Dealing Executive to initiate and put up.
- ii) HOD(C)/PE(C) to recommend
- iii) CS/GM(L&E) to vet.
- iv) Functional Director to approve.



ADDITIONAL TERMS & CONDITIONS

TENDER NO. GeM tender no GeM/2026/B/7769534 dated 10.07.2026 closing on 20.07.2026

ITEM: Turnkey Design, Construction and Delivery (Composite Supply of Ship Under HSN Code 8901) of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel

TYPE OF TENDER: Open Tender in Two Bid System.

Enclosure-9

DECLARATION CERTIFICATE FOR LOCAL CONTENT

This declaration must form part of all tenders & it contains general information and serves as a declaration form for all bidders. (Before completing this declaration, bidders must study the General Conditions, Definitions, Govt Directives applicable in respect of Local Content & prescribed tender conditions).

THE BIDDERS SHALL PROVIDE THIS CERTIFICATE FROM STATUTORY AUDITOR OR COST AUDITOR OF THE COMPANY (IN CASE OF COMPANIES) OR FROM A PRACTICING COST ACCOUNTANT OR PRACTICING CHARTED ACCOUNTANT (IN RESPECT OF SUPPLIER OTHER THAN COMPANIES) GIVING THE PERCENTAGE OF LOCAL CONTENT.

IN RESPECT OF BID/ TENDER No.....

ISSUED BY: (Name of Firm):

NB: The obligation to complete, duly sign and submit this declaration cannot be transferred to an external authorized representative, auditor or any other third party acting on behalf of the bidder.

I, the undersigned, (full names),
do hereby declare, in my capacity as of
.....(name of
bidder entity), the following:

(a) The facts contained herein are within my own personal knowledge.

(b) I have read and understood the requirement of local content (LC) and same is specified as percentage calculated in accordance with the definition provided at clause 2 of revised Public Procurement (preference to Make in India) Order 2017.

"Local content" as per above order means the amount of value added in India which shall be the total value of items procured (excluding net domestic indirect taxes) minus the value of imported content in the item (including all customs duties) as a proportion of the total value in percent."

(c) I have satisfied myself that the goods/services/works to be delivered in terms of the above specified bid comply with the local content requirements as specified in the tender for 'Class-I Local Supplier' / 'Class-II Local Supplier', and as above.

(d) I understand that a bidder can seek benefit of either Public Procurement Policy for MSEs -Order 2012 or Public Procurement (preference to Make in India) Order 2017 and not both and once the option is declared / selected it is not permitted to be modified subsequently. Accordingly, I seek the benefit from the below declared purchase preference policy only.

Note: For this tender, purchase preference is not applicable as tender is Customer nominated Single tender.

(e) The local content calculated using the definition given above are as under:



ADDITIONAL TERMS & CONDITIONS

TENDER NO. GeM tender no GeM/2026/B/7769534 dated 10.07.2026 closing on 20.07.2026

ITEM: Turnkey Design, Construction and Delivery (Composite Supply of Ship Under HSN Code 8901) of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel

TYPE OF TENDER: Open Tender in Two Bid System.

Tender Item Sr No	Local content calculated as above %	Location of local value addition (Location shall be the specified as name of city or district, etc. Location as name of country will be considered as ambiguous and such bids shall be rejected)

Attach separate sheet duly signed if the space not sufficient.

NB: Local content percentage shall be declared item wise or tender wise strictly as per the terms of the tender.

(f) I accept that the Procurement Authority / Institution / MDL / Nodal Ministry has the right to request that the local content be verified in terms of the requirements of revised Public Procurement (preference to Make in India) Order 2017 dated 16.09.2020 and I shall furnish the document / information on demand. Failure on my part to furnish the data will be treated as false declaration as per PPP MII Order 2017. In case of contract being awarded, I undertake to retain the relevant documents for 7 years from date of execution.

(g) I understand that the submission of incorrect data, or data that are not verifiable as described in revised Public Procurement (preference to Make in India) Order 2017, may result in the Procurement Authority / Nodal Ministry / MDL imposing any or all of the remedies as provided for in Clause 9 of the Revised Public Procurement (preference to Make in India) Order 2017 dated 16.09.2020.

SIGNATURE: _____

DATE: _____

Seal / Stamp of Bidder



ADDITIONAL TERMS & CONDITIONS

TENDER NO. GeM tender no GeM/2026/B/7769534 dated 10.07.2026 closing on 20.07.2026

ITEM: Turnkey Design, Construction and Delivery (Composite Supply of Ship Under HSN Code 8901) of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel

TYPE OF TENDER: Open Tender in Two Bid System.

Enclosure-11

ILLUSTRATIVE RATE SHEET FORMAT:

BLANK rate sheet in below format to be uploaded in technical bid:

SI No	DESCRIPTION	Unit	Qty	Unit rate	Applicable tax rate	HSN no.	Total (Rs.)
				Quoted / Not Quoted	%	XXX X	Quoted / Not Quoted
1	Turnkey Design, Construction and Delivery of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel	Activity Unit	1				
	Total			Quoted/ Not Quoted			

COMPANY'S NAME & ADDRESS:

SIGNATURE:

DATE:

NAME:

DESIGNATION:

BIDDER'S COMPANY SEAL:

NOTE:

- This rate sheet is only for illustration purpose & for the purpose of indicating tax and whether quoted / not quoted, as per clause 11.1.iii of Additional Service Level Agreement (SLA).
- BIDDER HAS TO QUOTE ONLINE AS PER THE PRICE BID FORMAT AVAILABLE ON GEM-PORTAL.**
- Bidder while quoting should consider the all costs such as labour, Consumables, High End Machinery & Equipment, hike in the minimum wages, transportation, equipment, all incidental expenses, consumables etc.
- While quoting bidder should consider that the minimum wages and allowances applicable to the Engineering Industry as notified from time to time by the Central Government or State Government whichever is higher under the Minimum Wages Act.
- Quantity shown is indicative. However, Payment shall be made as per actual work done.



ADDITIONAL TERMS & CONDITIONS

TENDER NO. GeM tender no GeM/2026/B/7769534 dated 10.07.2026 closing on 20.07.2026

ITEM: Turnkey Design, Construction and Delivery (Composite Supply of Ship Under HSN Code 8901) of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel

TYPE OF TENDER: Open Tender in Two Bid System.

vi) An **illustrative example** of blank rate sheet to be uploaded in bidder's bid is given below: *Illustrative Example of Blank rate sheet to be uploaded.*

SI No	DESCRIPTION	Unit	Qty	Unit rate	Applicable tax rate	HSN no.	Total (Rs.)
1	Turnkey Design, Construction and Delivery of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel	Activity Unit	1	Quoted	GST@__%	123456	Quoted



MAZAGON DOCK SHIPBUILDERS LIMITED

SCOPE OF WORK AND TERMS & CONDITIONS FOR TURNKEY DESIGN, CONSTRUCTION AND DELIVERY (COMPOSITE SUPPLY OF SHIP UNDER HSN 8901) OF 3000 DWT METHANOL DUAL FUEL DIESEL ELECTRIC PLATFORM SUPPLY VESSEL

	Doc no: PSV/SoW/2026 - Rev A			
	Doc no: PSV/SoW/2026 - Rev 0			
Rev	Description	Authority	Date	Signature

ANANT PRAKASH TRIPATHI M (PSV)	CDR. YOGESH MAHANI (Retd.) DGM (PSV)	SAPNA DIPU AGM/PIC (PSV)
Prepared	Checked	Approved

TABLE OF CONTENTS

INTRODUCTION	4
ARTICLE-I: DESCRIPTION OF THE VESSEL	5
ARTICLE-II: INTERPRETATION	8
ARTICLE-III: CONTRACT PRICE AND PAYMENT TERMS.....	9
ARTICLE-IV: ADJUSTMENT OF CONTRACT PRICE	1717
ARTICLE-V: SUPERVISION AND INSPECTION	21
ARTICLE-VI: MODIFICATION AND CHANGES.....	25
ARTICLE-VII: SEA TRIALS	27
ARTICLE-VIII: DELIVERY AND ACCEPTANCE.....	31
ARTICLE-IX: FORCE MAJEURE.....	34
ARTICLE-X: WARRANTY OF QUALITY	36
ARTICLE-XI: INSURANCE.....	40
ARTICLE-XII: BUYER'S DEFAULT	42
ARTICLE-XIII: DEFAULT BY THE BUILDER	45
ARTICLE-XIV: ARBITRATION AND LAW APPLICABLE.....	47
ARTICLE-XV: ALTERATIONS AND ASSIGNMENT OF CONTRACT	48
ARTICLE-XVI: TAXES, DUTIES AND BANK CHARGES	49
ARTICLE-XVII: PATENTS AND COPYRIGHTS	50
ARTICLE-XVIII: IDENTIFICATION	51

ARTICLE-XIX: WAIVER OF SOVEREIGN IMMUNITY	52
ARTICLE-XX: SUPPLY OF SCALE MODEL.....	53
ARTICLE-XXI: EFFECTIVENESS OF CONTRACT	54
ARTICLE-XXII: RIGHTS AND OBLIGATIONS OF THE BUILDER	55
ARTICLE-XXIII: EXCLUSIVENESS	56
EXHIBIT-A: FORM OF CORPORATE GUARANTEE (IN THE FORM OF INDEMNITY BOND)	57
EXHIBIT-B: FORM OF PERFORMANCE SECURITY	60
EXHIBIT-C: FORMAT FOR PROGRESS REVIEW.....	62
ANNEXURE-I: GENERAL ARRANGEMENT.....	64
ANNEXURE-II: TECHNICAL SPECIFICATION	65
ANNEXURE-III: MAKER'S LIST	66
ANNEXURE-IV : MAIN ENGINE	
ANNEXURE V : STRUCTURAL BASIC DESIGN.....	



INTRODUCTION

Definitions: In this Scope of Work (SoW), except where the content otherwise requires, the following definitions will apply:

1. **Buyer:** Mazagon Dock Shipbuilders Limited (MDL), Mumbai, India.
2. **Buyer's Representative:** Any Official / Officer authorized by MDL.
3. **Builder:** -----.
4. **Vessel:** one 3000DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel.
5. **Shipyard:** -----.
6. **Parties:** The Buyer on the one part and the Builder on the other part.
7. **Contract:** This Shipbuilding Contract together with the Specifications and Plans enlisted in Clause 1 of Article -I, mutually agreed between the Parties.
8. **Contract Price:** The Price for the vessel set-forth in Article - III hereof.
9. **Classification Society:** Indian Register of Shipping.
10. **Specifications:** The Specifications of the Vessel specified and enlisted in the Clause 1 of Article -I, signed by both the parties and forming an integral part of this Contract.
11. **Plans:** The finished Plans as enlisted in the Technical Specifications.
12. **Delivery Documents:** The Documents referred to in Clause 3 of Article - VIII hereof.
13. **Protocol of Delivery and Acceptance:** The Protocol to be jointly executed by the Builder and the Buyer or the Buyer's representative on the delivery of the Vessel in Mumbai, India as referred to in Clause 2 of Article - VIII.
14. **Guaranteed Speed:** The Speed as defined in Clause 2 of Article - I hereof.
15. **Business Day:** An office working day excluding Saturday, Sunday, Public & Bank Holiday at Mumbai, India.
16. **SRCC:** Strike Riot Civil Commotion.
17. **Key Events:** Contract Effectiveness, Keel Laying, Launching, Completion of Diesel Generator Engines Dock Trials & Delivery as defined in the Contract.
18. **Contract Effectiveness:** The contract shall become effective on the signing of the contract.
19. **Permissible delay:** The delays due to Buyer's default as defined in Article XII or extension of delivery due to modifications or changes mutually agreed upon (as defined in Article VI) or force majeure delays (as defined in Article IX) which result in postponement of delivery date.
20. **Force Majeure delays:** The delays as defined in Article IX for which no adjustment in contract price due to liquidated damages will be made.
21. **Non-permissible delays:** Delays which are other than permissible delays and result in adjustment of contract price on account of liquidated damages.



ARTICLE-I: DESCRIPTION OF THE VESSEL

1. **DESCRIPTION:** Subject to the provisions hereof, the Vessel shall be of the following description.

A 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel having the Builder's Hull No. ----- shall be designed, constructed, equipped and completed in accordance with the attached :

- (a) General Arrangement
- (b) Technical Specification
- (c) Maker's List

(Here in after collectively referred to as "Specifications" or the "Specifications and Plans") signed by the Parties to this Contract on the above-mentioned date (which signatories need not necessarily correspond to the signatories of this Contract) and attached to this Contract as an integral part hereof.

2. **MAIN PARTICULARS**

- (a) Length Overall (Max) Approx. 84.6m
- (b) Length between Perpendicular Approx. 76.8 m
- (c) Breadth (Moulded) 18.0m
- (d) Depth (Moulded) Approx. 7.25m
- (e) Scantling Draught 6.25m
- (f) DWT guaranteed at design draught of 5.95m 3000 T
- (g) Complement 60 persons
- (h) Main mach Diesel Gen Eng: 4 x 1440kW, Hyundai Himsen, 6H22CDF-LM
- (i) Propulsion Motors 2 x 1600kW
- (j) Guaranteed Speed
- (k) Guaranteed Speed of 12 Kn at 85% MCR of Diesel Generator Engines with two (2) Nos. of diesel engines running at designed draft of 5.95 meters with 15% sea margin up to Beaufort 3 sea state condition.
- (l) Guaranteed Fuel Consumption. Guaranteed Specific Fuel Oil Consumption for Methanol and Pilot fuel @85% MCR of Diesel Generator Engines: 346.8gm/ kWhr (Methanol) and 25.8 gm/kWhr (Pilot fuel).

Anand

R

6

3. **CLASSIFICATIONS, RULES REGULATIONS AND RESOLUTIONS:**

(a) The Vessel, including its hull, machinery, equipment and outfitting shall be designed and constructed in accordance with and in compliance with the rules, regulations, resolutions and requirements of Classification Society and regulatory bodies as described in the Specifications & Plans, including new additions and amendments which are ratified at the date of signing this contract and come into effect thereto in force at the time the Contract becomes effective and under survey of IRS and classed with the following Class Notation.

(b) **Swastika, SUL, MULTIPURPOSE OFFSHORE SUPPORT VESSEL (SUPPLY, OCC, STS, SSR, AGNI 1), SPECIAL PURPOSE SHIP, LFPF (ML) , CMF(C3-c-1), IY, IBS, SYJ, DP2, EP, Cys-E, IN-WATER SURVEY**

(c) If the rule and regulations of the classification society and / or regulatory bodies are changed during the vessel's construction and coming into effect and which are not covered by any other clauses in the specifications and if the buyer asks for such changes to be incorporated, the builder shall comply at the Buyer's expense or the buyer's credit, as the case may be. The party shall also agree to the extension of the date of delivery or advancement in the date of delivery of the vessel as the case may be, all in compliance with Article VI Clause 2 hereof.

(d) There shall be no condition of class or remarks relating to the Classification status or any statutory regulation of the vessel as specified in the Specifications at the time of its delivery and acceptance.

4. **FLAG AND REGISTRATION:**

(a) The Vessel shall be registered by the Buyer at its own cost and expense under the laws of India upon delivery and acceptance of the Vessel. The Builder shall submit necessary copies of drawings / documents required for Registration of the Vessel to the Buyer.

(b) The fee for inspection of vessel by Administration surveyors for issue of marking & carving note, certificate of survey etc to be borne by Builder

5. **CONSTRUCTION SCHEDULE**

Construction schedule of the Vessel would be as tabled: -

KEY EVENTS - TIME IN MONTHS				
Contract Signing	Keel Laying	Launching	Completion Of Diesel Generator Engines Dock Trials	Delivery
0	03	25	27	28

Contract Effectiveness would be the date of acceptance of PO by the Builder.

6. SUBCONTRACTING:

(a) The Builder may subcontract any works, as per the normal practices but the Builder shall nevertheless always remain fully responsible under the contract. The Buyer's rights herein under shall not be in any way reduced in respect of such subcontract work and the builder shall keep the buyer fully informed of the major sub-contractors appointed by the builder.

(b) It will be the Builders responsibility to ensure quality control and compliance with Rules, Regulations etc of the works carried out by the sub-contractor.

(c) Delays in construction schedule due to sub-contracting will be totally be the Builders responsibility and to his account.

7. MAIN ENGINE.

Main Engine and associated methanol system (LFSS) with technical specification and supply as per TSP will be provided by MDL. However, integration of Engine and all its associated systems, including Methanol System, coordination with its OEM and CLASS and its performance will be the responsibility of the shipyard. Further, as per Scope of supply of Engine and LFSS, the shipyard shall ensure smooth coordination with OEM and Classification Society for installation, setting to work and trials of the equipment. The shipyard shall also consider material handling and any other associated charges during installation of Engine, auxiliaries and its associated equipment apart from the scope of supply provided by M/s Hyundai as per Annexure IV attached.

Anand

[Signature]

[Signature]

ARTICLE - II: INTERPRETATION

1. The quality of construction, testing and trials of the Vessel, it's machinery, fittings, equipment, materials and workmanship shall be in accordance with international shipbuilding practice and in accordance with the Specifications & Plans.
2. The Specifications & Plans are intended to complement each other, and anything shown in the Plans but not stipulated in the Specifications or stipulated in the Specifications but not shown in the Plans, shall be deemed and considered as if included in both.
3. In the event there should exist any conflict, inconsistencies or contradictions or there should be any doubt regarding the interpretation between the Plans and the Specifications, the Specifications shall prevail and govern. Likewise, in the event of inconsistencies or contradictions between Plans or the Specifications and this Contract, the provisions of this Contract shall prevail and govern.
4. Notwithstanding anything to the contrary in this Contract, Specifications & Plans, it shall be obligatory on the part of the Builder to construct and deliver the Vessel in accordance with the rules, regulations and requirements of the Classification Society and in compliance with the requirements of the laws, rules and regulations mentioned in the Specifications.



ARTICLE-III: CONTRACT PRICE AND PAYMENT TERMS

1. Contract Price.

In consideration of and subject to the performance and observance on the part of the Builder of all its obligations under this Contract, the Buyer shall pay to the Builder a sum of INR -----, which shall be the Contract Price of the Vessel.

The Contract Price is fixed and not subject to any escalation or adjustment on any ground(s) whatsoever, except on account of those adjustments, upwards or downwards, as provided for in this Contract.

The Contract Price includes.

- (a) Cost of the Vessel completed and equipped according to the Specifications & Plans and otherwise as per this Contract including all spares specified in the Specifications at no additional cost.
- (b) Cost of all tests & inspections, quay tests & sea trials, working trials, dry docking, if any as specified in the Specifications.
- (c) Cost of Classification Society's fees and all other charges incidental to the compliance with the rules, regulations and requirements and also the cost for all Certificates from regulatory bodies to be delivered pursuant to this Contract and the Specifications.
- (d) Cost of Insurance of the Vessel covering Builder's risk, SRCC and war risk until its delivery by the Builder to the Buyer at Mumbai, India.
- (e) All taxes (excluding GST), duties, customs duty, excise duty and charges, and all levies of whatsoever nature including but not restricted to import license, legal charges and other expenses connected with the execution of this Contract, incurred up to the delivery by the Builder to the Buyer at Mumbai India.
- (f) Cost of placing aboard of all Buyer's equipment and supplies and securing them wherever necessary at Shipyard premises
- (g) Delivery Charges of the Vessel, up to delivery of the Vessel at Mumbai, India from the place of Construction.

The Contract Price does not include.

- (a) Design and procurement activities taken up by MDL as indicated below:
Model Test and Structural Basic Design. This includes undertaking the complete model test as per TSP and preparation of 29 documents and drawings pertaining to Structural Design of the PSV by M/s Philins (M/s Win Marine) without the class approval. SoW of the same is placed at **Annexure V**. Completion of the balance of Basic Design and Integration of this with the detailed design would be the scope of the Participating Shipyard or Contractor.
- (b) Diesel Generator Engine. Supply of DF (Methanol) Diesel Generator Engine and

its auxiliaries from M/s Hyundai-HimSen. The detailed extent of delivery for Marine Genset is placed at **Annexure IV**

(c) Methanol Low Flash Point Fuel Supply System (LFSS) from M/s Hyundai. The detailed technical proposal with clear bifurcation of supply from M/s Hyundai and supply by the Shipyard is placed at **Annexure IV**.

(d) Any increase in taxes, duties, customs duty, excise duty and charges, and all levies of whatsoever nature which are imposed by Government Authorities after signing of this Contract till the contractual delivery, will be borne by the Buyer.

(e) GST as applicable on the finished vessel at the time of delivery of the vessel at Mumbai, India shall be paid by the Buyer over and above the contractual price of the vessel.

2. **Currency.** All payments under this Contract, made by the Buyer, to the Builder or vice-versa, shall be made in **INDIAN RUPEES**. Exchange Rate Variation is not applicable.

3. **Payment Terms.** The Contract Price shall be paid by the Buyer to the Builder in installments as follows, subject to the Builder providing Corporate Guarantee (in the form of Indemnity Bond) :

Stage no	Payment Stages	Payment as % of Contract Value	Remarks
1	Steel Procurement	6%	On contract signing, Firm has to submit Performance Security (Performance Bank Guarantee cum Security Deposit) of 3% of Contract Value as per Tender valid up to completion of Guarantee Period. Receipt of Steel Ordered for the Project (On Pro rata basis on receipt of every 300 Tons steel for the Project)
2	Basic Design	3%	On acceptance of basic design by MDL. The list of basic drawings shall be finalised during contract signing. 50% stage payment shall be released after acceptance of 50% basic drawing by MDL and remaining 50% stage payment shall be released after acceptance of balance 50% basic drawing by MDL.
3	PO Placement of Major Equipment	10%	On Order of Main Equipment (Except Main engine). List of Major Equipment will be finalised during Contract Signing.
4	Unit Fabrication	10%	Pro rata for every 200 Tons fabrication after dry survey.
5	Keel Laying	5%	Provided the maximum blocks fabricated, inspected and accepted by class and buyer's representative are at least 20% of Steel Weight
6	Erection	5%	Pro rata for every 300 tons erection after dry survey
7	Delivery Receipt of Major	10%	On despatch of Main Equipment finalised during Contract Signing.

Stage no	Payment Stages	Payment as % of Contract Value	Remarks
	Equipment		
8	Lowering & Installation of Major Equipment & Main Engine	5%	On lowering & installation of major equipment, main engine finalised during Contract Signing.
9	Launching of the Vessel	22%	The major equipment like generator engines, propulsion system, methanol fuel supply system, bow thrusters, Fi-Fi pumps, ballast pumps and cargo pumps are in place and 100% super structure and deck house blocks to be erected and ballast tank / under water hull painting is complete
10	Completion of Basin Trials	5%	After Successful Completion of Basin Trials
11	Completion of Sea Trials	9%	Successful completion of Main Diesel Engine Dock / Quay trials and on submission of stage completion signed by surveyor of the classification society.
12	Delivery	10%	On acceptance of Vessel by SCI
		100%	

Note:-

- (a) The stage payments shall be paid within Thirty (30) Business Days after the date of builder's submission of original certificate of the stage completion signed by the surveyor of the Classification society, the builder and the buyer's representative, subject to the Builder meeting defined conditions. The business days referred to in this Contract means the working days, which shall exclude Saturdays, Sunday and the Bank holidays in Mumbai.
- (b) Twelfth Installment:
On signing the Protocol of Delivery and Acceptance and delivery of the Vessel by SCI, the Buyer shall pay to the Builder as set forth below:
- Ten percent (10%) of the Contract Price amounting to INR ----- and
 - Net increase over the contract price due to modifications and /or changes, if , any made after the signing of this contract and which have been agreed to, in writing, between the parties as provided in Article VI and
 - Any increase in taxes, duties, customs duty, excise duty and charges, and all levies of whatsoever nature which are imposed by Government Authorities after signing of this Contract.
 - GST as applicable, on the finished vessel

Handwritten signature

Handwritten mark

Handwritten signature

However, the purchase price of consumable stores remaining onboard the vessel at the time of delivery as provided for in Article VII of this contract, which shall be paid separately by the Buyer in Indian rupees within 15 days after Delivery of the vessel.

If there is a net decrease / increase in the Contract price due to modifications and/or changes as set-forth in this Contract, the same shall be deducted / added from / to the delivery installment of the Contract Price mentioned above.

It is understood and agreed between the Builder and the Buyer that except for the final adjustment of the Contract Price at the time of delivery of the Vessel, as provided in this Contract, all payments made by the Buyer under provisions of this Article shall be made without set-offs or counter-claim of any kind whatsoever and shall not be delayed or withheld by the Buyer due to any dispute of whatever nature arising between the Buyer and the Builder save & except that the Buyer shall be entitled to withhold payments of eleventh and twelfth Installments if either the Buyer or the Builder have commenced arbitration proceedings in accordance with the relevant provisions of this contract.

Should there be any dispute in this connection, the matter shall be dealt with in accordance with Article - XIV (Arbitration and Law Applicable) hereof.

(c) As per the MDL's existing commercial convention, MDL's production partner is required to submit 100% irrevocable Bank Guarantee against the milestone based payments that would be released to the builder as per MDL's outsourcing contract. With an intent to enable participating Shipyards with ease in Shipbuilding activities, it is proposed to adopt an alternative mechanism by way of earmarking exclusive and captive infrastructure facilities for the PSV project at the builder's premises to MDL. This can include stores, dry berths, waterfront, slipway, shops etc. leased out to MDL. The steps to be undertaken while adopting this approach shall involve following:

- (i) The Legal Search Report (LSR) to be submitted towards the clear and marketable title of the builder over the complete infrastructure facilities proposed to be leased to MDL and non-encumbrance certificate to be obtained from the local lawyer at builder's location along with the technical offer.
- (ii) The registered lease deed of the Proposed infrastructure, with clear marking on the map attached to the deed, to be executed post signing of the contract.
- (iii) The measures for safety and security of the leased infrastructure including the under construction vessels are to be adopted as per safety and security guidelines of MDL.
- (iv) The security of the premises shall be by CISF / MDL's Security and the cost towards the deployment of these personnel's shall be borne by the builder.
- (v) **Indemnity Bond** : Builder shall also furnish a Corporate Guarantee in the form

of Indemnity Bond for the entire Contract Value at the time of signing of the contract with validity till acceptance of the Vessel by SCI.

(vi) **Equipment Consignee & Installation Location** : The equipment under this contract shall be ordered in the name of MDL which shall be the consignee and owner of the equipment. The equipment shall be delivered, installed and commissioned at the builders premises which shall be leased to buyer for execution of the project. The builder shall complete the construction, installation, testing and commissioning of the equipment at the above mentioned leased premises in accordance with the technical specifications and terms of this contract.

4. Method of Payment.

i) Payments before Delivery of the vessel:

All payments to the Builder, before delivery of the Vessel as provided in Clause 3 of this Article shall be made by RTGS to the Builder's Account No. ----- with ----- (Bank Name) at ----- (Branch Name & address) or in case of change in above designated bank, all payments to the Builder shall be made to any other bank, as designated and notified by the Builder at least Seven (7) Business Days prior to the due date of first Installment, which shall be deemed as payment to the Builder. Such notification of change of the Builder's Bankers shall be accompanied by due confirmation from the new Bank.

The Builder shall give to the Buyer a written notice by email, at least Thirty calendar (30) days in advance of the likely date when the stage payments as per Clause 3 of this Article are expected to fall due, to enable the Buyer to make necessary arrangements of funds.

In addition to the above notice of Thirty (30) days, the Builder shall also notify and reconfirm the Buyer by email (confirmed in writing), at least Fifteen (15) calendar days in advance of the likely date when the installment of Clause 3 of this article is expected to falls due, to enable the buyer to make necessary arrangements for the funds.

ii) Payments on Delivery:

For 12th Installment plus applicable GST as per Para (g) of Clause 3 of this Article, shall be released to the Builder's Account No ----- with ----- (Bank Name) at ----- (Branch Name & address) RTGS/IFSC CODE: ----- in the name of the Builder, after Protocol of Delivery is signed by the Builder and Buyer.

The Builder shall give to the Buyer a notice, at least thirty (30) calendar days in advance, of the likely date of the delivery followed by ten (10) days firm notice of the delivery of the Vessel. In case after the firm notice the delivery of the vessel is revised, then a fresh ten

(10) days' notice of the delivery is required to be given with the reasons for revised delivery.

5. **SUBMISSION OF INVOICES AND CERTIFICATES:**

The payment of each installment, referred to in Clause 3 above, shall be affected only on the production of:

- i) Original Proforma Invoice(s) for stage payments and Tax Invoice at the time of delivery as per GST Act, duly signed by the Builder and submitted to the Buyer;
- ii) Copy of the Invoice signed by the Builder will be sent by e-mail to the Buyer at least ten (10) days in advance of the date when the Installment is likely to fall due and two (02) copies each of the original signed Invoice will be couriered in the next three (3) Business Days to the Buyer and Buyer's representative. The Buyer shall acknowledge the receipt of the Invoice by return e-mail.
- iii) Four (4) copies of Certificate of the stage of building (hereinafter called "**Stage Completion Certificate**") in the case of Installments referred to in Clause 3 above, shall be signed by the **Surveyor** of the Classification Society, the **Builder** and the **Buyer's Representative** posted at the Shipyard or any other representative so designated by the Buyer for this purpose. The Buyer's representative is to be present for witnessing all key events. If the buyer has not designated a representative or any other representative for this purpose, then the aforesaid certificate shall be acceptable as signed by the builder and the Surveyor of the classification society. The aforesaid Certificates shall be sent to the Buyer immediately by e-mail and the originals copies each within three (3) Business Days of the occurrence of the said events to the Buyer.

6. **CORPORATE GUARANTEE (IN THE FORM OF INDEMNITY BOND) TO BE PROVIDED BY THE BUILDER**

All payments made by the Buyer to the Builder prior to the delivery of the Vessel shall constitute as advances to the Builder. If the Vessel is rejected by the Buyer, or this Contract is rescinded or cancelled by the Buyer, in accordance with the terms of this Contract, or in the event of the Builder going or taking steps to go into liquidation (reconstruction or amalgamation while solvent is excluded), the Builder shall forthwith refund to the Buyer without demur, in Indian Rupees, the full amount of total sums paid by the Buyer to the Builder prior to the delivery of the Vessel, together with interest (free of any tax of whatsoever nature, if leviable by any Authority) thereon at the rate as stated below.

In the event that the Builder is required to make any deduction or withholding, it shall make payment to the Buyer of such amount as will ensure that after the making of such a

deduction or withholding, the Buyer receives a net sum equal to the sum which it would have received had no such deduction or withholding been made. It is understood by both Parties that the payment of interest provided herein is not by way of penalty. All sums so refunded shall be paid in Indian Rupees. The transfer and other bank charges or such other charge(s) shall be entirely borne by the Builder.

If at any time the Builder is required to make any deduction or withholding for whatsoever reason in respect of any refund to be made to the Buyer pursuant to this Contract, the sum due from the Builder in respect of such refund shall be increased to the extent necessary to ensure that after the making of such deduction or withholding the Buyer receives on the due date for such payment (and retains free from any liability in respect of such deduction or withholding) a net sum equal to the sum which it would have received had no such deduction or withholding been made and the Builder shall indemnify the Buyer against any losses and costs incurred by the Buyer by reason of any failure of the Builder to make any such deduction or withholding or by reason of an increased payment being made on the due date for such payment. The Builder shall promptly deliver to the Buyer any receipts, certificates or other proofs evidencing the amounts (if any) paid or payable in respect of such deduction or withholding as aforesaid.

The interest rate of the refund, as above provided, shall be Nine percent (9%) per annum from the date these pre-delivery Installment(s) are received by the Builder to the actual date of receipt of such refund by the Buyer.

If pursuant to the provisions of this Contract, the Builder is required to refund to the Buyer the Installment(s) paid by the Buyer to the Builder, the Builder shall forthwith return to the Buyer all of the Buyer's supplies not incorporated into the Vessel and/or pay to the Buyer an amount equal to the cost of those supplies already incorporated into the Vessel. Such refund(s) as provided in this paragraph, by the Builder to the Buyer shall forthwith discharge all the obligations, duties and liabilities of each of the parties hereto to the other. Any and all refunds or payments due to the Buyer, under this Contract, shall be affected by telegraphic/RTGS transfer to the account specified by the Buyer.

The Builder shall deliver to the Buyer a Corporate Guarantee (in the form of Indemnity Bond) in respect of the entire contract value at the time of signing of the contract as per Clause 3 of this Article plus interest as aforesaid. The Corporate Guarantee (in the form of Indemnity Bond) shall be in the form and substance as per Exhibit – 'A' to this Contract and shall be released to the Buyer at least fifteen (15) Business Days prior to the payment of each Installment mentioned above. In the event of delay in submission of above Corporate Guarantee (in the form of Indemnity Bond), release of corresponding installment(s) shall be automatically deferred by the number of business days for which the delay in submission of Corporate Guarantee (in the form of Indemnity Bond) has occurred.



The Corporate Guarantee (in the form of Indemnity Bond) should be kept valid up to minimum three (03) months after contract rescinding option date.

In case the delivery of the Vessel is expected to be delayed from the fixed date as per the Contract, then the Builder will take necessary steps at least forty five (45) days in advance to extend this Corporate Guarantee (in the form of Indemnity Bond) to cover this delay period and the Original extension has to be provided to the Buyer at least 20 days before expiry of the Corporate Guarantee (in the form of Indemnity Bond); otherwise the Builder shall be deemed to be in default / breach of contract and the Buyer may, at its sole option, rescind the contract and claim the Corporate Guarantee (in the form of Indemnity Bond) immediately.

7. SECURITY FOR GUARANTEE PERIOD:

On contract signing, Firm has to submit Performance Security (Performance Bank Guarantee cum Security Deposit) of 3% of Contract Value as per Tender valid up to completion of Twelve (12) months of Guarantee Period after delivery of vessel. The same will stand released on expiry of the stipulated Guarantee period as extended for a further period of Guarantee, if any, and with a claim period of at least three (03) additional months. The Buyer shall be entitled to claim the said Guarantee amount towards non-fulfillment of Guarantee liabilities by the Builder in accordance with the provisions of this Contract, to compensate the losses or expenditure incurred on account of rectifications or repairs.

After the Builder fulfills its obligations as stated above, Buyer shall return the Performance Security to the Builder for cancellation upon a written demand from the Builders within 60 days.

8. SHIPBUILDING FINANCIAL ASSISTANCE (SBFA)

 The shipyard/builder will not be eligible for applying SBFA from the Government.



ARTICLE-IV: ADJUSTMENT OF CONTRACT PRICE

The Contract Price shall be subject to adjustment as hereinafter set-forth. It is hereby understood by both parties that any adjustment of the Contract Price as provided for in this Article is by way of liquidated damages and not by way of penalty.

1. DELAYED DELIVERY:

No adjustment shall be made and the Contract Price shall remain unchanged for the first **Thirty (30) days** of delay in delivery of the Vessel beyond the date on which delivery is required under the terms of this Contract. If the delivery of the Vessel is delayed by **more than Thirty (30) days** beyond the said delivery date, the Contract Price shall be reduced by 0.02% per day deducting the sum of INR----- (in words) as liquidated damages for each day of such delay beyond the above said Thirty (30) days.

But if the delay in delivery of the Vessel continues for a period of **more than Two Hundred and Ten (210) days** from the thirtieth (30th) day after date on which delivery is required under the terms of this Contract, the Buyer may, at its sole option, rescind the Contract by serving upon the Builder a written notice of rescission of the contract within Fifteen (15) days after the expiry of the **Two Hundred and Forty (240) days**, from the date on which delivery is due as mentioned above, in which event the provisions of Article XIII shall apply.

In case the Buyer has not served the notice of rescission as mentioned above, the Builder shall immediately propose a future delivery date and demand that the Buyer shall either rescind the Contract or accept a reasonable mutually agreed revised delivery date. The Buyer shall, within fifteen (15) days after such demand is received by the Buyer, notify the Builder by e-mail, confirmed in writing, of its intention to rescind the Contract or of its consent to accept the Vessel at an agreed future date. In case the Buyer agrees to accept the Vessel at such future date, the Contract Price shall be reduced for the liquidated damages for delay in delivery at 0.02% per day of Contract Price INR----- (in words), for the additional period of delay incurred after the said period of Two Hundred and Forty (240) days, it being clearly understood by the parties that if the Vessel is not delivered even by such future mutually agreed date, the Buyer shall have the sole right to rescind the Contract immediately. If the Buyer fails to notify the Builder of its intention to rescind the Contract, as specified above within the aforementioned fifteen (15) days, the Buyer shall be deemed to have consented to accept delivery of the Vessel at such future date.

Further, if any of the Key Event which are related to Stage Payments is Delayed for a period of more than **Two Hundred Forty (240) days** after the date on which it was required to be



completed as per the (construction schedule) of this Contract as mentioned in the Article 1, clause 5; the Buyer may, at its sole option, rescind the Contract by serving upon the Builder a written notice of rescission of the Contract.

2. **INSUFFICIENT SPEED:**

The Contract Price of the Vessel shall not be affected or changed if the speed of the Vessel, on trials, as determined in accordance with the Specifications, is less than the guaranteed speed of the Vessel under this Contract, provided such deficiency is not more than **zero point three (0.3) of a knot** below the guaranteed speed of 12.0 knots.

In the event, however, the deficiency in speed **exceeds zero point Three (0.3) of a knot** below the guaranteed speed, Contract Price shall be reduced as liquidated damages, by 0.25% deducting the sum of INR----- (in words) for the deficiency of each Zero point One (0.1) of a knot (and pro-rata for part thereof) below the Guarantee Speed of knots.

If the deficiency of the Vessel's speed on trials **exceeds One (1) full knot below the guaranteed speed** and the Builder is not able to rectify it (without being entitled to a free extension of delivery date), the Buyer, at its sole option, may reject the Vessel and rescind this Contract and such rescission shall be effective as of the date of serving of notice to the Builder and the Builder shall within Fifteen (15) days thereafter refund all installments prepaid by the Buyer to the Builder, with interest at Nine percent (9%) per annum from the date of each installment paid by the Buyer till the actual date of receipt of refund from the Builder by the Buyer. The Buyer may at its sole discretion accept the Vessel at a reduction in Contract Price by way of liquidated damages at the rate 0.25% amounting to INR----- (in words) for the deficiency of each Zero point One (0.1) of a knot (and pro-rata for part thereof) beyond the One (1) knot, in addition to the reduction in Contract Price for the deficiency of One (1) knot, referred to above.

3. **EXCESSIVE SPECIFIC FUEL OIL CONSUMPTION: (SFOC)**

The Contract Price of the Vessel shall not be affected or changed if the specific fuel oil consumption of the Diesel Generator Engines for Methanol and Pilot Fuel @ 85 % MCR output of 1224 KW @1000 RPM during the shop test, as determined in accordance with the Specifications, does not exceed **Five per cent (5%)** above 346.8 (Methanol) + 25.8(Pilot fuel) gram/KW/hr.

In the event, however, the specific fuel oil consumption **exceeds Five per cent (5%)** above 346.8 (Methanol) + 25.8 (Pilot fuel)gm/KW/hr. on the above specified conditions, the Contract Price shall be reduced, as liquidated damages, by 0.20% deducting the sum of INR----- --- (in words) for each full One per cent (1%) (Or Pro-rata) i.e. 3.468 (Methanol) + 0.258 (Pilot

fuel)gram/kW/hr. in excess of the figure of 364.14 (Methanol) + 27.09 (Pilot fuel) gram/kW/hr. (fraction of One per cent (1%) shall be pro-rata).

If the fuel consumption, as above stated, exceeds the guaranteed fuel consumption (i.e. 346.8 (Methanol) + 25.8 (Pilot fuel) gram/kW/hr.) by **Nine per cent (9%)**, the Buyer, at its sole option, may reject the Vessel under this contract if the Builder is not able to rectify the excess specific fuel consumption, (without being entitled to a free extension of the delivery period) and rescind this Contract and such rescission shall be effective as of the date of serving of notice to the Builder and the Builder shall within Fifteen (15) days thereafter refund all installments prepaid by the Buyer to the Builder, with interest at Nine percent (9%) per annum from the date of each installment paid by the Buyer till the actual date of receipt of refund from the Builder by the Buyer, or the Buyer may at its sole discretion accept the Vessel at a reduction of 0.20% of Contract Price by way of liquidated damages liquidated damages at 0.20% amounting to INR----- (in words) for each One per cent (1%) of excess fuel consumption (fraction of One per cent (1%) shall be prorated) beyond the Nine per cent (9%), in addition to the reduction in the Contract Price for the first Nine per cent (9%).

4. DEFICIENCY IN DEAD-WEIGHT TONNAGE:

The Contract Price of the Vessel shall not be affected or changed if the dead-weight tonnage of the Vessel, as determined in accordance with the Specifications, is less than the guaranteed dead-weight of 3000 tonnes at the design draught of (5.95) metres, provided such deficiency is **not more than One per cent (1%)** i.e. 30 tonnes below the said guarantee dead-weight tonnage at the aforesaid draught.

In the event however, the deficiency in the dead-weight tonnage **exceeds One per cent (1%)** i.e. (30) metric tons below the said guaranteed dead-weight tonnage, the Contract Price shall be reduced by 0.002% deducting the sum of INR----- (in words) for the deficiency of each one (1) full dead-weight ton (but disregarding fractions of a ton) below 2970 metric tons.

But if the deficiency in actual dead-weight of the Vessel is **more than Two (2) per cent**; i.e. 60 metric tons and the Builder is not able to rectify it, (without being entitled to a free extension of the delivery period), then the Buyer may, at its sole option, reject the Vessel and rescind this Contract (in which case the provisions of Clause-2 of this Article regarding the refund of installments with interest by the Builder shall apply).

The Buyer may, in its sole discretion, accept the Vessel at a reduction in the Contract Price at 0.002% in amount of INR ----- (in words) for each One (1) metric ton of deficiency below such metric tons, in addition to the reduction in the Contract Price for the first Two per cent (2%).



5. REDUCTION IN THE CONTRACT PRICE:

The reduction in the Contract Price envisaged by the Clause herein above in this Article and deductions permitted there under, are independent of each other and are not intended to be read concurrently or cumulatively and in the event of there being contingencies, which necessitate the application of two or more clauses, there shall be separate deductions in the Contract Price of the Vessel, in respect of each of the contingencies specified in the said Clauses. The total amount of these reduction and deductions, if any, shall be made from the Delivery installment payable as per Article III, Clause 3.



ARTICLE-V: SUPERVISION AND INSPECTION

1. **Appointment of Buyer's representative.** The Buyer shall have the right to retain at the Shipyard one or more Supervisor (hereinafter called the "Buyer's Representatives"), to maintain close contact with the Builder and to perform the functions hereinafter specified. All key events linked to stage completion are to be witnessed by Buyer's representatives. The Builder and the buyer shall mutually agree on the time when the Buyer's representatives are required to be present in the shipyard. Upon appointment of the Buyer's representatives, the buyer shall notify the builder in writing of the name (s) of the buyer's representatives.

2. **Approval of Plans and Drawings.**

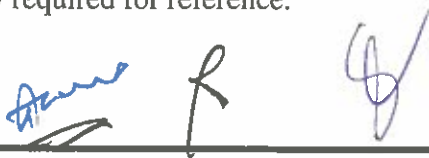
(a) MDL shall provide the Structural drawings (without class approval) like Profile and deck plan, beam & bulkhead plan, Scantling table & Steel BoM, midship section and shell expansion plan etc based on hull form finalized through model test.

(b) For other basin design inputs, the shipyard shall tie up with M/s Philins (based on MoU with M/s Win Marine) and obtain basic design inputs in order to prepare detailed design and obtain class approval based on the basic design and technical specifications.

(c) The shipyard shall tie up with M/s Philins (M/s Win Marine) and obtain basic design inputs from the firm in order to prepare detailed design and obtain class approval based on the basic design and technical specifications.

(d) MDL has taken up part Basic Design of PSV (Structural Drawings) as indicated at Annexure-V. However, coordinating with Classification Society and Basic Designer M/s Philins (M/s Win Marine) for approval of plans lies with the shipyard.

(e) All drawings or Plans, indicated as "drawings for approval" in the Specifications, will be submitted directly to the office of the Buyer's office in Mumbai, for examination and approval in accordance with the manner outlined in the Specifications. The list of drawings or plans for approval will be delivered to the Buyer for their comments / approval within thirty (30) days of the Contract signing date. The Buyer shall, however, have the right to authorize one or more of the Buyer's representatives to approve these drawings or plans. The Buyer's Representatives shall have the right to ask for all of the Builder's working drawings and calculations reasonably required for reference.



(f) If the Buyer's comments on the Plans or drawings that are returned to the Builder by the Buyer are not clearly specified or detailed, the Builder shall be entitled to consult with the Buyer's representatives regarding such matters and proceed with the construction pursuant to the clarifications given in writing by the Buyer's representatives.

(g) In the event the Buyer shall fails to return to the Builder the Plans and drawings with the approval / comments, if any, of the Buyer within fourteen (14) calendar days after receipt of said Plans and drawings, such Plans and drawings shall be deemed to have been automatically approved without any comment. If the said Plans are not returned within fourteen (14) calendar days, they shall be deemed to be approved and the Builder shall inform the Buyer that such Plans are deemed to have been approved without any comments. The submission of plans / documents to the Buyer shall be well staggered accordingly.

(h) Whenever Plans are being furnished to the Buyer for approval, the Builder shall inform the Buyer if these Plans contain any departure from the original Specifications or previously agreed drawings or Plans. If such departures are not indicated by the Builder and even if the Plans have been approved by the Buyer, due to oversight in this regard, then such approval shall be considered to be invalid. The Builder shall not be entitled to any extension of the contractual delivery date (as defined in Clause 1 of Article - VIII) of the Vessel as a result of a delay caused due to such invalid approval and the Buyer shall be entitled to be compensated by the Builder for such delay by way of liquidated damages as per Article - IV.

(i) Any approval of the Buyer's representative shall not relieve the Builder of its responsibility for safe construction of the Vessel, its machinery, equipment or any part thereof.

3. Inspection by Buyer AND / OR Buyer's Representatives.

(a) The Buyer's representatives shall, at all times, until the Vessel leaves the Shipyard, have the right to attend to such tests and inspections relating to the Vessel, its machinery equipment and outfitting and to monitor and inspect the construction and workmanship as the Buyer's representatives may consider necessary and shall have the right to inspect the Vessel, its engines and all accessories and all work in progress, or materials utilized in connection with the construction of the Vessel, wherever such work is done, or such material is stored, including the premises of its suppliers and sub-contractors, for the purpose of ensuring that the Vessel is being constructed in accordance with the terms of this Contract and Specifications.



The Builder shall be obliged to render any and all assistance to the said Buyer's representatives to allow them to conduct their duties. The Buyer's representatives shall, on behalf of the Buyer, make decisions or give advice or suggestions to the Builder on all problems arising during the course of or in connection with the construction of the Vessel.

(b) The Builder shall give the Buyer's Representative a notice reasonably well in advance stating the details of tests and inspections, to be conducted on the Vessel, as specified in the Specifications. All key events linked to stage completion are to be witnessed by Buyer's Representative.

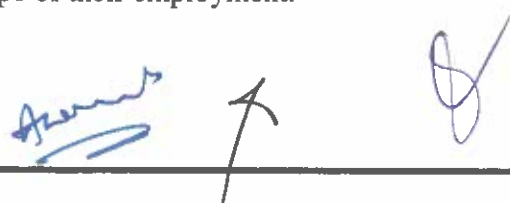
(c) Failure of the Buyer's Representative, without reasonable causes to be present after due notice as above, shall be deemed to be a waiver of the right to be present. The tests and inspections, as far as possible, shall be conducted during normal working hours of the Shipyard's general shift without any overlapping of inspections.

(d) Any material or workmanship found to be defective or any unauthorized departure from the Contract, Specifications & Plans, observed by the Buyer's representatives during the course of inspection, shall be communicated to the Builder in writing. The Builder shall thereupon take effective measures and correct such defects and departures as per the terms of this contract, Specification and plans. The Builder shall not be eligible for an increase in Contract Price or extension in delivery date on this account.

4. **Responsibility of the Builder.** The Builder shall provide the Buyer's representatives, free of charge, with suitably furnished office accommodation at the Shipyard together with facilities such as, telephone, admin support, a set of personal computers with internet facility and printer and one copying machine etc. to carry out their work under this Contract.

5. **Liability of the Builder.**

(a) The Buyer's representatives engaged by the Buyer, under this Contract, shall at all times, be deemed to be employees of the Buyer. The Builder shall not be liable for personal injury to, or death of such Buyer's representative or for damage to or loss or destruction of their property, unless such injury, death, damage to or loss or destruction is due to the negligence of the Builder and/or sub-contractors and/or their employees or agents while acting within the scope of their employment.

Handwritten signatures in blue ink, including a signature that appears to be 'Ahmed' and another signature to the right. A large, hand-drawn arrow points upwards from the bottom center of the page.

(b) The supervision thus exercised on behalf of the Buyer shall not, in any way, absolve, alter or diminish the responsibility of the Builder with regard to the compliance with the rules and regulations and the provisions of the Contract and Specifications.

6. Responsibility of the Buyer.

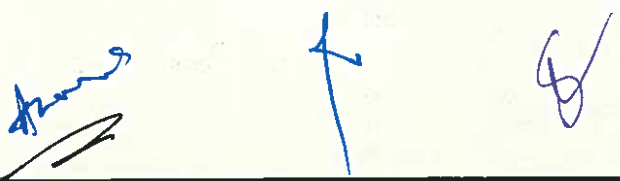
(a) The Buyer shall ensure that the Buyer's representatives shall carry out their inspection and supervision in accordance with the usual procedures and in such a way as not to unduly obstruct the Builder in the construction of the Vessel. Buyer's representatives shall be bound to comply with the required security norms/regulations of the Builder.

(b) All salaries and expenses of the Buyer's representatives shall be paid by the Buyer.

7. Periodical Review of Progress.

(a) Builder to prepare and provide detailed "Build Strategy" document to the Buyer within 30 (Thirty) business days after Contract effectiveness and before release of First Stage payment. The percentage progress of the Vessel will be monitored in accordance with the format in the form and substance as per Exhibit – 'C' to this Contract every month thereafter.

(b) The progress of Vessel will be monitored by the Buyer every month through progress review meetings and slippages vis-à-vis planned progress will be addressed by the Builder and appropriate action will be taken so that slippages do not escalate further. Buyer will carry out "Periodical review of progress" at the Builder shipyard or at Buyer's Office or a mutually convenient meeting place to monitor the progress.



ARTICLE-VI: MODIFICATION AND CHANGES

1. Alteration During Construction.

(a) The Buyer may request the Builder for alternations and modifications to the Specifications & Plans of the Vessel during the course of construction and the Builder shall carry out the said alterations and modifications, provided these alternations and modifications are not unreasonable taking into consideration the overall design of the Vessel and the whole construction schedule of the Shipyard, and the Parties hereto agree to the necessary adjustment in the Contract Price, time of delivery and other terms of this Contract and Specifications for which the Builder shall give a notice to the Buyer indicating the most reasonable cost and shortest time reasonably possible.

(b) Minor modifications or changes to the Specifications & Plans mutually agreed under which the Vessel is to be constructed may be made at any time hereafter by written agreement of both the parties. Such modifications shall be carried out at no extra cost to the Buyer.

(c) The said agreement shall be affected by an exchange of official letters, manifesting such agreement, or jointly signed memorandum of discussions. The said official letters, or the memorandum of discussions/agreement, shall constitute an amendment to this Contract, Specifications & Plans and shall be deemed to have been incorporated in this Contract.

2. Changes in CLASS Requirements & Regulations etc.

(a) If, after signing of this Contract and up to the time of the delivery & acceptance of the Vessel, any requirements as to Class or to rules and regulations, to which the construction of the Vessel, its engines, accessories, equipment and material of construction are required to conform pursuant to this Contract and Specifications, are changed or altered by the Classification Society/Statutory authorities or the regulatory bodies which are referred to in the Specifications and this Contract, the Builder shall transmit such information to the Buyer in writing as soon as possible.

(b) Within ten (10) calendar days after the receipt of the said notice from the Builder, the Buyer shall instruct the Builder in writing about the alternations and changes, if any, to be made in the Vessel, its engine or accessories. The Builder shall promptly comply with such changes or alternations, provided the parties hereto agree to the alternations in the Contract Price, delivery date or any other terms of the Contract and/or Specifications & Plans,

Anand

[Signature]

[Signature]

as may be applicable due to the said modification and changes. Such agreement shall be affected in the same manner as provided in Clause 1 above.

(c) Any delay in delivery of the Vessel caused by the Buyer's delay in notifying the decision or an agreement as above shall constitute a permissible delay under this Contract.

3. **Substitution of Materials.** In the event any of the materials required in the construction of the Vessel under this Contract and the Specifications & Plans cannot be procured on time to effect delivery or are in short supply, the Builder may, with prior written approval of the Buyer and after giving detailed description, supply other available material, (hereinafter called 'Substitute') which shall comply with the requirements of the Class and of the rules and regulations and the Specifications including approval of statutory drawings if applicable, including additions and amendments thereto in force at the time the Contract becomes effective, with which the construction of the Vessel must comply. The Substitute shall not be of a lesser standard and quality, in all respects, including maintenance and availability of spares and repair facilities. This substitution shall not result in any delay in delivery, increase in the Contract Price and shall not affect any of the Contractual obligations and guarantee of the Builder.

ARTICLE-VII: SEA TRIALS

To verify fulfillment of the conditions stipulated in this Contract, Specifications & Plans, the Builder, at its expense, shall carry out sea-trials.

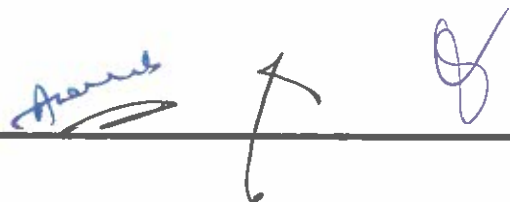
1. **Notice.**

(a) The Buyer shall receive from the Builder at least fifteen (15) calendar days advance written notice by e-mail as to the expected time and place of the sea trials of the Vessel.

(b) The Builder shall also give seven (7) calendar days written notice by e-mail as to the actual date, time and place of the sea trials of the Vessel. The Buyer shall promptly acknowledge receipt of such notice and the Buyer's Representative shall be onboard the Vessel to witness such sea trials.

(c) In case of failure of the Buyer's Representative to be present at the sea trials, after due notice to the Buyer has been given, then the date of delivery shall be extended for the time of delay caused by such failure of the Buyer's Representative to be present and such delay shall be deemed as permissible delay in the delivery of the Vessel. If, however, the sea trials are delayed by more than Three (3) calendar days for the reason of the failure of the Buyer's Representative to be present, after due notice has been given to and received by the Buyer as provided above, then the Buyer shall be deemed to have waived its rights to have the Buyer's Representative onboard the Vessel and the said sea trials will be conducted without the Buyer's Representative onboard and the Buyer shall be obliged to accept the Vessel on the basis of certificate of satisfactory performance provided by the Builder and the Classification Society.

2. **Weather Conditions.** The sea trials shall be carried out under weather conditions, which are deemed favorable enough in the judgment of the Builder, it being clearly understood that the weather conditions of Beaufort Scale 3 or less are deemed to be favorable conditions for this purpose. In the event of unfavorable weather conditions on the date specified for the trial runs, the same shall take place on the first available day thereafter, when weather conditions permit. It is agreed by the Parties that if, during the trial runs, the weather should become unfavorable for the Builder to continue the sea trial runs, then the sea trial shall be discontinued and postponed until the first day next following, which is deemed favorable enough by the Builder. Any delay as aforesaid does not entitle the Builder to extend the delivery date. However, if the weather condition continues



to be beyond Beaufort Scale 3, the Builder shall postpone only the speed trials to the first available day thereafter, in such case the delay beyond three (3) days shall be considered as permissible day.

3. How to be conducted.

(a) All expenses connected with the Vessel's trial runs shall be to the account of the Builder.

(b) The Builder shall provide necessary crew to comply with the conditions of safe navigation. During the trials, the Buyer's Representative will be provided with accommodation and victualing by the Builder.

(c) The Builder shall provide the Vessel with the required quantities of fuel & lubricating oils, grease, fresh water and other stores necessary for the sea trials. The grades of lubricant, etc. shall be as prescribed by the Diesel Generator Engines and generator manufacturers and shall be as per the Specification.

(d) Sea Trial shall be conducted with both fuels i.e. Methanol and MDO.

(e) Methanol, being a green fuel, is presently at a developmental stage in India and is not commercially available for newbuilding vessels within the country. Accordingly, the conduct of Sea Trials in relation to Methanol fuel shall be subject to the following conditions:

(i) In case at time of Sea trials marine grade methanol supplies are available in India, sea trials shall be conducted with both the fuels i.e. Methanol and MDO. The supply of the marine grade methanol shall be made available on-board for trials purpose by the Buyer and the price difference between Methanol and MDO shall be borne by the Buyer.

(ii) In the absence of methanol supplies, sea trials may be conducted using MDO in compliance with applicable Class Rules and OEM guidelines. In such an event sea trials with methanol will not be considered as pre-requisite for delivery and associated stage payment. In such instance, the Builder shall provide a Letter of Comfort for conducting successful sea trial using Methanol post-delivery of the vessel to the Buyer.

(f) The sea trials shall be conducted in the manner to comply with the Specifications. During the sea trials, the hull shall be checked for any excessive noise and vibrations and the abnormal noise and vibrations, if any, shall be reduced to the normal extent as per the technical specifications before the acceptance of the Vessel.

4. **Other Tests.**

- (a) Shop tests and onboard tests for Diesel Generator Engines, various machineries and other equipment shall be conducted as provided in the Specifications.
- (b) After the sea-trials, the working parts of the machinery shall be inspected, in so far as considered necessary, by the Buyer and the Classification Society.
- (c) If the period between launching and delivery of the Vessel exceeds One Hundred & Twenty (120) calendar days, then the Vessel shall be dry-docked prior to delivery for underwater hull cleaning and paint touch-up as mentioned in the Specifications.

5. **Method of Acceptance or Rejection.**

- (a) Upon completion of the alternations or corrections and the inspection, after the sea trials, the Builder shall give the Buyer notice by e-mail confirmed in writing of the completion of sea trials along with major trial data and results and send the **Protocol of Trials** duly signed by the authorized Representatives of both Parties. The Buyer shall, within five (5) Business Days, after receipt of such notice and the Protocol of Trials from the Builder, notify the Builder by a written e-mail of its acceptance of the Vessel provided the Vessel complies with the Contract and Specifications or rejection.
- (b) If the Buyer fails to notify the Builder of its acceptance or rejection of the Vessel as herein above provided, the Buyer shall be deemed to have accepted the Vessel provided the Vessel complies with the Contract and Specifications.
- (c) If the Buyer rejects the Vessel, the Buyer shall indicate, in its written notice of rejection, in what respect the Vessel, or any part thereof does not conform to the requirement of this Contract and/or the Specifications. The Builder shall correct such non-conformity, at its own expense, and perform such further tests, as may be deemed necessary by the Buyer, and prove to the satisfaction of the Buyer that the requirements of the Contract and/or the Specifications, are satisfied. The Builder shall not be entitled to any extension of the delivery date of the Vessel on this account.
- (d) If there is any disagreement between the Builder and the Buyer about the non-conformity with this Contract and/or Specifications, such dispute shall be resolved through Arbitration as provided in this Contract.
- (e) The Buyer shall not reject the Vessel by reason of any item deemed either minor



or insubstantial from the point of view of standard shipbuilding practice as not being in conformity with the Specifications, but the Builder shall not be released from the obligation to correct and/or remedy such minor or insubstantial items as soon as possible before the delivery of the Vessel at Mumbai.

6. **Effect of Acceptance.** Notwithstanding anything contained above, the written notification of acceptance of the Vessel by the Buyer, on the basis of the sea trials, shall be final and binding in so far conformity of the Vessel to the Specifications & Plans is concerned. However, in the event there shall remain any outstanding work to be done, such work shall be completed before delivery of the Vessel, unless otherwise mutually agreed.

7. **Disposal of Surplus Consumables.** Any fuel oil, un-broached lubricating oil including unused lubricating oil in storage tanks and greases, furnished and paid for by the Builder remaining on board the Vessel, at the time of Delivery of the Vessel, shall be bought by the Buyer from the Builder at the Builder's purchase price for such supply and payment by the Buyer thereof excluding logistic cost shall be made at the time of delivery of the Vessel. The Builder shall furnish to the Buyer the copies of original invoices.

8. **Protocol of Trials.** On the sea trials performed as well as all other tests, a Protocol of Trials shall be made and signed by the authorized Representatives of both the Buyer and the Builder.



ARTICLE-VIII: DELIVERY AND ACCEPTANCE

1. **Time and Place.**

(a) Vessels shall be delivered by the Builder to the Buyer free and clear of all liens, claims, mortgages and other encumbrances whatsoever, in clean and seaworthy condition ready for service in all respects, afloat and clear of obstruction, safe and secure, at the Builder's quay at Mumbai, India, **within 28 Months from the date of the contract acceptance;** (Contractual Delivery date) subject, however, to the provisions relating to permissible delays and extension of the time of delivery of the Vessel under this Contract. Builder shall give a notice to the Buyer specifying the scheduled delivery date of the Vessel at least thirty (30) calendar days prior thereto. This shall be followed by ten (10) calendar days of firm notice.

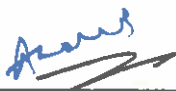
(b) The Buyer shall be entitled to, but not obliged to take delivery of the Vessel, if the delivery is offered at a date before the contractual delivery date. It is also agreed by the Parties that the Buyer is entitled, but not obliged, to accept the Vessel, even if the Vessel is not fully completed, subject to mutual agreement between the Builder and the Buyer on the program of completion of remaining items and a time schedule in this respect.

2. **When and How Effected.** Provided that the Buyer shall pay to the Builder all sums due and payable upon delivery of the Vessel, the delivery of Vessel shall be forthwith effected by the buyer of a **Protocol of Delivery & Acceptance**, duly signed by authorized Representative of both Parties, which is concurrently delivered by each of the Parties hereto to the other Party, acknowledging delivery of the Vessel by the Builder and acceptance thereof by the Buyer. This Protocol shall be prepared, in two originals (one for each party) and executed by each of the parties hereto.

3. **Documents to be Delivered to the Buyer.** Acceptance of the Vessel by the Buyer shall be conditioned upon receipt by the Buyer of the following duly authenticated documents, to be provided by the Builder, at the sole expense of the Builder, which shall accompany the aforementioned Protocol of Delivery and Acceptance.

(a) **PROTOCOL OF TRIALS** of the Vessel, made pursuant to this Contract and Specifications

(b) **PROTOCOL OF INVENTORIES** of the equipment of the Vessel, including spares,



scale model and the like, as set-forth in the Specifications.

- (c) **PROTOCOL** of Stores of consumable in nature
- (d) **DRAWINGS & PLANS** pertaining to the Vessel, as stipulated in the Specifications.
- (e) **ALL CERTIFICATES** in originals & three (3) copies required to be furnished upon delivery of the Vessel, pursuant to this Contract and Specifications, and according to normal shipbuilding practice.
- (f) **DECLARATION OF WARRANTY** by the Builder that the Vessel is delivered to the Buyer, free and clear of any liens, claims mortgages or other encumbrances upon the Buyer's title thereto and in particular that the Vessel is absolutely free of all burdens in the nature of imports, taxes or charges of whatsoever nature imposed by the city, state or country of the port of delivery or any other authority whatsoever, as well as of all liabilities of the Builder to its Sub-contractors, suppliers, employees and crew and of all liabilities arising from the operation of the Vessel, in sea trials, or otherwise up to delivery and acceptance.
- (g) To assist the Buyer to arrange prompt provisional/permanent Registration of the Vessel, the builder shall at least thirty (30) calendar days prior to estimated contractual delivery date release an original of the Builder's Certificate or a temporary Builder's Certificate to the Buyer.
- (h) **Performance Bank Guarantee** to the tune of Five percent (3%) of the Original Contract Price valid for the entire guarantee period of Twelve (12) months plus a claim period of Three (03) additional months i.e. covering a total period of Fifteen (15) months or an amount equivalent to the said Performance Bank Guarantee value to be retained by the Buyer from the delivery installment due to the Builder till such time as mentioned above. The Performance Bank Guarantee to be provided by the Builder on the date of signing of the Protocol of Delivery and Acceptance of the Vessel.
- (i) Two sets of Original Bill of Sale.

4. **Builder's Right to Tender Vessel for Delivery & Acceptance.** After completion of the Vessel according to this Contract, Specifications & Plans, the Builder shall have the right to tender delivery of the Vessel at Mumbai, India after compliance with all procedural requirements as provided above.

5. **Title & Risk.** Title to and risk of the Vessel shall pass to the Buyer upon delivery



and acceptance of the Vessel by the Buyer, it being expressly understood that until such delivery and acceptance by the Buyer, the Vessel and its equipment shall be at the entire risk of the Builder.

6. **Removal of the Vessel.** The Buyer shall take possession of the vessel immediately upon delivery and acceptance thereof and if so requested by the Builder shall remove the vessel from the shipyard within fifteen 15 days after delivery and acceptance thereof is effective.

Handwritten signatures and initials:
A blue signature, a black checkmark, and a black signature.

ARTICLE-IX: FORCE MAJEURE

1. **Cause of Delay.** If, at any time, either the construction or delivery of the Vessel is delayed due to:

(a) Acts of God such as earthquakes, pandemics or epidemics, quarantines, terrorism, war, tidal waves, typhoons, hurricanes; or Strikes, sabotages, lock out caused by the shipyard or its sub-contractors workers or, by destruction of the Shipyard or works of the Builder or its principal Sub-Contractors, or of the Vessel, or any part thereof, by fire, flood, etc.; beyond the control of the Builder/its principal Sub-Contractors, which could not have been reasonably foreseen and eliminated by the Builder;

(b) the Buyer's financing arrangements which could not have been reasonably foreseen and eliminated by the Buyer and/or any disruption in the currency or capital markets which affect the ability of the Buyer to draw down or continue to draw down the Loan which it has negotiated in order to finance part of the Contract Price.

Then and in any such case, the delivery date of the Vessel, under the Contract, shall be postponed by the actual number of days lost to the Builder in completing the Vessel due to such causes. No separate delays shall be counted in respect of two or more of the above causes occurring concurrently.

Provided always then in case of clauses set out in 1 (ii) above, the buyer shall notify the Builder in writing of such event and the Buyer and the Builder shall negotiate in good faith with a view of mitigating and/ or solving the problems raised by the matters set out in Clause 1 (ii) above so as to avoid any delay in the delivery date of the vessel or any increase cost to the Buyer.

Delay on account of Force Majeure, as provided in this Article, shall be understood to be permissible delay and is to be distinguished from non-permissible delay, on account of which the Contract Price of the Vessel is subject to adjustment or the Vessel liable to be rejected, as provided in Article - IV hereof.

2. **Notice of Delay.**

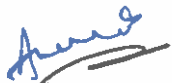
Within fifteen (15) calendar days from the date of commencement of any cause of delay, which the Builder claims to be the delay due to the Force Majeure under this Article, the Builder

shall advise the Buyer in writing of the date such cause of delay commenced and the reasons thereof and if possible the details of the action taken or to be taken by the Builder to remedy and minimize the delay caused by such Force Majeure event. Likewise, within fifteen (15) calendar days after such cause of delay ends, the Builder shall advise the Buyer in writing of the date such cause of delay ended and shall also specify the period of time by which the date for delivery is extended by reasons of such cause of delay. Failure of the Builder to provide the aforesaid notices to the Buyer within above time shall be deemed to be a waiver by the Builder of its claims for extension of delivery, provided that should there arise any event of Force Majeure disrupting communication disabling the Builder to directly or indirectly notify the Buyer of such event, the Builder shall notify the Buyer of such event immediately on the day when the Builder has access to the communication facilities.

The Buyer shall have the right to object to any extension claimed by the Builder, which does not conform to the provisions of this Article. The causes of Force Majeure shall be unequivocally established to the Buyer's satisfaction and certified by the Government or any other official authority at the place where Force Majeure occurs or supported by any other documentary evidence such as proof of authentication of such event or press report acceptable to the Buyer.

3. Right to Rescind for Excessive Delay

If the total cumulated time of permissible delays due to Force Majeure causes, aggregates Two Hundred and Forty (240) calendar days, then, in such an event, the Buyer shall have the right to rescind this contract on terms mutually agreed to.



ARTICLE-X: WARRANTY OF QUALITY

1. Guarantee for Performance, Equipment, Materials and Workmanship:

For the period of twelve (12) months from the date of delivery and acceptance of the Vessel, the Builder guarantees the Vessel in respect of its design, hull, engines, machinery and other accessories, painting including hull coating, cargo and /or ballast tank coatings and all parts and equipment of such Vessel and their performance against all defects which are due to deficiency in design, defective equipment and/or material, poor workmanship and/or faulty construction.

Paint performance guarantee shall be as under:

- (a) Guarantee of antifouling performance for the underwater, side and bottom part to be 60 months;
- (b) Guarantee of anticorrosion for ballast tanks to be 60 months
- (c) Guarantee for fresh water tanks painting to be 60 months;
- (d) Guarantee for other areas be 12 months.

2. Notice of Defects.

Complaints in respect of all defects discovered before the expiry of the guarantee period shall be dispatched by e-mail, confirmed in writing by the Buyer to the Builder as soon as possible from the time of discovery of the defects. Last complaints by e-mail shall be lodged not later than fourteen (14) calendar days and detailed claim for the same shall be lodged within thirty (30) calendar days after the expiry of the twelve (12) months guarantee period.

3. Extent of the Builder's Liability.

The Builder shall be under no obligation with respect to defects discovered after the expiry of the period of guarantee specified above.

The Builder shall not be responsible for any consequential loss or damages occasioned by or connected with any defects other than those defects directly affecting the mechanical functioning of the Vessel or any part or equipment thereof, nor for any loss of time in operating or repairing the Vessel, or both, caused by any defects. Nor shall there be any liability of the Builder hereunder for defects in the Vessel, or any part or equipment thereof caused by fire or accident at sea or elsewhere by normal wear and tear, by perils of sea, river or navigation or by mismanagement, accidents, negligence or willful neglect on the part of the Buyer, its

employees or agents or of any persons other than employees or agents of the Builder.

Likewise, the Builder shall not be liable for subsequent defects in the Vessel or any part or equipment thereof that are conclusively established to be solely due to bad repairs which were made by workshops other than the Builder without prior intimation to the Builder at the sole discretion of the Buyer.

4. Sub-contracting

The Builder may subcontract any works, as per the normal practices but the Builder shall nevertheless always remain fully responsible under the contract. The Buyer's rights herein under shall not be in any way reduced in respect of such subcontract work and the builder shall keep the buyer fully informed of the major sub-contractors appointed by the builder.

It will be the Builders responsibility to ensure quality control and compliance with Rules, Regulations etc of the works carried out by the sub-contractor.

Delays in construction schedule due to sub-contracting will be totally be the Builders responsibility and to his account.

5. Extended Warranty

In respect of the machinery items, if any defect arises during the guarantee period, and such machinery is to be repaired or replaced with new, then the guarantee for such items shall be extended for a further period of six (6) months from the date of installation of such machinery, paints etc. as per technical specifications.

In case if repairs that couldn't be carried out within the guarantee period of Twelve (12) Months, and are differed by mutual consent, then the extended guarantee for such items will be for a period of Six (6) months , but any case such warrantee shall not exceed Eighteen (18) from the date of delivery. Any natural wear and tear is not the subject for extension of guarantee.

In case of painting of underwater hull, ballast water tanks and Fresh water tanks the builder shall provide five (05) years extended guarantee (in accordance with the terms and conditions of the paint manufacturer) to be arranged by the builder from the manufacturer of the said paints.

6. Remedy of Defects

The Builder shall remedy any defects, against which the Vessel, its hull, painting, engines,



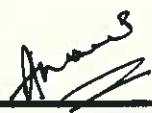
machineries and other accessories or any part or equipment thereof as guaranteed under this Article, by repairing, rectifying or replacing the defective parts at the builder's Shipyard satisfactorily. In case the Vessel cannot be conveniently brought to the Shipyard of the Builder, and upon written acceptance of the repairs, defects, etc. by the Builder to be covered under the guarantee, the Buyer with due intimation to the Builder may arrange necessary repairs or replacements to be made elsewhere. The Builder shall be liable to bear the costs of such repairs and replacement.

If the repairs/replacements, accepted by the Builder and covered under the guarantee, are carried out at a place other than the Builder's Shipyard, then the Builder's liability shall be limited to the cost of carrying out such repairs/replacements in a reputable Indian shipyard where the Vessel can be dry-docked.

In such case, the Builder shall not be responsible for towage, dockage, wharfage, port charges and anything else incurred for the Buyer's getting and keeping the Vessel ready for such repairing or replacing and the Buyer shall first give the Builder a notice thereof and the Builder shall have the right to verify, by its own representative, the nature and extent of the defects complained of and shall, after such verification, promptly, advise the Buyer of its acceptance or rejection of the defects as one that is subject to the guarantee herein provided. The Buyer shall give all co-operation for such verification, which shall not hold up the operation of the Vessel. Any dispute, which cannot be mutually resolved, shall be referred to arbitration in accordance with the provisions of Article – XIV hereof.

Upon request from the Buyer, the Builder shall forward to the port or place designated by the Buyer, necessary parts and/or equipment, by courier/air-freight/sea-freight on case to case basis at Builder's expense, to replace those which have been found defective, in accordance with provisions hereof. If the Buyer should reasonably require same to be forwarded by air-freight, the Builder shall do so, at Builder's expense on CIF (Cost, Insurance & Freight) terms, provided such parts and/or equipment are essential to and urgently required for the normal operation of the Vessel.

When it is necessary in view of urgency for the manufacturers' or their authorised representatives to carry out repairs, where such repairs cannot be undertaken by local workshops at the port where the Vessel is, then the Buyer has the right to request such representatives to visit the port at which they are required and to carry out the repairs with



intimation to the Builder. All expenses, including travel, lodging and boarding expenses, as well as cost of replacement or spare parts with class certification if required and labour charges, shall be to the account of the Builder, provided such defects are covered under the guarantee.

If the buyer is unable to dry dock the vessel within guarantee period due to operational commitments, the builder shall agree to extend the guarantee period for under water inspection of the hull and equipment, provided that this dry docking is not delayed beyond (3) Months. Before expiry of the twelve (12) months guarantee period for the underwater portion of the hull and equipment under water inspection may be arranged, at the Buyer's cost to determine the defects, if any, to the underwater portion of the hull and equipment during the guarantee period. Should the report of the underwater inspection result in guarantee claims on the Builder, both Parties shall mutually agree on a settlement of these claims. Should it result in a claim of a substantial nature, the Builder may ask the Buyer to dry-dock the Vessel as soon as feasible at the Builders cost & expenses.

Notwithstanding what is stated above, in the event of pressing repairs, when the safety of the Vessel is involved or when the operational requirements of the Vessel warrant, such repairs shall be carried out by the Buyer underwritten intimation to the Builder. The cost of bringing the Vessel to the repair yard for such repairs shall be borne by the Buyer. During the guarantee period, the Builder shall pay to the Buyer as promptly as possible, not later than sixty (60) calendar days after the receipt of invoices(s) by the Builder from the Buyer, in Indian Rupees, for such repairs or replacements, the cost of making the repairs or replacements incurred by the Buyer.

The Buyer shall be entitled to invoke and en-cash the Performance Bank Guarantee in the event of failure / default on the part of the Builder to remedy the defects as aforesaid.

Within Fifteen (15) months after delivery of the Vessel, the Buyer and the Builder shall make a financial settlement of all guarantee claims and sign a Protocol.

7. Arrangements for Supply of "spares"

In order to facilitate arrangements for supply of "spares", the Builder shall provide appropriate letters from the suppliers/vendors of Diesel Generator Engines, propulsion equipment, propulsion motors, methanol fuel supply system of their commitments for continuous uninterrupted supply of essential "spares" during service period of the Vessel.

ARTICLE-XI: INSURANCE

1. **Extent of Insurance Coverage.**

It is the Builder's responsibility to insure the Vessel commencing from the time of keel laying up to acceptance and delivery of the Vessel by the Buyer. The Builder shall, at its own cost and expense, insure the Vessel and all machinery, equipment, and outfits built into or installed in or upon the Vessel against all risks including war and SRCC risks with a reputable insurance company or underwriters. The amount of such insurance coverage shall not be less than the aggregate amount of all Installments payable by the Buyer to the Builder. The builder shall take Builders Risk Insurance (BRI) with beneficiary as MDL as the vessel is built on facilities leased out to MDL.

2. **Application of Recovered Amounts.**

In the event the Vessel or material, parts, machinery and equipment of the Vessel, are damaged by reason of an insured risk at any time before the delivery and Acceptance of the Vessel and in the further event that such damage shall not constitute an actual or a constructive total loss of the Vessel, the amount received in respect of the insurance shall be applied by the Builder in repair of such damage to the satisfaction of the Buyer and the Classification Society and the Buyer shall accept the Vessel under this Contract and the Specifications. The Builder, however, will not be entitled to a free extension of the period of delivery of the Vessel unless agreed by the Buyer, based upon the extent of damage and time required to rectify the same.

Should the Vessel, from any cause, become an actual or constructive total loss, the Builder shall according to the mutual agreement with the Buyer either:

- i) Proceed in accordance with the terms of the Contract, in which case the amount received in respect of the insurance shall be applied to the construction of a similar Vessel, provided the parties hereto shall have first agreed thereto, in writing, to such reasonable extension of delivery date, as may be necessary, for the completion of such reconstruction, delays due to such extension being deemed to be permissible delays, or
- ii) Refund promptly to the Buyer the full amount of all sums paid by the Buyer to the Builder, as Installments, in advance of delivery of the Vessel, along with interest at the rate

of nine percent (9%) per annum accrued from the date of the payment of the price Installments to the date of receipt of refund by the Buyer, in which case this Contract shall be deemed to be automatically terminated and all rights, duties, liabilities and obligations of each of the Parties to the other, shall forthwith cease and stand terminated.

Further the Contract clause between MDL and the Contractor / Shipyard will also endorse the following clause to safeguard the interest of MDL.

(i) In all cases of claims, the contractor shall lodge the claims with the underwriter and also settle all the claims. All claims shall be settled in India. However, the contractor shall proceed with the repairs and/ or replacement of the equipment/components without waiting for the settlement of claim”.

(ii) “Contractor shall indemnify and hold harmless MDL against any and all liability, loss and expenses to the extent caused by the contractor’s negligent or wrongful act or omissions and resulting in bodily injury, death or property damages”

3. Termination of Builder’s Obligation to Insure.

The Builder shall be under no obligation to insure the Vessel hereunder after delivery by the Builder and acceptance of the Vessel by the Buyer.



ARTICLE-XII: BUYER'S DEFAULT

1. **Definition of Default.** The Buyer shall be deemed to be in default in performance of its obligations under this Contract in the following cases:

(a) If the Buyer fails to pay the second, third and fourth Installments to the Builder within Thirty (30) Business days, subject to the Builder providing Bank Guarantee for each installment, after such Installments become due and payable under the provisions of Article - III hereof, or

(b) If the Buyer fails to sign the Protocol of Delivery & Acceptance and take delivery when the Vessel is tendered for Acceptance or delivery, respectively by the Builder on completion of the Vessel in full conformity with the Contract and Specifications & Plans, under the provisions of Article - VIII hereof.

(c) In case the Buyer's financing arrangements is beyond the Buyer's control, which could not have been reasonably foreseen and eliminated by the Buyer and/or any disruption in the currency or capital markets affecting the ability of the Buyer to draw down or continue to draw down the loan which it has negotiated in order to finance part of the Contract Price.

(d) It is clearly understood between the Buyer and the Builder that it would not be a default on the part of the Buyer if the Buyer remedies the default under sub-clause (i), (ii) and (iii) above within thirty (30) Business days from the date when the Buyer's obligation falls due.

2. **Effect of Buyer's Default.**

If the Buyer shall be in default as provided in Clauses 1 (i) to (iii) above of its obligations under this Contract, then the contractual delivery date of the Vessel shall be extended automatically for the actual period (in calendar days) of such default and hence the Builder shall not be obliged to pay any liquidated damages for the delay in delivery of the Vessel caused thereby.

3. **Interest Charge**

If the Buyer is in default of payment of any Installments due and payable under this Contract, the Buyer shall pay to the Builder interest at the rate of Nine percent (9 %) per annum in



respect of the Installment payments so in default for the whole period of default commencing with the first day of default and lasting up to the date of actual payment by the Buyer of the full amount of such Installments. Such sum of interest charges will be paid along and in addition to the amount of the twelfth Installment payment to the Builder as provided in Clause 4 of Article – III hereof.

It is also hereby understood by both Parties that the above interest charges, paid by Buyer to the Builder, is by way of liquidated damages and not by way of penalty.

4. Rescission by the Builder:

If the said default of the Buyer continues for a period of thirty (30) calendar days after the Builder's notification to the Buyer of such default, the Builder may, at its sole option, rescind this Contract by giving notice to the Buyer by e-mail/letter of such rescission, confirmed in writing. In this case, any Installment or Installments thereof paid by the Buyer to the Builder shall be retained subject to provision of Clause 5 of this Article.

5. Sale of the Vessel:

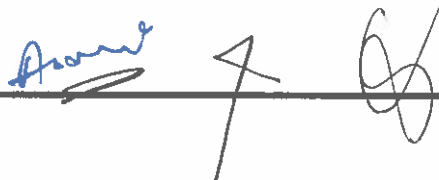
In the event of rescission of this Contract, as provided above, the Builder shall have full right and power either to complete or not to complete the Vessel, as it deems fit, and after notice to the Buyer to sell the Vessel, at a public or private sale, on such terms and conditions as the Builder thinks fit. In case of public sale through tender, the terms and conditions of the tender shall be communicated to the Buyer also, who shall be invited to participate. Such invitation to tender shall include the place and closing date of the tender, which shall not be less than fifteen (15) calendar days from the date such invitation to tender is received by the Buyer.

The proceeds from the sale, received by the Builder, shall be applied by the Builder as follows:

(a) In case of sale of the Vessel in incomplete state:

The proceeds from the sale, received by the Builder, shall be applied firstly, to payment of:

- (i) all costs and expenses attending the sale incurred by the Builder as a result of the



Buyer's default, and then towards

- (ii) Compensation to the Builder for all costs and expenses relating to and restricted to the construction of the Vessel.

If there is any balance left out of the proceeds from the sale plus the Installment or Installments paid by the Buyer, after meeting all of the above (a) and (b), then such balance shall be paid to the Buyer within fifteen (15) Calendar Days without interest. However, the amount of such payment to the BUYER shall in no event exceed the total amount of installments already paid by the BUYER and the invoice price of the BUYER's supplies, if any. However, if the proceeds of sale and the Installment(s) paid by the Buyer to the Builder is deficient to pay the same, such deficiency shall be paid by the Buyer within fifteen (15) Calendar Days from the date of Acceptance of demand from the Builder.

- (b) In case of sale of the Vessel after completion: The proceeds from the sale, received by the Builder, shall be applied firstly, to payment of:

- (i) all costs and expenses attending the sale incurred by the Builder as a result of the Buyer's default, and then towards
- (ii) all unpaid Installments and/or unpaid balance of the Contract Price and interest on such Installments at the rate of nine percent (9%) per annum from the date of such Installments fall due.

If there is any balance left of the proceeds from the sale, after full payment of all of the above (a) and (b), the balance shall be paid to the Buyer within fifteen (15) Calendar Days without interest. However, that the amount of such payment to the BUYER shall in no event exceeds the total amount of installments already paid by the BUYER and the invoice price of the BUYER's supplies, if any. However, if the proceeds of sale are deficient to pay all of the above (a) and (b), such deficiency shall be paid by the Buyer within fifteen (15) Calendar Days from the date of receipt of the demand from the Builder.

ARTICLE-XIII: DEFAULT BY THE BUILDER

The Builder shall be deemed to be in default if the Vessel is not delivered within Two Hundred and Forty (240) calendar days after the contractual delivery date, excluding:

- (a) delays due to Buyer's defaults of nature which under the terms of this Contract permit extension of time for delivery;
- (b) delays due to modification and changes as defined in Article – VI;
- (c) delays due to force majeure as defined in Article IX;

All in accordance with the terms of this Contract and specifications of the vessel.

In such an event the Buyer at its sole option, may rescind the contract by serving upon the Builder a written notice of rescission of the Contract as provided under Article IV of this contract.

Further, if any of the Key Events which are related to Payment is Delayed for a period of more than Two Hundred and Ten (210) days after the date on which it was required to be completed as per the (construction schedule) of this Contract as mentioned in the Article 1 Clause no. 5 or failure to extend the Original Corporate Guarantee (in the form of Indemnity Bond) as per Article III Clause 6; the Buyer may, at its sole option, rescind the Contract by serving upon the Builder a written notice of rescission of the Contract.

The Builder shall further be deemed to be in default if the Builder goes or takes steps to go into liquidation (reconstruction or amalgamation while solvent is excluded). In such an event, the Buyer may, at its sole option, rescind the Contract by serving the notice provided under Article - IV of this Contract. Such rescission will be effective as of the date of notice and the Builder shall, within fifteen (15) Calendar Days thereafter, refund all Installments paid by the Buyer, with interest at the rate of nine percent (9%) from the date of payment of each Installment by the Buyer till the actual date of receipt of the refund by the Buyer.

In the event of the Vessel being incomplete even after expiry of Two Hundred and Forty (240) calendar day's period, the Buyer has the sole option to remove the Vessel, along with all equipment, material or parts acquired for the construction of the Vessel, to any other Shipyard of its choice and cause the same to be completed there. The balance of the Contract Price shall be applied by the Buyer for such completion. If the balance of the Contract Price is found to be deficient to pay for the completion of the Vessel, such deficiency shall be restored by the Builder immediately upon the Buyer making such claim.



It is further clarified that in case the Builder is in default of any of its obligations under this Contract, the Buyer is entitled to and shall have, in addition to the above rights and remedies, such other rights, powers and remedies as the Buyer may have elsewhere in this Contract.

Further, it is added that Builder shall be deemed to be in default if the Builder is declared bankrupt, goes into voluntary liquidation or is unable to meet its obligation to its creditors when they fall due or a receiver is appointed or is asked by a competent authority or a court to re-organize its affair. In such an event the Buyer should have the sole and complete right to rescind this Contract at its absolute discretion.



ARTICLE-XIV: ARBITRATION AND LAW APPLICABLE

In the event of any dispute or difference relating to the interpretation and applications of the commercial contract(s) between Central Public Sector Enterprises (CPSE)/Port Trusts inter se and also between CPSEs and Government Departments/Organizations (excluding disputes relating to Railways, Income Tax, Customs & Excise Departments), such dispute or difference shall be taken up by either party for its resolution through AMRCD as mentioned in DPE OM No. 05/0003/2019-FTS-10937 dated 14th December 2022 and the decision of AMCRD on the said dispute will be binding on both the parties.



ARTICLE-XV: ALTERATIONS AND ASSIGNMENT OF CONTRACT

1. Any alterations to this Contract shall be valid only when the alterations / amendments are reduced to writing and signed by both parties or as provided under the Contract.
2. The Builder agrees that the Buyer shall have the right to assign the Contract at any time prior to the delivery of the Vessel, with the prior written approval of the Builder, which the Builder shall not unreasonably withhold.
3. In the event of any assignment pursuant to the terms of this Contract, the assignee, its successors and assigns shall succeed to all of the rights and be bound by the obligations of the Buyer hereunder.
4. The Builder acknowledges that the Buyer may be assigning the Contract by way of security to a bank or a financial institution or a lender and confirms and agrees that in the event of such a bank or financial institution or the lender requiring any changes and/or additions to be made in this Contract, the Builder shall consider such request in good faith and will not unreasonably withhold its consent or agreement to such changes.
5. Any financial implications arising due to assigning the Contract as above shall be borne by the Buyer.

ARTICLE-XVI: TAXES, DUTIES AND BANK CHARGES

1. Taxes

All taxes and charges of any kind incurred in connection with this Contract, arising out of obligations of the Builder, shall be borne by the Builder and those arising out of obligations of the Buyer, shall be borne by the Buyer.

2. Duties

The Builder shall hold the Buyer free from any payment of duty imposed upon materials or supplies, which the Builder may acquire, at its cost, for construction and sea trials of the Vessel, including running stores, provisions and supplies necessary to stock onboard the Vessel for the sea trials.

3. Bank charges

All costs and bank charges incurred in connection with remittances by the Builder to the Buyer shall be borne by the Builder, and all costs and bank charges incurred in connection with remittances by the Buyer to the Builder shall be borne by the Buyer.

Asant

7

6

ARTICLE-XVII: PATENTS AND COPYRIGHTS

1. The Builder shall indemnify the Buyer against infringement of any patent or trademark rights, or any other patent liability, including costs and expenses for or on account of any patented or un-patented invention made or used in the performance of the Contract, including the cost of litigation, if any. The Builder's obligation shall not be terminated by the passage of any period of time even after delivery of the Vessel.
2. The Buyer or its representative shall have a right of access through the Builder to information pertaining to any materials or designs used for or in the construction of the Vessel which the Buyer may reasonably require for plan and equipment approval, modifications, normal operation, repair or maintenance of the Vessel.
3. The Builder shall not change the designer at any point of time during the construction period of the vessel.



ARTICLE-XVIII: IDENTIFICATION

Immediately upon the Contract becoming effective, the Builder shall identify all parts, materials, equipment and machinery, wherever situated, appropriated for the purpose of performing this Contract, as belonging to the Vessel by marking the Hull No. ----- or any other appropriate identification on them as per the normal practice of the Shipyard.

Amend

T

6

ARTICLE-XIX: WAIVER OF SOVEREIGN IMMUNITY

1. The Buyer and the Builder hereby represent and warrant that this Contract is a commercial act and that neither the Buyer nor the Builder is entitled to claim immunity from any legal action or proceedings with respect to itself or any of its properties or assets in relation to the enforcement of this Contract on the ground of sovereignty or otherwise under any law.

2. To the extent that the Buyer or the Builder, or any of its properties or assets has or hereinafter may acquire any right to immunity from set-off, legal proceeding or action attachment whether prior to judgment or otherwise, or execution of judgment on the ground of sovereignty, the Buyer or the Builder for itself and its properties or assets, hereby irrevocably waives such right to immunity in respect of its obligations under this Contract.



ARTICLE-XX: SUPPLY OF SCALE MODEL

The Builder agrees to supply to the Buyer, free of charge, a model of the Vessel manufactured to scale 1:50 in finished state duly mounted on platform and illuminated and enclosed in glass case. One model shall be supplied at a place within India indicated by the Buyer at the time of delivery of the Vessel.

ARTICLE-XXI: EFFECTIVENESS OF CONTRACT

This Contract shall become effective on the acceptance of PO.



ARTICLE-XXII: RIGHTS AND OBLIGATIONS OF THE BUILDER

All the covenants, liabilities, undertakings, agreements and obligations herein given, made or assumed on the part of the Builder are given, made and assumed by -----
(Shipyard's name).

It is further agreed that all benefits, rights and other entitlements, including the right to payment shall constitute benefits, rights and entitlements of the Builder.

Amir

↑

Q

ARTICLE-XXIII: EXCLUSIVENESS

This Contract shall nullify all communications, negotiations, agreements, whether written or oral of the parties with respect thereto made prior to the date of this Contract, unless otherwise specifically mentioned in or referred to in this Contract, save and except the Supplemental Agreements and Addenda, if any, entered into and signed by the parties to this Contract, which shall be deemed as being incorporated in and forming part of this Contract. Any Agreement, Addendum or Amendment to this contract after the date of this contract shall be valid.

The Contract is made out and signed in two identical copies, one for the Builder and one for the Buyer consisting of Article –I to Article – XXIV.

IN WITNESS WHEREOF, the Parties hereto have caused this Contract to be duly executed on the date, month and year first above written.

For and on behalf of	Buyer MAZAGON DOCK SHIPBUILDERS LIMITED	Builder
Signature		
Name		
Designation		
Date		
Place		
In Presence of		
Signature		
Name		
Designation		
Date		
Place		

**EXHIBIT-A: FORM OF CORPORATE GUARANTEE (IN THE FORM OF
INDEMNITY BOND)**

To
Mazagon Dock Shipbuilders Limited
Dockyard Road, Mumbai – 400010
INDIA

Dear Sirs,

**LETTER OF CORPORATE GUARANTEE (IN THE FORM OF
INDEMNITY BOND)**

We refer to the Shipbuilding Contract dated ___ day of _____, XXXX (hereinafter referred to as "the Contract") entered into between MAZAGON DOCK SHIPBUILDERS LIMITED, a company duly incorporated under the law of India, whose registered office is at Dockyard Road, Mazagon, Mumbai- 400010, India (hereinafter called the "Buyer") and -----, with registered office is at ----- (hereinafter called the "Builder").

Under the Contract the Builder has undertaken to design, construct, equip, launch and deliver to the Buyer within months from the date of the Contract becoming effective, a ... Vessel bearing the Builder's Hull No. XXX (hereinafter referred to as "the Vessel") in accordance with the Specifications and Plans thereof contained in the Contract.

According to the Article - III of the Contract, the Contract Price of the Vessel shall be INR xxxxxxxxxxxx/- Only) (hereinafter referred to as the "Contract Price").

The Contract Price shall be paid by the Buyer to the Builder in installments as per Clause 3 of Article III subject to the Builder providing Corporate Guarantee (in the form of Indemnity Bond) for all the stages of the contract as stated in Clause-7 of Article – III.

In connection with the above, upon the Buyer serving a Notice of rescission pursuant to the provisions of the Contract,

We do hereby irrevocably and unconditionally guarantee that:

1. Upon the first demand of the Buyer in writing (such demand to be given in the manner set out in (2) below), we shall, without reference or recourse unconditionally pay to the Buyer without demur, the aggregate amount of the Installments paid by the Buyer to and received by the Builder, not exceeding INR ___only without any deduction whatsoever together with interest thereon at the rate of Nine percent (9 %) per annum as the case may be under the provisions of the Contract. Such interest to be payable from the date each of

the above installment was received by the Builder until the date of receipt of refund by the Buyer. All monies payable by us to the Buyer under this Corporate Guarantee (in the form of Indemnity Bond) shall be paid in Indian Rupees by means of RTGS. We confirm that this transaction is permitted by our authorities so that any refund to be made to the Buyer will be made as herein above provided, without any further permit or license being necessary.

2. Any demand under the Corporate Guarantee (in the form of Indemnity Bond) shall be made in writing and be given by email or delivered by courier to us as follows:

Address:

Telephone:

Fax /E-mail:

Attention:

3. This Corporate Guarantee (in the form of Indemnity Bond) shall come into force, as soon as payment of INR ----- (in words) representing the (first/second/...../twelfth) installment is made to the bank account of the Builder held with us and will expire three (3) months after the actual date of delivery of the vessel as evidenced by the Protocol of Delivery and Acceptance of the Vessel duly signed by the Builder and the Buyer or refund has been made by the Builder to the Buyer, whichever occurs earliest, after which you are to return this Corporate Guarantee (in the form of Indemnity Bond) to us by courier for cancellation in accordance to Article VIII Clause 2.
4. This Corporate Guarantee (in the form of Indemnity Bond) is irrevocable and any change in the corporate constitution of the Builder or of the Buyer shall not discharge our liability hereunder.
5. Our liability under this Corporate Guarantee (in the form of Indemnity Bond) shall terminate upon acceptance by the Buyer of the delivery of the Vessel, in accordance with the Contract.
6. This Corporate Guarantee (in the form of Indemnity Bond) is assignable and may be assigned to any person to whom the benefit of the Contract shall be assigned subject to and in accordance with the terms thereof.
7. This Corporate Guarantee (in the form of Indemnity Bond) shall be governed and construed in accordance with the Laws of India and the undersigned submits to the jurisdiction of the courts of India.
8. Notwithstanding anything contain herein our liability under this Corporate Guarantee (in the form of Indemnity Bond) is restricted to xxx (amount), and interest thereon at the rate of 9% per annum.

Our Corporate Guarantee (in the form of Indemnity Bond) shall remain in force up to Three (03) months after the contract rescinding option date linked to the delivery event viz., XXXX (date) and unless any action is filed against us or a request for the extension of the guarantee is received on or before the XXXX (date), all your rights under this Corporate Guarantee (in the form of Indemnity Bond) all stand extinguished and we shall be relieved and discharged from all liabilities there under.



9. IN WITNESS HEREOF, we have caused this Letter of Corporate Guarantee (in the form of Indemnity Bond) to be executed and delivered by our duly authorized representative the day and year above written.

Very truly yours

For and on behalf of XXX

(AUTHORISED SIGNATORY)



**EXHIBIT-B: FORM OF PERFORMANCE SECURITY (PERFORMANCE BANK
GUARANTEE CUM SECURITY DEPOSIT)**

To,
Mazagon Dock Shipbuilders Limited
Dockyard Road, Mumbai – 400010
INDIA

Performance Security towards coverage of Performance Bank Guarantee cum Security Deposit period against Contract dated ___ for Hull No. ___ in favour of ___

Agreement between M/s. ___ (herein after called the Builder) and ___ (herein after called the Buyer).

In consideration of the ___ (Buyers full Address) having agreed as per their contract dated ___ Mentioned above to accept the Performance Security consisting of three percent (03%) of the consideration for the due fulfillment of the contract as per the terms and conditions contained therein towards coverage against Performance and Warranty in the shape of Performance Bank Guarantee and Security Deposit for INR ____.

The Builder undertake to indemnify and keep indemnified the ___ (Buyers full Address) to the extent of INR ___ towards coverage for Performance and warranty to the ___ (Buyers full Address) or their assignee by reason of any breach of terms and conditions as contained in the said Contract by the Builder (M/s. ___) during the period of ___ months from the date of issuance.

And the Builder hereby unconditionally without demur undertake to pay any claim under the Performance Security on demand of the ___ (Buyers full Address), without any reference to the Builder a sum not exceeding INR ___ for non-fulfillment of any of the terms and conditions of the said contract by the Builder.

The Builder undertakes not to revoke this Performance Security during its currency except with the previous consent of the Buyer in writing.

The Performance Security shall remain in force for a period of ___ months from the date of Issue subject to further that the Buyer has no right under this bond after the expiry of the above period from the date of execution and the Builder shall be relieved / discharged from all liabilities under this guarantee thereafter.

The conditions of these obligations are:

- 1) If the Builder does not fulfill any of the conditions mentioned in the Contract
- 2) If performance of the supplied vessel or equipment or services is not found satisfactory and

hampers official function in any manner even after attending to by the Service Engineer deputed by the Builder within a reasonable time.

The Builder undertake to indemnify the Buyer up to the above amount, without the Buyer, having to substantiate its demand, provided that in its demand, the Buyer will note that the amount claimed by it is due to it owing to the occurrence of one or all of the two conditions, specifying the occurred conditions or conditions.

This Performance Security will remain in force till _____ and any demand in respect thereof should reach the Builder not later than the specified date/dates.

Notwithstanding anything contained herein:

Our liability under this Performance Security shall not exceed INR -----

This Performance Security shall be valid up to -----

The amount of warranty/guarantee shall not be increased beyond 3 %. Unless a demand under this warranty/guarantee is received by Builder in writing on or before the expiry date (unless this warranty/guarantee is extended by the Builder) all rights under this guarantee shall be forfeited and Builder shall be discharged from the liabilities hereunder. This warranty/guarantee is personal to the BUYER and not assigned to a third party without prior written permission.

This Performance Security (Performance Bank Guarantee cum Security Deposit) shall be governed by the Indian Law.

Note: The above Performance Security will be submitted on Non-Judicial Stamp paper of Rs. 500 as specified in the Maharashtra Stamp Act.







EXHIBIT-C: FORMAT FOR PROGRESS REVIEW

PROGRESS REPORT - HULL NO

Activity	Description	Weightage in overall project	Group weightage	Cumulative Individual Percentage		
				Plan	Actual	Var.
Design						
	Key plans	4.50%	25.00%			
	Production drawings	13.50%	75.00%			
		18%	100%			
Procurement						
	Indenting	1.50%	10.00%			
	Placing of Purchase order	6.00%	40.00%			
	Receipt of Material	7.50%	50.00%			
		15%	100%			
Production						
	Hull Construction	23.45%	35.00%			
	Preparation	2.58%	3.850%			
	Sub assembly	3.99%	5.950%			
	Block Assembly	7.50%	11.200%			
	Block Painting	1.06%	1.575%			
	Grand Assembly	1.64%	2.450%			
	Erection of blocks	0.94%	1.400%			
	Consolidation	4.92%	7.350%			
	Tank APT / HPT	0.82%	1.225%			
	Outfitting , Piping & Painting	20.10%	30.00%			
	Pipe, support & seat fabrication	2.51%	3.75%			
	Block outfitting	1.52%	2.28%			
	Onboard outfitting	2.66%	3.97%			
	Tank outfitting completion & survey	1.31%	1.95%			
	Tank painting	1.31%	1.95%			
	Shaft erection, alignment, choke fasting, A & P brackets fit up	0.17%	0.26%			
	Hull exterior blasting & painting	0.44%	0.65%			
	Onboard painting	0.73%	1.09%			
	Hull markings, Principal dimensions survey & Launching	0.11%	0.16%			

PROGRESS REPORT - HULL NO

Activity	Description	Weightage in overall project	Group weightage	Cumulative Individual Percentage		
				Plan	Actual	Var.
	Piping systems completion & pressure testing	2.38%	3.55%			
	Installation of major Machinery / Equipment	2.83%	4.23%			
	Commissioning of major Machinery / Equipment	4.14%	6.18%			
	Accommodation Outfitting	11.39%	17.00%			
	Insulation	2.32%	3.47%			
	Panelling, Ceiling & Flooring	5.17%	7.71%			
	HVAC System	1.74%	2.60%			
	Furniture	0.35%	0.52%			
	Piping in accommodation	0.74%	1.11%			
	LSA, FFA	0.11%	0.16%			
	Windows & Scuttles	0.13%	0.20%			
	Laundry & drying equipment	0.13%	0.20%			
	Galley , Pantry & Mess equipment	0.26%	0.39%			
	Toilet Modules, Showers	0.44%	0.65%			
	Electrical Outfit	10.05%	15.00%			
	Fabrication & installation of cable way items	1.06%	1.58%			
	Cabling works	3.05%	4.55%			
	Fitting of Doppler log, Eco sounder , ICCP etc	0.22%	0.33%			
	Communication system	0.98%	1.46%			
	Navigation items	0.94%	1.40%			
	Alarm systems	0.87%	1.30%			
	Installation of major electric machinery	0.81%	1.20%			
	Commissioning of major electric machinery	1.48%	2.21%			
	Cable termination works	0.65%	0.98%			
	Mandatory surveys & inclination test	0.05%	0.07%			
	Sea trials & Delivery	1.96%	2.93%			
		67.0%	100.0%			
Overall Project:		100.0%				





ANNEXURE-I: GENERAL ARRANGEMENT

The General Arrangement is enclosed at Annexure – I.

Handwritten signature

Handwritten mark

Handwritten signature

ANNEXURE-II: TECHNICAL SPECIFICATION

The Technical Specification enclosed at Annexure – II.

Amrit

7

G

ANNEXURE-III: MAKER'S LIST

The Maker's List is enclosed at Annexure – III.

Handwritten signature

Handwritten mark

Handwritten mark

PLAN HISTORY	ENGINE TYPE	HYUNDAI - HiMSEN 4 x 6H22CDF-LM x 1000rpm
	SHIPYARD	TBD
	CLASS	DNV
	HULL NO.	TBD

TITLE : Extent of Delivery for Marine GenSet
(HYUNDAI-HiMSEN 4-Stroke Dual Fuel Engine)

Date : 2026-06-26

Signature

Date	Des.	Chk.	Appd.	A.C	Replaced by Ident. No. :	R
						5
						4
						3
						2
260615	HMS	JJU	SMH	*	Update	1
260206	HMS	JJU	SMH	*	For preliminary	0
Scale :				Type :		 HD HYUNDAI HEAVY INDUSTRIES
				6H22CDF-LM		
Ver. No. MDF 16				Description :		
Page No. : 1 (26)				Extent of Delivery		Ident. No. : EP664-M-01

Handwritten signature

Handwritten number 4

Handwritten signature

HIMSEN	Extent of Delivery	Ident. No. EP664-M-01	R 1	Page 2 (26)
---------------	---------------------------	--------------------------	--------	----------------

INDEX OF CONTENTS

<u>CODE NO.</u>	<u>DESCRIPTION</u>	<u>PAGE</u>
4 00 01 0	General Information	
4 01 00 0	Introduction -----	3
4 02 00 0	Description of Symbol -----	3
4 03 00 0	Quantity of Components -----	3
4 00 02 0	General Specification	
4 04 00 0	Information of Project -----	4
4 05 00 0	Rules and standardization -----	4
4 06 00 0	Application of Engine -----	5
4 07 00 0	Rating of Engine -----	5
4 08 00 0	Particulars of Alternator -----	6
4 09 00 0	Documentation -----	8
4 10 00 0	Language and Unit -----	8
4 11 00 0	Factory / -----	9
4 00 03 0	Design of Engine	
4 14 00 0	Painting colour -----	11
4 15 00 0	Rotating direction -----	11
4 16 00 0	GenSet Coupling -----	11
4 17 00 0	GenSet Foundation -----	11
4 18 00 0	Torsional Damping Equipment -----	12
4 19 00 0	Maintenance & Safety Fabrication -----	12
4 20 00 0	Turning Equipment -----	12
4 21 00 0	External Connections -----	13
4 22 00 0	Fuel Oil System -----	13
4 23 00 0	Methanol System -----	15
4 25 00 0	Lubricating Oil System -----	16
4 26 00 0	Cooling Water System -----	17
4 27 00 0	Compressed Air System -----	18
4 28 00 0	Combustion Air & Exhaust Gas System -----	19
4 29 00 0	Engine Spare Parts -----	20
4 30 00 0	Engine Tools -----	20
4 70 00 0	General Specification for Electric equipment -----	21
4 72 00 0	Speed governing-----	21
4 73 00 0	Engine Automation Equipment -----	21
4 80 00 0	Sensor -----	22
4 92 00 0	Pre-lubricating Oil Pump Starter -----	24
4 94 00 0	Turning gear starter-----	25
4 99 00 0	Special Notes	
4 99 00 1	General -----	26

[Handwritten signature]

[Handwritten mark]

[Handwritten mark]

Page II

	Extent of Delivery	Ident. No. EP664-M-01	R 1	Page 3 (26)
---	---------------------------	--------------------------	--------	----------------

4 00 01 0

GENERAL INFORMATION

4 01 00 0

INTRODUCTION

This document of technical summary is to be used as a tool for clarification of detail technical specification and extent of delivery of the offered engine(s) between the customer and engine builder.

The offered engine(s) is "HiMSEN", which is the registered brand name of

Hyundai's own design engine and the abbreviation of "HI-Touch Marine & Stationary Engine".

The applicable model type of engine is H22CDF-LM in each number of cylinder.

The application of the engine is available for only Marine GenSet.

4 02 00 0

DESCRIPTION OF SYMBOL



Applied and included in the engine builder's supply scope ; Filled with "X"



Not applied and/or excluded in the engine builder's supply scope ; Filled with "—"



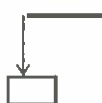
Not ordered, to be decided later on ; Basket blanked



Hardware delivered separately (not built-on engine) ; Basket dash-line



Alternatives, only one to be chosen ; Baskets connected by vertical line



Standard ; Left Column

Column defines the basic design and standard scope without taking into



consideration at any specific project requirement.



Option ; Right Column

Column defines the available alternatives and/or additional requirements

with extra expenses for a specific project.

4 03 00 0

QUANTITY OF COMPONENTS

Delivery quantities of components specified hereafter are provided for one(1) ship's installation as per each engine if not separately mentioned otherwise.

[Handwritten signature]

[Handwritten mark]

[Handwritten signature]

Page - III

HIMSEN	Extent of Delivery	Ident. No. EP664-M-01	R 1	Page 4 (26)
---------------	---------------------------	--------------------------	--------	----------------

4 00 02 0 GENERAL SPECIFICATION

4 04 00 0 INFORMATION OF PROJECT

4 04 01 1 Hull No(s) :

4 04 02 1 Ship owner : Flag :

4 04 03 1 Shipbuilder 

4 04 04 1 Type of Ship :

4 05 00 0 RULES AND STANDARDIZATION

4 05 01 1 ☒ The design, standardization and production of the engine in accordance with engine manufacturer's standard practice.

4 05 02 1 ☒ Rules of Classification Society : Notation :

4 05 03 1 ☒ NOx emission regulation according to MARPOL 73/78 Annex VI Regulation 13 (**IMO NOx Tier II**) : **Diesel mode and Methanol mode**

4 05 04 1 ☐ Other special regulations :

SCR operation condition :

4 05 05 1 ☐ Sulfur content below 0.1% (MGO)

4 05 05 2  ☒ Others :

4 05 05 3 ☐ SCR applied with by-pass system

4 05 05 4 ☐ SCR applied without by-pass system

* Min. required temperature for SCR operation and Max. allowable temperature for SCR to be informed by ship yard (except scheme A)

Allowable exhaust gas backpressure :

4 05 06 1 ☒ Max. 300 mmWC

4 05 06 2 ☐ Max. 500 mmWC

Handwritten signature

Handwritten arrow pointing up

Handwritten signature

Page IV

	Extent of Delivery	Ident. No. EP664-M-01	R 1	Page 5 (26)
---	---------------------------	--------------------------	--------	----------------

4 06 00 0

APPLICATION OF ENGINE

Designation : HYUNDAI
 Application : 4-Stroke Dual Fuel Engine for Marine GenSet
 Engine Type : H32DF-LM in Each Number of Cylinder

Auxiliary GenSet

Engine Type for Auxiliary GenSet :

4 06 01 1 ☐ x Set(s) per Ship

4 06 01 2 ☐ x Set(s) per Ship

Electric Propulsion

Engine Type for Electric Propulsion :

4 06 02 1 ☒ x Set(s) per Ship

4 06 02 2 ☐ x Set(s) per Ship

In case of using em'cy D/G, detail specification for engine & alternator including requirements which are not indicated in this EOD, should be provided by shipbuilder and clarified separately.

4 07 00 0

RATING OF ENGINE

Specified Maximum Continuous Rating :

4 07 01 1 ☒ kWm BHP rpm for

4 07 01 2 ☐ kWm BHP rpm for

4 07 01 3 ☐ kWm BHP rpm for

* The engine output for a specific project will be finally declared corresponded with specified capacity of alternator with its accurate efficiency.

* Engine power definition is in accordance with ISO 3046/1 reference condition. However, the engine ratings are valid within the following reference condition.

. Turbocharger air inlet pressure : 1000 mbar
 . Turbocharger air inlet temperature : Max. 45℃
 . Charge air coolant inlet temperature : Max. 36℃

Handwritten signature

Handwritten mark

Handwritten mark

Page V

HIMSEN	Extent of Delivery	Ident. No. EP664-M-01	R 1	Page 6 (26)
---------------	---------------------------	--------------------------	--------	----------------

4 08 00 0

PARTICULARS OF ALTERNATOR (To be confirmed by shipyard)

Alternator Supplier :

4 08 01 1

☐

Customer (Shipbuilder)

* The engine output and alternator efficiency shall be informed to alternator maker.

4 08 01 2

☒

Engine manufacturer (KSOE)

* If the alternator is provided by engine manufacturer, detail delivery specification of the alternator to be made by separate clarification.

Alternator Manufacturer :

4 08 02 1

☒

HD HYUNDAI ELECTRIC CO., LTD.

4 08 02 2

☐

Other manufacturer ;

* Fixing materials(fixing bolt/nut, jack bolt/nut,washer, pin etc.) to be provided by alternator manufacturer.

* Commissioning for service engineer to be responsible for shipbuilder.

* An indicator has to be installed to check the shaft position to conduct shaft alignment between engine and generator.

* The axial clearance of the bearing needs to be $\pm 1\text{mm}$ or more.

(For clearances of $\pm 1\text{mm}$ or less, the additional axial load for the engine shaft must be considered.)

Alternator Capacity : pf = 0.8

4 08 03 1

☒

1368 kWe 1710.0 kVA 690 VAC 900 rpm
95.0% (Alternator efficiency)

4 08 03 2

☐

kWe kVA VAC rpm
(Alternator efficiency)

Alternator Bearing :

4 08 04 1

☒

B16 or B5/B20, Single bearing

4 08 04 2

☐

B20, Double bearing

Alternator Bearing Lubrication :

4 08 05 1

☒

Self-Lubrication on the own alternator

4 08 05 2

☐

Forced-Lubrication from the engine's system with common LO pipe
* common L.O inlet pipes should be installed on alternator itself

Amend

↑

⊗

Page 51

	Extent of Delivery	Ident. No. EP664-M-01	R 1	Page 7 (26)
---	---------------------------	--------------------------	--------	----------------

- Alternator Cooling Type :**
- 4 08 06 1 ☐ IP23, Alternator cooling by ventilation air
- 4 08 06 2 ☒ IP44, Alternator cooling by water cooled air with JIS-Standards flange
- 4 08 06 3 ☐ IP44, Alternator cooling by water cooled air with DIN-Standards flange
- Automatic Voltage Regulator for Alternator :**
- 4 08 07 1 ☐ AVR, installed on alternator
- 4 08 07 2 ☒ AVR, installed on ship's system (MSBD Maker:)
- * If selected 4 08 07 2, the contact point for delivering AVR to be confirmed by shipyard.
- Cable connection**
- 4 08 08 1 ☒ Cable gland
- 4 08 08 2 ☐ MCT(Multiple Cable Transit)
- Others (* If selected 4 08 01 2)**
- In case of 4 09 01 2, a requirement of accessories for alternator
- 4 08 09 1 ☒ Space heater
- 4 08 10 1 ☒ Local thermometer for bearing(s)
- 4 08 10 2 ☒ Temperature sensor for bearing(s)
- 4 08 11 1 ☒ Temperature sensor for winding incl. three spare ones (each one for each phase)
- 4 08 12 1 ☒ Current transformer for differential protection mounted in alternator (For above 1500kVA)
- 4 08 12 2 ☐ Current transformer for differential protection mounted in MSB (For above 1500kVA)
- 4 08 13 1 ☐ Fasteners(Bolt, Nut, Plain washer and spring washer) for main power cable

Amant

↑

6

Page - VII

4 09 00 0 **DOCUMENTATION**

Drawing and Manual Service :

- 4 09 01 1 ☒ Sets of Approval Drawing in total contract (with PDF file by e-mail)
- 4 09 01 2 ☒ Sets of Working Drawing in total contract (with PDF file by e-mail)
- 4 09 02 1 ☒ Three(3) Sets of Instruction Manual & Final Drawing per each shipset
- 4 09 02 2 ☐ Sets of Instruction Manual & Final Drawing per each shipset
- 4 09 02 3 ☐ Sets of Instruction Manual & Final Drawing for the 1st / 2nd-series ship
- 4 09 02 1 ☒ Sets of Electronic Instruction Manual on USB for the 1st / 2nd-series ship

Factory Acceptance Test Reports :

- 4 09 03 1 ☒ Engine shop test records included in Final Drawing service

Torsional Vibration Calculation

- 4 09 04 1 ☒ Calculation of torsional vibration for GenSet

4 10 00 0 **LANGUAGE AND UNIT**

Language in Documentation :

- 4 10 01 1 ☒ Drawing and Instruction Manual written in English
- 4 10 01 2 ☐ Drawing written in English and Instruction Manual in ;

Language in Plates :

- 4 10 02 1 ☒ Name Plates and Caution Plates written in English
- 4 10 02 2 ☐ Name Plates written in English and Caution Plates in ;
- 4 10 02 3 ☐ Name Plates and Caution Plates written in ;

* If a special designated language for plates is asked, the translation shall be taken by shipbuilder via his customer from the original draft in English given in advance by engine manufacturer.

Unit Description of Instrument :

- 4 10 03 1 ☒ °C for temperature and bar for pressure
- 4 10 03 2 ☐ °C for temperature and kg/cm² for pressure
- 4 10 03 3 ☐ °C for temperature and Mpa for pressure
- 4 10 03 4 ☐ Special requirements

Handwritten signature

Handwritten number 4

Handwritten signature

Page - VIII

HIMSEN	Extent of Delivery	Ident. No. EP664-M-01	R 1	Page 9 (26)
---------------	---------------------------	--------------------------	--------	----------------

4 11 00 0

FACTORY ACCEPTANCE TEST

The engine(s) is tested in accordance with engine manufacturer's standard practice complied with requirement of corresponding rules of Classification Society under surveillance of the customer(s) and Classification Society.

4 11 01 1



Test running on RMA 20-0.5 Grade(ISO 8217:2024) and Methanol

4 11 02 1



Engine testing coupled with Alternator

4 11 02 2



Engine testing coupled with Water-Brake

* If the engine tested with water-brake, the test items 4 13 05 1, 4 13 07 1, 4 13 08 4 could not be done.

4 11 03 1



Start-up test

4 11 04 1



Load test in rate of specified MCR - Diesel mode

- . 50% load on duration 20 minutes
- . 75% load on duration 20 minutes
- . 100% load on duration 60 minutes
- . 110% load on duration 30 minutes

4 11 04 2



Load test in rate of specified MCR - Diesel mode

- . 50% load on duration 30 minutes
- . 75% load on duration 30 minutes
- . 100% load on duration 60 minutes
- . 110% load on duration 30 minutes

4 11 05 1



Load test in rate of specified MCR - Methanol mode

- . 50% load on duration 20 minutes
- . 75% load on duration 20 minutes
- . 100% load on duration 60 minutes

4 11 05 2



Load test in rate of specified MCR - Methanol mode

- . 50% load on duration 30 minutes
- . 75% load on duration 30 minutes
- . 100% load on duration 60 minutes

4 11 06 1



Additional load test requirements

25	% load on duration	20	minutes - Diesel mode
25	% load on duration	20	minutes - Methanol mode

4 11 07 1



Engine governing test

- . Recording in speed variation
- . Recording in voltage variation

Ames

↑

[Signature]

Page IX

HIMSEN	Extent of Delivery	Ident. No. EP664-M-01	R 1	Page 10 (26)
---------------	---------------------------	--------------------------	--------	-----------------

- 4 11 08 1 ☒ Safety function test (Trip test) - Diesel mode
. Lube oil pressure inlet too low
. HT-Cooling water temperature outlet too high
. Overspeed
. Oil mist high (if applied)
- 4 11 09 2 ☒ Safety function test (Trip test) - Methanol mode
(It will be informed later)
- 4 11 10 1 ☒ Parallel running test : Not provided
* Parallel running test shall be performed by shipyard during shipboard test with its own PMS
- 4 11 12 1 ☒ Fuel changeover test : From diesel to methanol at 80% load 
: From methanol to diesel at 100% load
- 4 11 13 2 ☐ Load characteristic test
- Measurements :**
- 4 11 14 1 ☒ Fuel consumption measurement at MCR (50% as reference)
4 11 14 2 ☐ Fuel consumption measurement at 25%, 50%, 75% and 100% of MCR
- 4 11 14 3 ☒ Crankshaft deflection measurement at both cold and hot condition
* The measured value at hot condition is only for reference.
- 4 11 14 4 ☒ Mechanical vibration measurement at MCR only
- 4 11 14 5 ☐ Torsional vibration measurement for one(1) GenSet in first vessel only
- 4 11 14 6 ☐ Sound level measurement for one(1) engine in total contract
- 4 11 14 7 ☐ Bearing temperature measurement
- 4 11 14 8 ☒ Overhaul inspection, only one(1) cylinder per each ship
- 4 11 14 9 ☐ Overhaul inspection, only one(1) cylinder per each engine
- 4 11 14 10 ☐ Additional inspection in ;
- IMO NOx Certification (Depending on Ship's flag)**
- 4 11 15 1 ☐ Certification by KR
- 4 11 15 2  ☒ Certification by other classification society

Handwritten signature

4

Handwritten signature

Page - 8

HIMSEN	Extent of Delivery	Ident. No. EP664-M-01	R 1	Page 11 (26)
---------------	---------------------------	--------------------------	--------	-----------------

4 00 03 0 DESIGN OF ENGINE

4 14 00 0 PAINTING COLOUR

Final Painting Colour :

- 4 14 01 1 ☒ Engine finally painted in colour of Munsell no. 5 PB 4/4 (Navy Blue)
Alternator finally painted in colour of Munsell no. 5 PB 4/4 (Navy Blue)

- 4 14 01 2 ☐ Engine finally painted in colour ;
Alternator finally painted in colour ;
* Thermal parts will be heat-resistant silver painted.
* Colourless painting is not allowed for final painting colour.
* Methanol pipes will be painted in colour of RAL 8008 (Brown)

Electric Panel Paint Colour(Loose Supply Panel Only)

- 4 14 01 3 ☒ Final painted in color of RAL 7032 (Pebble grey)

- 4 14 01 4 ☐ Final painted in color; _____
* The panel color attached on engine is maker standard (RAL 7032)

4 15 00 0 ROTATING DIRECTION

Direction of Engine Rotation :

- 4 15 01 1 ☒ Engine rotating direction : Clockwise seen from driving-end (flywheel side)
* Alternator to be counter-clockwise seen from driving-end.

4 16 00 0 GENSET COUPLING

Engine & Alternator Coupling :

- 4 16 01 1 ☒ Direct disc coupling with lamination disc plates on alternator shaft

4 17 00 0 GENSET FOUNDATION

GenSet Mounting

- 4 17 01 1 ☒ Common base frame with resilient rubber mountings

Foundation Equipment :

- 4 17 02 1 ☒ Jack screw bolts for GenSet leveling

- 4 17 02 2 ☐ Self locking nut for fixing bolt
* Foundation equipment incl. holding down bolts to be provided by shipbuilder.

Amur

f

g

Page XI

HIMSEN	Extent of Delivery	Ident. No. EP664-M-01	R 1	Page 12 (26)
---------------	---------------------------	--------------------------	--------	-----------------

4 17 03 0	☐	Main Engine Data for Resilient Mounting Design (To be filled out by shipyard)
4 17 03 1		. Type of main engine : x Set(s)
4 17 03 2		. Maximum rating of M/E : kW x rpm
4 17 03 3		. Service rating of M/E : kW x rpm
4 17 03 4		. Type of propeller : (FPP or CPP)
4 17 03 5		. Service speed of propeller : rpm
4 17 03 6		. No. of propeller blade : EA

4 18 00 0 **TORSIONAL DAMPING EQUIPMENT**

Remark

		GenSet Damping Device :	1) The necessity of damping device to be finally decided after completion of GenSet torsional vibration calculation.
4 18 01 1	☐	Damping device ; Not equipped	
4 18 01 2	☒	Damping device	

4 19 00 0 **MAINTENANCE & SAFETY FABRICATION**

		Engine Gallery :
4 19 01 1	☐	Gallery ; Not provided
4 19 01 2	☒	Gallery including hand rail and ladder
		Flywheel Cover :
4 19 02 1	☒	Flywheel protection guard

4 20 00 0 **TURNING EQUIPMENT**

		Flywheel Turning Device :
4 20 01 1	☒	Hand operated manual turning device

Handwritten signatures and marks:
 - A signature on the left.
 - A large blue '4' in the center.
 - A signature on the right.
 - The text "Page - XII" written in blue ink.

	Extent of Delivery	Ident. No. EP664-M-01	R 1	Page 13 (26)
---	---------------------------	--------------------------	--------	-----------------

4 21 00 0

EXTERNAL CONNECTION

External Pipe Connection

4 21 01 1  Flexible connecting hoses including T/C outlet expansion joint

External Pipe Connection

4 21 02 1  Flexible connecting hose for double-walled gas pipe

4 21 02 2  Flexible connecting hose for ventilation air inlet

Flexible connecting hoses for LT-water conn. of alternator air and/or oil cooler

Applied Standards :

4 21 03 1  External connection flanges in accordance with JIS-Standards

4 21 03 2  External connection flanges in accordance with DIN-Standards

Counter-Flanges :

4 21 04 1  External flanges sealed without counter-flanges

4 21 04 2  External flanges with drilled counter-flanges including gaskets and bolts

4 21 04 3  Counter-flange of double-walled gas pipe

4 21 04 4  O-rings, bolts & nut, washers for double-walled gas pipe flexible hose.

** All external piping design and system arrangement according to rule requirement and building specification should be done by shipbuilder with responsibility for engine operation.

Engine builder only supply the auxiliary equipment as agreed in the EOD and provide guidance for engine external system instruction.

4 22 00 0

FUEL OIL SYSTEM

Fuel Oil Specification :

4 22 01 1  Normal operation with Residual Fuel Oil in accordance with ISO8217(2017) up to RMK700, or equivalent (Max. 700 cSt @ 50 °C) except some properties

* Normal operation with Distillate fuel Oil in accordance with ISO8217(2017) DMA/DMZ/DMB or equivalent except some properties can be intermittently operated.

4 22 01 2  Normal operation with Distillate Fuel Oil in accordance with ISO8217(2017) DMA/DFA/DMZ/DFZ/DMB/DFB or equivalent except some properties.

4 22 01 3  Normal operation with special fuel oil ;

* In case of special fuel oil, detail fuel specification to be separately specified.

4 22 01 4  Normal operation with both Residual Fuel Oil and Distillate Fuel Oil in ISO8217(2017) up to RMK700, or equivalent (Max. 700 cSt @ 50 °C) except some properties

HIMSEN	Extent of Delivery	Ident. No. EP664-M-01	R 1	Page 14 (26)
---------------	---------------------------	--------------------------	--------	-----------------

- 4 22 02 1 ☒ **Fuel Injection Equipment :**
 . Fuel injection pump on each cylinder
 . Combined fuel injection valve on each cylinder
 . High pressure injection pipe or block on each cylinder
- 4 22 03 1 ☒ **Fuel Leakage Box :**
 . Fuel oil leakage tank
 . Level switch for leakage alarm
- 4 22 04 1 ☒ **Fuel Oil Safety Filter :**
 Fuel oil filter, Duplex manual cleaning with fineness 50 micron
- 4 22 05 1 ☐ **Nozzle Cooling System :**
 Fuel valve cooling arrangement
- 4 22 05 2 ☒ Fuel valve uncooled (* MDO operation)
- 4 22 06 1 ☒ **Fuel Oil Change-Over Valve :**
 HFO/MDO change-over valve ; Not provided
- 4 22 06 2 ☐ HFO/MDO pneumatic change-over 3-way valve without control panel
 : ____ set(s)/ship,
- 4 22 06 3 ☐ HFO/MDO pneumatic change-over 3-way valve with control panel (Manual control)
 : ____ set(s)/ship,
- 4 22 06 4 ☐ HFO/MDO pneumatic change-over 3-way valve with control panel (Auto control)
 : ____ set(s)/ship,
- 4 22 07 1 ☐ **Pressure Control Valve on External System : (To be confirmed by shipyard)**
 Pressure regulating valve on MDO outlet : One(1) set/ship, ____ bar / DN A
- 4 22 07 2 ☐ Pressure regulating valve on MDO inlet : One(1) set/ship, ____ bar / DN A
- 4 22 07 3 ☐ Pressure regulating valve on HFO inlet : One(1) set/ship, ____ bar / DN A
- 4 22 08 1 ☐ **Emergency MGO Pump Unit :**
 Pneumatically driven em'cy MGO pump unit : ____ set/ship
- 4 22 09 1 ☒ **Fuel Oil Supply Unit :**
 Fuel oil supply unit ; Not provided
- 4 22 09 2 ☐ Fuel oil supply unit ; ☐ Set(s)/ship, ____ engine(s) capacity
 including ; Strainer, Pump(feeder+booster), Auto-filter, Mixing tank, Heater, MDO Cooler
☐ Flow meter ; ☐ Set(s)/ship

Arad

4

6

Page XIV

HIMSEN	Extent of Delivery	Ident. No. EP664-M-01	R 1	Page 15 (26)
---------------	---------------------------	--------------------------	--------	-----------------

4 23 00 0

METHANOL SYSTEM

4 23 01 1



Normal operation with Methanol in accordance with engine manufacturer's standard.
Low calorific value : 19.9 MJ/Nm³
* In case of special methanol detail methanol specification to be separately specified.

4 23 02 1



Methanol supply equipment :



[H22CDF-LM]

- e-HBU (Electro-Hydraulic Boosting Unit)
- Double-walled Methanol Supply pipe
- Safety Valve Unit (SVU) including purge valve, safety valve and inert DBB valves

4 23 04 1



Fuel Valve Train (FVT) : 4 Set(s) / ship , 1set / engine

FVT : Not provided

4 23 04 2



FVT including following equipment

- Manual shut-off valve
- Auto double block & bleed valves on main methanol supply line
- Auto double block & bleed valves on inert gas line for purge
- Necessary pressure & temperature transmitters and gauges.
- Inert gas filter etc.

4 23 04 3



FVT filter : Not provided



FVT filter is mounted on FVT

4 23 05 3



High pressure methanol supply system set(s) / ship

High pressure pump unit : Not provided



High pressure pump unit including following equipment

- HP pump
- Electric motor
- Pump unit skid
- Control valve and instrument
- Control panel

4 23 05 4



N2 booster unit : 1 set(s) / ship

N2 booster unit : Not provided



N2 booster unit

Remark)

The leak test is carried out after initial assembly and/or maintenance on vessel.

Amant

1

GS

Page 15

HIMSEN	Extent of Delivery	Ident. No. EP664-M-01	R 1	Page 16 (26)
---------------	---------------------------	--------------------------	--------	-----------------

4 25 00 0

LUBRICATING OIL SYSTEM

4 25 01 1



Lube Oil Specification :

Lubricating oil viscosity, SAE 40

4 25 02 1



Lube Oil Sump Tank :

Wet oil sump incorporated in common base frame

4 25 03 1



Main Lube Oil Pump :

Engine driven lubricating oil pump, Gear type

4 25 04 1



Prelubricating Oil Pump :

Electric motor driven prelubricating pump

4 25 05 1



Lube Oil Cooler :

Lubricating oil cooler, Plate type in stainless steel plates

4 25 06 1



Lube Oil Temperature Control Valve :

Lubricating oil temperature control valve, Wax-thermostat type

4 25 07 1



Main Lube Oil Filter :

Lubricating oil filter, Duplex paper cartridge with fineness 15 micron

4 25 07 2



Lubricating oil automatic back-flushing filter (abs. 34 micron)

4 25 08 1



Additional Lube Oil Filter :

Lubricating oil centrifugal by-pass filter

4 25 09 1



Additional Branch Connections :

Overflow connection on sump tank

4 25 09 2



Special branch arrangement ; _____

Handwritten signature

Handwritten mark

Handwritten mark

HIMSEN	Extent of Delivery	Ident. No. EP664-M-01	R 1	Page 17 (26)
---------------	---------------------------	--------------------------	--------	-----------------

4 26 00 0

COOLING WATER SYSTEM

4 26 01 1	☒	High Temperature Cooling Water : HT-Cooling water for cooling ; . Cylinder jackets . Cylinder heads . Exhaust valve seats . Charge air cooler	Remark Engine inlet cooling water pressure should be kept under 2.5 bar by shipbuilder.
4 26 02 1	☒	Low Temperature Cooling Water : LT-Cooling water for cooling ; . Lubricating oil cooler . Charge air cooler	
4 26 03 1	☒	Cooling Medium : Coolant for both HT-circuit and LT-circuit as fresh water only * LT-Cooling water inlet temperature based on 36℃	
4 26 04 2	☒	Internal Cooling Circuit Design : 2-String connection as HT & LT-circuit separated	
4 26 06 1	☒	Cooling Water Pipe : Steel pipe treated parkerizing for both HT & LT-water piping	
4 26 07 1	☒	High Temperature Cooling Water Pump : Engine driven circulating pump, Centrifugal type	
4 26 08 1	☐	Low Temperature Cooling Water Pump : Engine driven circulating pump ; Not provided	
4 26 08 2	☒	Engine driven circulating pump ; Centrifugal type	
4 26 09 1	☒	High Temperature Cooling Water Temperature Valve : Temperature control valve, Wax-thermostat type	
4 26 09 2	☐	Temperature control valve ; Electric motor driven type with controller, loose supply	

Handwritten signature

Handwritten signature

Handwritten signature

HIMSEN	Extent of Delivery	Ident. No. EP664-M-01	R 1	Page 18 (26)
---------------	---------------------------	--------------------------	--------	-----------------

Cylinder Jacket Preheating Provision :

- 4 26 11 1 ☒ Hot water from running engine via venting connection
- 4 26 11 2 ☒ Electric element type preheater built on engine
- 4 26 11 3 ☐ Electric type external preheater module ; Set(s)/ship, engine(s) capacity
- 4 26 11 4 ☐ Steam type external preheater module ; Set(s)/ship, engine(s) capacity
- 4 26 12 1 ☒ Throttle type non-return valve for air venting
- 4 26 13 1 ☐ Special capacity of preheater
(In case all aux. gensets are ready at stand-by due to the ship's electric facilities such as M/E shaft generator, the capacity of preheater should be increased and suitable for all gensets).
* For ensuring hot water flow from running engine(s) to stand-by engine(s), the customer is advised the air vent piping to be arranged with multi-engine common connection and installed a restriction (orifice) on common line.

Cooling Water Shut-Off Valve :

- 4 26 14 1 ☐ Cooling water automatic shut-off valve ; Not provided
- 4 26 14 2 ☒ Auto shut-off valves activated by engine lube oil
* In case of applying jacket water preheating device, it is recommended to install the auto shut-off valve at engine inlet for better heating effect.

4 27 00 0 COMPRESSED AIR SYSTEM

Engine Starting Equipment :

- 4 27 01 1 ☒  Engine started by means of pneumatically driven air starter
 . Pneumatic motor starter
 . Main starting valve
 . Starting air reducing valve(if applied.)

Main Starting Air Reservoir :

- 4 27 02 0
- 4 27 02 1 ☐ Vertical mounting type l x Bottle(s), Colour ;
- 4 27 02 2 ☐ Horizontal mounting type l x Bottle(s), Colour ;

Auxiliary Starting Air Reservoir : (per ship)

- 4 27 03 0
- 4 27 03 1 ☐ Vertical mounting type l x Bottle(s), Colour ;
- 4 27 03 2 ☐ Horizontal mounting type l x Bottle(s), Colour ;

Handwritten signature

Handwritten signature

Handwritten signature

Page KVIN

	Extent of Delivery	Ident. No. EP664-M-01	R 1	Page 19 (26)
---	---------------------------	--------------------------	--------	-----------------

4 28 00 0

COMBUSTION AIR & EXHAUST GAS SYSTEM

Charge Air Cooler :

4 28 01 1



1-Stage charge air cooler designed LT & HT-water cooling stack

Exhaust Gas Turbocharger :

4 28 02 1



Turbocharger equipped with dry air filter.

Turbocharger Location :

4 28 03 1



Turbocharger located at Free-end side (Opposite to flywheel)

Turbocharger Outlet Inclination :

4 28 04 1



Exhaust gas outlet, Vertical direction

4 28 04 2



Exhaust gas outlet, Away from engine, Inclined from vertical ;



Turbocharger Cleaning System :

4 28 05 1



Water-cleaning provision for both compressor and turbine side

. Water container for compressor side, built-on engine

. One(1)/ship loose delivered water hose with reducing valve for turbine cleaning

Exhaust Gas Silencer (To be confirmed by shipyard)

4 28 06 1



Exhaust silencer without spark arrestor, Damping 25 dB(A)

4 28 06 2



Exhaust silencer without spark arrestor, Damping 25 dB(A)

4 28 06 3



Exhaust silencer with spark arrestor, Damping 35 dB(A)

4 28 06 4



Exhaust silencer with spark arrestor, Damping 35 dB(A)

4 28 06 5



Outside insulation of exhaust silencer

* It is recommended to carry out the outside insulation of silencer by shipbuilder to avoid any possible damage during transportation or shipyard commissioning.

Handwritten signature

Handwritten number 4

Handwritten signature

Page XIX

	Extent of Delivery	Ident. No. EP664-M-01	R 1	Page 20 (26)
---	---------------------------	--------------------------	--------	-----------------

4 29 00 0

ENGINE SPARE PARTS
Standard Spare Parts :

4 29 01 1



One(1) set of standard spare parts
. Requirement or recommendation from each classification society
. Engine manufacturer's standard service

Extra Spare Parts for Yard Commissioning :

4 29 02 1



Total engine set(s) of cartridge for lube oil filter

4 29 02 2



Total engine set(s) of turbocharger air filter

Extra Spare Parts on Request

4 29 03 1



Extra spare parts on request (* The details to be specified on 4 99 00 0)

4 29 03 2


Wearing parts for the first operating in ; Hours

4 30 00 0

ENGINE TOOLS
Standard Tools

4 30 01 1



One(1) set of engine manufacturer's standard tools

Extra Tools

4 30 02 1



One(1) set of extra tools on request (* The details to be specified on 4 99 00 0)

4 30 02 2



One(1) set of GenSet lifting device (1set /ship)



4



Page XX

	Extent of Delivery	Ident. No. EP664-M-01	R 1	Page 21 (26)
---	---------------------------	--------------------------	--------	-----------------

4 70 00 0

GENERAL SPECIFICATION for Electric Equipment

Electric Power Source :

4 70 01 1



3 x 440 VAC, 60 Hz / 1 x 220 VAC, 60 Hz / 24 VDC

4 70 01 2



Phase Identification :

4 70 03 1



R(u) -- Red, S(v) -- White, T(w) -- Black

P(+) -- Red, N(-) -- Blue

4 70 03 2



Special requirements ;

4 72 00 0

SPEED GOVERNING

4 72 01 1



Electronic control (Maker standard)

4 73 00 0

ENGINE AUTOMATION EQUIPMENT

Main Control Panel

4 73 01 1



Main control panel, mounted on engine

. Complete engine control, alarm & safety function

Injection Control Module

4 73 02 1



Driving of injections(methanol, pilot oil and main fuel oil), mounted on engine

Local Operating Panel

4 73 03 1



Monitoring and operation of engine, mounted on engine

. All monitoring, complete engine operation & alarm

. Push buttons for start/stop/reset/emc'y stop

. Switches for Local/Remote, Inc/Dec speed or load, Diesel/Methanol fuel mode

. Independent and redundant engine shutdown

4 73 03 2



Not provided

Auxiliary Operation Panel

4 73 06 1



Control of auxiliaries, interfaced with vessel system, panel

. Indicating lamps for engine operation status

. Push button for engine stop

. Control of FVT, CW control valve

* Aux. control panel to be interfaced with main switch board, PMS and IAS

* All data between eng. and ship's IAS is transmitted via Modbus TCP communication

(The response time of actual load signal to engine control system shall be within 0.3 secs.

It is recommended the dedicated kW transducer is used for this actual load signal.)

[Handwritten signature]

[Handwritten signature]

[Handwritten signature]

Page XXI

HIMSEN	Extent of Delivery	Ident. No. EP664-M-01	R 1	Page 22 (26)
---------------	---------------------------	--------------------------	--------	-----------------

- 4 73 08 1 ☒ **Electric Wiring on Engine**
Engine delivered with wiring to terminal box
- 4 73 08 2 ☐ Cable tag for maker cable at terminal box entry on engine
(If selected, Cable number is applied according maker's standard)

- 4 73 08 3 ☒ **Cable Type**
Flame retardant cable with common shield
- 4 73 08 4 ☐ Special requirements ;

- 4 80 00 0 **SENSOR**
* Sensor scope for engine complies with classification rules.
* Supply status for marked sensors(*) are subject to change based on specific engine design.

- 4 81 00 0 ☒ **Fuel Oil System**
Pressure transmitter, Fuel oil filter inlet
Pressure transmitter, Fuel oil engine inlet
Temperature sensor, Fuel oil engine inlet
* Level switch, Clean fuel oil leakage tank
* Temperature sensor, Nozzle cooling oil engine outlet (Only for HFO)

- 4 82 00 0 ☒ **Methanol System**
Pressure transmitter, Methanol on engine inlet
Pressure transmitter, Methanol supply filter inlet on FVT
Temperature sensor, Methanol supply filter inlet on FVT
Pressure transmitter, Methanol supply filter outlet on FVT
Pressure transmitter, Control air on FVT
Pressure transmitter, Inert gas on FVT

- 4 83 00 0 ☒ **Lubricating Oil System**
Pressure transmitter, Lub oil filter inlet
Pressure transmitter, Lub oil engine inlet
Pressure transmitter, Lub oil engine inlet (for safety)
Temperature sensor, Lub oil engine inlet
Pressure transmitter, Lub oil turbocharger inlet
* Temperature sensor, Lub oil turbocharger outlet
Level switch, Lub oil sump tank / level low and high

- 4 83 10 1 ☒ **Crankcase Explosion Protection Equipment :**
Oil mist detector

- 4 83 10 2 ☒ Temperature sensor, Main bearing
* If the bearing protection equipment is required by the customer, oil mist detector
instead of main bearing temperature sensor is recommendable.

Handwritten signature

Handwritten mark

Handwritten mark

Page XXII

HIMSEN	Extent of Delivery	Ident. No. EP664-M-01	R 1	Page 23 (26)
---------------	---------------------------	--------------------------	--------	-----------------

4 84 00 0



Cooling Water System

Pressure transmitter, LT water air cooler inlet
 Temperature sensor, LT water air cooler inlet
 Temperature sensor, LT water air cooler outlet
 Pressure transmitter, HT water engine inlet
 Temperature sensor, HT water engine inlet
 Temperature sensor, HT water engine outlet
 Temperature sensor, HT water engine outlet (for safety)

4 85 00 0



Combustion Air & Exhaust Gas System

Pressure transmitter, Charger air cooler outlet
 Temperature sensor, Charge air cooler outlet
 Temperature sensor, Exhaust gas cylinder outlet
 Temperature sensor, Exhaust gas turbocharger inlet
 Temperature sensor, Exhaust gas turbocharger outlet
 Temperature sensor, Intake air before turbocharger compressor

4 86 00 0



Compressed Air System

Pressure transmitter, Starting air engine inlet
 Pressure transmitter, Control air engine inlet

4 87 00 0



Miscellaneous

Limit switch, Turning gear engaged
 Pick-up sensors, Engine speed & Position
 Pick-up sensor, Turbocharger speed

Power Supply Unit for Engine Automation Equipment

* According to IACS M61.2.3 and each Class rule, the power supply unit including battery has to be supplied by shipyard or engine maker

4 87 04 1



Not provided

4 87 04 2



Power supply unit with DC battery

- . Fedded from main power 1 x 220 VAC, emergency power 1 x 220 VAC, 60 Hz
- . 220VAC/24VDC converter
- . Alarm output and indication
- . The quantities of total supplied power supply unit _____ set(s)/ship
- . The capacity of one(1) power supply unit covers _____ engine(s)

Page xxm

	Extent of Delivery	Ident. No. EP664-M-01	R 1	Page 24 (26)
---	---------------------------	--------------------------	--------	-----------------

4 92 00 0 Pre-lubricating oil pump & J. W preheater starter panel

Pre-lubricating oil pump & J.W preheater starter panel :
4 92 01 1 ☐ Not applied

4 92 01 2 ☐ Pre-lubricating oil pump starter only

4 92 01 3 ☒ Pre-lubricating oil pump starter with J.W. preheater starter
* Direct on-line starting, IP44, Wall mounting

Power Source from Shipyard
4 92 02 1 ☒ One power feeder for each starter : 440V, 3PH, 60Hz
* At least one starter must be powered from emergency source

4 92 02 2 ☐ Two power feeders for each starter
. Main : 440V, 3PH, 60Hz
. Em'cy : 440V, 3PH, 60Hz

Cable Entry
4 92 03 1 ☒ With coaming plate
4 92 03 2 ☐ With cable glands

Additional Items
4 92 04 1 ☐ Ammeter / Running hour meter
4 92 04 2 ☐ Under Voltage Protection (UVP)
4 92 04 3 ☐ Under Voltage Release (UVR)

Handwritten signature

Handwritten signature

Handwritten signature

	Extent of Delivery	Ident. No. EP664-M-01	R 1	Page 25 (26)
---	---------------------------	---------------------------------	---------------	------------------------

4 99 00 0

SPECIAL NOTES

4 99 00 1

GENERAL

- Flexible coupling x 2sets (for front PTO)
- PTO shaft x 2sets

Drawn

↑

[Signature]

Page XXV

KSOE & Shipyard Supply Scope List

No.	Item	Basic design	Detail design	Material Supply	Production/ Unit assembly	Onboard Installation	Remark
1	MeOH LFSS						
	- P&ID	KSOE	KSOE	-	-	-	
	- MeOH pump (Vertical, magnetic sealing type)	KSOE	KSOE	KSOE	KSOE	Yard	incl. motor and VFD
	- MeOH heat exchanger (Semi-welded plate type)	KSOE	KSOE	KSOE	KSOE	Yard	
	- Duplex filter (with DBB)	KSOE	KSOE	KSOE	KSOE	Yard	
	- Flowmeter (Colioris)	KSOE	KSOE	KSOE	KSOE	Yard	
	- Valves, Cable, Instruments, Insulation, Piping within LFSS unit	KSOE	KSOE	KSOE	KSOE	Yard	
	- Valves, Cable, Instruments, Insulation, Piping outside LFSS unit	Yard	Yard	Yard	Yard	Yard	
	- Starter (LP Pump) & JB	KSOE	KSOE	KSOE	KSOE	Yard	
	- Glycol Water Pump	KSOE	KSOE	KSOE	KSOE	Yard	
	- Glycol Exchanger (Plate)	KSOE	KSOE	KSOE	KSOE	Yard	
	- Skid fabrication	KSOE	KSOE	KSOE	KSOE	Yard	
2	LFSS Control System						
	- LFSS control cabinet	KSOE	KSOE	KSOE	KSOE	Yard	
	- I/O module for LFSS	KSOE	KSOE	KSOE	KSOE	Yard	
3	Emergency shut-down system						
	- Manual ESD push button for LFSS	Yard	Yard	Yard	-	Yard	
	- Fusible element plug	Yard	Yard	Yard	-	Yard	
	- Audible and visible alarm	Yard	Yard	Yard	-	Yard	
	- ESDS cabinet	Yard	Yard	Yard	Yard	Yard	
4	Valve Remote Control System for LFSS						
	- Cause & Effect chart	Yard/KSOE	Yard/KSOE	-	-	-	
5	Valve Actuator (Pneumatic) within LFSS skid	KSOE	KSOE	KSOE	KSOE	Yard	
	MeOH Bunkering Station						
	- P&ID	KSOE	KSOE	-	-	-	
	- MeOH fuel bunker station (incl. loading (spill coaming) platform)	KSOE	KSOE	KSOE	KSOE	Yard	Capacity confirmed by Yard
	- Valves, Cable, Instruments, Insulation, Piping within bunker station	KSOE	KSOE	KSOE	KSOE	Yard	
	- Valves, Cable, Instruments, Insulation, Piping outside bunker station	Yard	Yard	Yard	Yard	Yard	
	- Water curtain for hull structure	Yard	Yard	Yard	-	Yard	
	- Water spray nozzle for bunker station	Yard	Yard	Yard	-	Yard	
	- Fire fighting system	Yard	Yard	Yard	-	Yard	
	- QC/DC	Yard	Yard	Yard	-	Yard	
	- MeOH bunkering hose	Yard	Yard	Yard	-	Yard	
6	Ship Shore Link System						
	- Main control cabinet	KSOE	KSOE	KSOE	-	Yard	
	- Ship shore connection box (Port & St'bd)	KSOE	KSOE	KSOE	-	Yard	
	- Hand carry reel	KSOE	KSOE	KSOE	-	Yard	
	- Cable	KSOE	KSOE	KSOE	-	Yard	One (1) pneumatic, One (1) electric
7	MeOH Transfer Pump						
	- Loop back test unit	KSOE	KSOE	KSOE	-	Yard	One (1) pneumatic, One (1) electric
	- MeOH transfer pump with hydraulic power unit	KSOE	KSOE	KSOE	-	Yard	incl. motor and VFD
	- Hydraulic oil tank	KSOE	KSOE	KSOE	-	Yard	
8	N2 Generator System						
	- Starter	KSOE	KSOE	KSOE	-	Yard	
	- Valve & Instrument	KSOE	KSOE	KSOE	-	Yard	
	- P&ID	KSOE	KSOE	-	-	-	
	- N2 generator (Membrane)	KSOE	KSOE	KSOE	-	Yard	Capacity confirmed by Yard
9	Gas Detection System						
	- Feed air compressor	KSOE	KSOE	KSOE	-	Yard	
	- N2 buffer tank	KSOE	KSOE	KSOE	-	Yard	
	- O2 analyzer for N2 gas and N2 room	KSOE	KSOE	KSOE	-	Yard	
	- DBB & Check valve for N2 gen. discharge line	KSOE	KSOE	KSOE	-	Yard	
	- Sensing point	Yard	Yard	Yard	-	Yard	
	- Control panel	Yard	Yard	Yard	-	Yard	
	- Repeater panel	Yard	Yard	Yard	-	Yard	
10	Venting System						
	- Cable, Piping, Tube	Yard	Yard	Yard	-	Yard	
	- Portable gas detector	Yard	Yard	Yard	-	Yard	
	- Audible and visual alarm	Yard	Yard	Yard	-	Yard	
	- Continuous sampling panel	Yard	Yard	Yard	-	Yard	
	- Liquid leakage detector (Level switch)	KSOE	KSOE	KSOE	-	Yard	Q'ty & location confirmed by Yard
	- P&ID	Yard	Yard	-	-	-	
10	Venting System						
	- Vent mast	Yard	Yard	Yard	-	Yard	
	- Cable, Piping for vent mast	Yard	Yard	Yard	-	Yard	
	- Valves, Instruments, Insulation for vent mast	Yard	Yard	Yard	-	Yard	
	- Vent cowl & flame arrestor	Yard	Yard	Yard	-	Yard	
	- Ventilation fan	Yard	Yard	Yard	-	Yard	
10	Silencer	Yard	Yard	Yard	-	Yard	

Handwritten signature

Handwritten mark

Handwritten mark

	- Gas dispersion analysis	Yard	Yard	Yard	-	Yard	
	Methanol Storage Tank						
	- P&ID	KSOE	KSOE	-	-	-	
	- Methanol storage tanks including hull outfitting	Yard	Yard	Yard	-	Yard	Tank capacity confirmed by Yard
	- P/V valves	KSOE	KSOE	KSOE	-	Yard	
11	- Tank monitoring system (Pressure, Level, Temperature)	Yard	Yard	Yard	-	Yard	
	- Independent high level & overflow alarm system	Yard	Yard	Yard	-	Yard	
	- UTI (Manual sounding) unit	Yard	Yard	Yard	-	Yard	
	- Vapor sealing valve for UTI (Manual sounding)	Yard	Yard	Yard	-	Yard	
	- Valve & Instrument	KSOE	KSOE	KSOE	-	Yard	
	Methanol Service Tank						
	- P&ID	KSOE	KSOE	-	-	-	
	- Methanol Service tank including hull outfitting	Yard	Yard	Yard	-	Yard	Tank capacity confirmed by Yard
	- Filter (Loose) for M/E, G/E purge return lines	Yard	Yard	Yard	-	Yard	
	- Settling chamber in return compartment	Yard	Yard	Yard	-	Yard	
12	- P/V valve	KSOE	KSOE	KSOE	-	Yard	
	- Tank monitoring system (Pressure, Level, Temperature)	Yard	Yard	Yard	-	Yard	
	- High level & overflow alarm system	Yard	Yard	Yard	-	Yard	
	- Oil detector for return compartment	Yard	Yard	Yard	-	Yard	
	- Vapor sealing valve for UTI (Manual sounding)	Yard	Yard	Yard	-	Yard	
	- Valve & Instrument	KSOE	KSOE	KSOE	-	Yard	
	Methanol Drain Tank						
	- P&ID	KSOE	KSOE	-	-	-	
	- Methanol Drain tank	Yard	Yard	Yard	-	Yard	Tank capacity confirmed by Yard
	- P/V valve	KSOE	KSOE	KSOE	-	Yard	
	- Tank monitoring system (Pressure, Level, Temperature)	Yard	Yard	Yard	-	Yard	
	- High level & overflow alarm system	Yard	Yard	Yard	-	Yard	
	- Valve & Instrument	KSOE	KSOE	KSOE	-	Yard	
	Methanol Bilge/Drain System						
	- P&ID	KSOE	KSOE	-	-	-	
	- Piping arrangement	Yard	Yard	Yard	-	Yard	Tank capacity confirmed by Yard
	- Bilge/Drain pump (diaphragm type)	Yard	Yard	Yard	-	Yard	
	- Local collecting system	Yard	Yard	Yard	-	Yard	
	- Hazardous space bilge system	Yard	Yard	Yard	-	Yard	
	Cofferdams / Voids Surrounding Methanol Tanks						
	- P&ID including sea water handling system	Yard	Yard	-	-	-	
15	- Cofferdams / voids	Yard	Yard	Yard	-	Yard	Tank capacity confirmed by Yard
	- Bilge eductor	Yard	Yard	Yard	-	Yard	
	- Bilge alarm & float switch	Yard	Yard	Yard	-	Yard	
	Fire Distinguishing						
	- Fire detectors	Yard	Yard	Yard	-	Yard	
16	- Fixed alcohol resistant foam type fire-fighting system	Yard	Yard	Yard	-	Yard	
	- Portable fire extinguisher	Yard	Yard	Yard	-	Yard	
	- Fire protection plan for LFSS are	Yard	Yard	-	-	-	
	Personal Protective Equipment for Methanol Handling Area						
	- Arrangement drawing for personal protective equipment	Yard	Yard	-	-	-	
17	- Personal protective equipment (gloves, goggles, aprons face shield, chemical resistant clothing, respirators, eyewash stations...etc)	Yard	Yard	Yard	-	Yard	
	Double Wall Pipes						
	- Double wall pipes for engine supply and purge line.	Yard	Yard	Yard	-	Yard	
18	- Double wall pipes between both side bunker lines entering the deck to cofferdam supply and purge line for methanol storage tanks.	Yard	Yard	Yard	-	Yard	
	- Double wall pipes in pump room	Yard	Yard	Yard	-	Yard	
	- Double wall pipes for any others location as per Class requirement.	Yard	Yard	Yard	-	Yard	
	- Piping practice and stress analysis	Yard	Yard	-	-	-	
	Test						
19	- FAT, Commissioning, Shop & Hyd. Test for below will be carried out if necessity based on the maker's standard. 1. LFSS skid 2. Bunker station skid(inc. loading platform) 3. Other equipment supplied by KSOE	KSOE	KSOE	-	-	-	
	Arrangement						
	- Piping arrangement outside LFSS skid	Yard	Yard	Yard	Yard	Yard	
	- Piping arrangement within LFSS skid	KSOE	KSOE	KSOE	KSOE	Yard	
20	- Cable arrangement outside LFSS skid	Yard	Yard	Yard	Yard	Yard	
	- Cable arrangement within LFSS skid	KSOE	KSOE	KSOE	KSOE	Yard	
	- FPR arrangement	Yard	Yard	Yard	Yard	Yard	
	- Pipe stress analysis outside LFSS skid	Yard	Yard	-	-	-	
	- Pipe stress analysis within LFSS skid	KSOE	KSOE	-	-	-	
21	Utilities (ex. glycol water) initial filling for LFSS skid	Yard/KSOE	Yard/KSOE	Yard	-	Yard	

Drawn

4

6

Page XXVII

ANNEXURE V – STRUCTURAL BASIC DESIGN

Srl	Description
1	General Arrangement Plan (revised)
2	Lines plan & offsets (Initial)
3	Tank Capacity Plan (Initial)
4	Calculation of Equipment number
5	Preliminary Freeboard calculations
6	Watertight Compartment Division and Integrity Plan
7	Preliminary Escape Route Plan
8	Preliminary Midship Section
9	Preliminary Profile & Deck Plan
10	Preliminary Longitudinal Bulkheads
11	Preliminary Transverse Sections (Engine Room)
12	Preliminary Transverse Sections (Cargo tank area)
13	Preliminary Fore End Structure
14	Preliminary Aft End Structure
15	Preliminary Transverse Bulkheads
16	Preliminary Bottom and Tank Top Plan
17	Preliminary Shell Expansion
18	Initial tonnage calculation
19	Compartment Access Plan
21	Preliminary Lightweight estimation
21	Preliminary Trim & Stability booklet (with longitudinal strength calculations Hydrostatics, cross curves etc.)
22	Preliminary Endurance (Fuel) calculation
23	Preliminary Steel Bill of Material for Hull and Superstructure
24	Preliminary Welding Schedule
25	Preliminary Structural Details – Lower F'cle Deck and below
26	Preliminary Structural Details – Upper F'cle Deck and below
27	Preliminary Tier 1 Deckhouse Structural Details
28	Preliminary Tier 2 Deckhouse Structural Details
29	Preliminary Wheelhouse Structure

Anand.

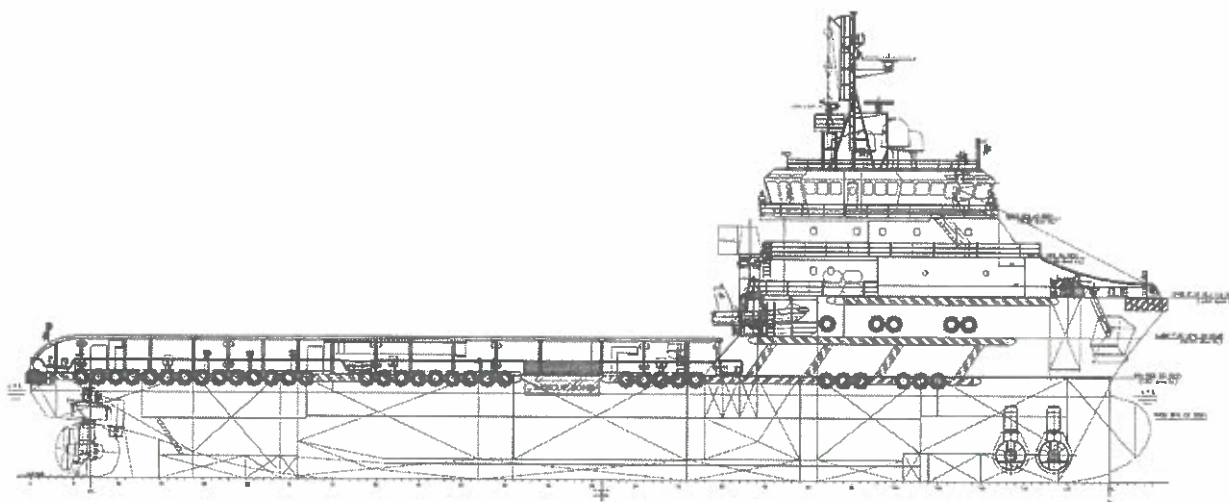
7

6



MAZAGON DOCK SHIPBUILDERS LIMITED

TECHNICAL SPECIFICATIONS OF 3000T DWT PLATFORM SUPPLY VESSEL (METHANOL & DIESEL ELECTRIC)



0	P25-12/1001		13 May 26	
Rev	Description	Authority	Date	Signature

K DOPPALA M (PSV)	CDR. YOGESH MAHANI (Retd.) DGM (PSV)	SAPNA DIPU AGM/PIC (PSV)
Prepared	Checked	Approved



Contents

CHAPTER 1	7
GENERAL	7
1.1 Intent	7
1.2 Design Conditions and Basic Requirements	8
1.2.1 Design Conditions	8
1.2.2 Duties	8
1.3 Description of the Vessel	9
1.3.1 General	9
1.3.2 Principal Particulars (approximate)	10
1.3.3 Accommodation	10
1.3.4 Approximate Capacities at 100%	11
1.3.5 Dead weight	11
1.3.6 Light ship weight	11
1.3.7 Speed and Endurance	12
1.3.8 Subdivision	12
1.3.9 Main Engines and Auxiliary Machinery	12
1.4 Classification, Rules, Regulations and Certificates	12
1.4.1 Classification and Port of Registry	12
1.4.2 Rules and regulations	13
1.4.3 Certificates and Documents	16
1.5 Stability, Draught and Trim	17
1.6 Noise and Vibration Requirements	17
1.7 Materials and Workmanship	19
1.8 Supervision, Inspection & Testing	19
1.9 Drawings, Schemes, Calculations and Manuals	20
1.9.1 Classification approved drawings	21
1.9.2 As Fitted Drawings	21
1.9.3 Manuals and Instruction books	21
1.10 Spare Parts, Inventories and Tools	22
1.11 Tests and Trials	22
1.11.1 Model Testing	22
1.11.2 On-board tests & trials- General	23
1.11.3 Shop Tests	23
1.11.4 Tank Testing	23
1.11.5 Inclining Experiment	23
1.11.6 Dock Trials	23
1.11.7 Sea Trials	24
1.12 Ship's model & Progress reports	26
1.13 Delivery	26
1.13.1 Scope of Supply	26
1.13.2 Delivery	26
1.13.3 Guarantee	27
CHAPTER 2	28
HULL STRUCTURE	28
2.1 General	28
2.1.1 Material	28
2.1.2 Preparation of Materials and Construction	29
2.1.3 Workmanship	30
2.1.4 Construction testing	31
2.1.5 Bilge Keel	31
2.1.6 Bottom Plugs	31
2.1.7 Bulwark	32
2.1.8 Sea Chests	32
2.2 Bottom Construction	32
2.3 Side Shell Plating and Framing	33
2.4 Deck Structure	33
2.5 Bulkheads	33



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

2.6	Skeg	34
2.7	Keel	34
2.8	Fore End Construction	34
2.8.1	Forepeak Compartment	34
2.8.2	Chain Locker	34
2.8.3	Bow thruster Compartment	35
2.9	Tanks Construction	35
2.10	Engine Room Structure:	35
2.11	Deckhouse and Bridge Deck	36
2.12	Hull Preservation and Painting	36
2.12.1	General	36
2.12.2	Surface Preparation	37
2.12.3	Execution of Painting	37
2.12.5	Cathodic Protection	40
2.13	Miscellaneous	40
2.13.1	Hull Markings	40
2.13.2	Hull Openings, Watertight Doors & Hatches	41
2.13.3	Foundations	41
CHAPTER 3		42
DECK EQUIPMENT AND OUTFIT		42
3.1	Steering Equipment	42
3.2	Mooring Equipment	42
3.2.1	Mooring Lines	42
3.2.2	Bollards	42
3.2.3	Fairleads and Mooring Eyes	42
3.2.4	Capstans	42
3.3	Anchor, Anchor Chain and Windlass	43
3.3.1	Anchors	43
3.3.2	Chain cable and shackle	43
3.3.3	Windlass cum Mooring Winch	43
3.4	Lashing Lugs/ Stanchions	44
3.5	Deck Crane	44
3.6	Tugger Winch	44
3.7	Cargo Rails & Pipe Stanchions	45
3.8	Life Saving Appliances	45
3.9	Fire Fighting Appliances	47
3.10	Miscellaneous Deck fittings	49
3.10.1	Deck Connections	49
3.10.2	Hatches	49
3.10.3	Manholes	49
3.10.4	Fenders and associated fittings	50
3.10.5	Scuppers, Freeing Ports	50
3.10.6	Bulwark	50
3.10.7	Gangway Opening	51
3.10.8	Hawse pipes	51
3.10.9	Masts	51
3.10.10	Ladders and Railings	52
3.10.11	Funnels	52
3.10.12	Gangway	53
3.10.13	Rescue Zones	53
3.10.14	Storm Rails	53
3.10.15	Watertight sliding doors	53
CHAPTER 4		55
ACCOMMODATION		55
4.1	General	55
4.2	Bulkhead, Linings & Ceilings	56
4.3	Heat, Fire and Sound Insulation	56
4.4	Flooring & Deck Coverings	57
4.4.1	Deck Composition	57
4.4.2	Cement & Tiles	57



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

4.5	Accommodation doors	57
4.6	Windows and Scuttles	58
4.7	Stairways, Ladder and rails in accommodation	59
4.8	Furniture and Fittings	59
4.9	Fittings of Furniture	60
4.10	Drinking water fountains	67
4.11	Waste Compactor	67
4.12	Dry Provision stores	67
4.13	Bosun's stores	68
4.14	Paint Store	68
4.15	Cold Storage Space	68
4.16	Furnishing	69
4.17	Provision refrigeration Plant	69
4.18	ERRV Requirements	70
4.19	Workshop	72
4.20	Engine Control Room	73
4.21	Air-conditioning, Refrigeration & Ventilation	73
4.22	Miscellaneous	75

CHAPTER 5

MACHINERY

5.1	General	76
5.2	Main Propulsion & Main Diesel Generating Sets	77
5.3	Emergency Diesel Generator	82
5.4	Main Propulsion Thrusters and Maneuvering Thrusters	82
5.4.1	Azimuth Propulsion System	82
5.4.2	Remote Control (Maneuvering and control equipment)	83
5.4.3	Propulsion motors	84
5.4.4	Tunnel Thrusters	84
5.5	Pumps	85
5.5.1	General	85
5.5.2	Bilge/ Ballast water Pump	85
5.5.3	GS / Fire Pump	85
5.5.4	Emergency Fire pump	85
5.5.5	Bilge Transfer Pump	86
5.6	Ship's Fuel Oil System	86
5.6.1	Diesel mode	86
5.6.2	Methanol Mode (Low Flash Point Fuel Supply System)	86
5.7	Calorifier	99
5.8	Cooling Water Preheater	100
5.9	Dirty Oil / Sludge pump	100
5.10	L.O. Transfer Pump	100
5.11	RO Plant	100
5.12	Domestic FW and SW system	100
5.13	Cooling System	101
5.13.1	Sea Water Cooling System:	101
5.13.2	Fresh Water Cooling System	101
5.14	Starting Air Compressors	101
5.15	Starting Air Receivers	101
5.16	Service Air Compressor	102
5.17	Oily Bilge Separator	102
5.18	Sewage Treatment Unit	102
5.19	Lifting Equipment	102
5.20	Minor Tanks	102
5.21	Floor Plates, Handrails and Gratings	102

CHAPTER 6

PIPING SYSTEM

6.1	General	104
6.2	Material (Piping and valves)	104
6.3	Sea Water Cooling Systems	105
6.4	Fresh Water Cooling System	105



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

6.5	Fuel Oil System.....	105
6.6	Workmanship.....	105
6.7	Fuel Oil System (MDO).....	106
6.7.1	General.....	106
6.7.2	Fuel Oil Filling and Transfer System.....	107
6.7.3	Stripping and sampling system.....	107
6.7.4	Fuel Oil Supply System.....	108
6.8	Lubrication Oil System.....	109
6.8.1	Lub. Oil system - Drain and Transfer System.....	109
6.8.2	Lub.Oil System for Main Propulsion System.....	110
6.8.3	Lub.Oil System for Main Generator Sets.....	110
6.9	Cooling System.....	110
6.9.1	General.....	110
6.9.2	Cooling system with sea water.....	111
6.9.3	Main sea cooling systems.....	111
6.9.4	Fresh Water cooling systems.....	112
6.10	Air Pressure System.....	113
6.10.1	Starting air system and manoeuvring system.....	113
6.10.2	Working air system in engine room etc.....	113
6.10.3	Working air system for deck etc.....	114
6.10.4	Instrument air.....	114
6.10.5	Breathing air compressor.....	114
6.11	Exhaust Systems And Air Intakes.....	114
6.12	Sea Chests.....	115
6.13	Bilge and Ballast System.....	116
6.14	Air Vent, Filling and Sounding pipes.....	116
6.15	Environmental Protection Equipment.....	117
6.16	Scuppers and Discharge, Sanitary Piping.....	118
6.10	Fire-fighting and General Service system.....	119
6.12	Sanitary Fresh and Sea water system.....	119
6.13	Exhaust System.....	119
6.14	Hydraulic System.....	120
6.15	EFMS System.....	120
CHAPTER 7.....		121
ELECTRICAL.....		121
7.1	General.....	121
7.2	Power Supply.....	121
7.2.1	General.....	121
7.2.2	Main Generators.....	122
7.2.3	Emergency Generator.....	122
7.2.4	Shore Supply Connection.....	122
7.3	Supply and Distribution.....	123
7.3.1	Main Switchboards.....	123
7.3.2	Emergency Switchboard.....	125
7.3.3	Distribution Boards.....	125
7.3.4	Transformers.....	125
7.3.5	Motors (To check with Electrical engineer).....	126
7.3.6	Battery / Rectifier units.....	127
7.4	Cables.....	127
7.4.1	Type.....	127
7.4.2	Installation.....	128
7.5	Lighting.....	129
7.6	Alarms/Monitoring System.....	131
7.6.1	Fire detection system.....	132
7.6.2	General alarm.....	132
7.7	Earthing.....	133
7.8	Automation system.....	133
7.8.1	General.....	133
7.8.2	Maneuver Desks, Main Console, Instruments.....	133
7.8.3	Bridge consoles.....	134
7.8.4	Alarm/monitoring system.....	135



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

7.8.5 Aux. Engine Safety System	136
CHAPTER 8	137
NAVIGATION AND COMMUNICATION EQUIPMENT	137
8.1 Navigational Lights and Shapes	137
8.2 Search Lights	137
8.3 Radar, signal observation and antenna masts	137
8.4 Navigational Equipment	137
8.5 Consoles	139
8.6 Communication Equipment	139
8.6.1 Radio Communication	139
8.6.2 Internal Telephone System	139
8.6.3 Sound Powered Telephone System	140
8.6.4 Public Address / Talk-back System	140
8.6.5 Telegraph	140
8.6.6 Loud Hailers	141
8.7 Computer Network	141
8.8 CCTV System	141
CHAPTER 9	142
DYNAMIC POSITIONING SYSTEMS	142
9.1 General	142
9.2 System Requirements	142
CHAPTER 10.	144
CARGO SYSTEM	144
10.1 Dry Cement Tank	144
10.1.1 Pneumatic bulk handling system	144
10.2 Loading/Discharging Systems For Liquid Cargo	144
10.3 Filling/Discharge stations (manifold)	146
10.4 Hose connections	146
10.5 Tank washing system	146
10.6 Auxiliary Systems	146
10.7 Special system for Cargo	147
10.7.1 General	147
10.7.2 Mud system	147
10.7.3 Brine system	148
10.7.4 Cargo Fuel oil systems	148
10.7.5 Fresh water cargo system	149
10.7.6 Ballast/Drill water system	149
10.7.7 Base oil system	149
10.7.8 Methanol/Special Products systems	149
10.7.9 Foam system	150
10.7.10 Sounding and tank ventilation system	150
10.7.11 El. Hydr.Power Pack	151
10.7.12 Mud Tank Washing System	151
10.7.13 Gas Detection	151



CHAPTER 1 GENERAL

1.1 Intent

The purpose of this document (hereinafter called the "Specification") together with the General Arrangement Plan (attached along with) is to outline the technical and functional requirements for the construction and delivery of a Methanol fuelled (diesel) electric driven, DP-2, 3000T DWT Platform Supply Vessel.

The vessel shall be built in steel as a modern, safe and seaworthy vessel with aesthetic lines and pleasant profile. The vessel shall be designed with bulbous bow and transom stern. The vessel shall have an efficient hull form for stability and see keeping purpose.

The vessel including all its material, equipment, piping, machinery, workmanship, etc. shall comply with good standards of shipbuilding applicable to this type of vessel. All works shall be carried out according to the Specification and approved plans and to the requirements of the classification society, regulatory bodies shall be fully documented as required.

The design and construction of the vessel to meet the requirements of the Classification Society and the statutory regulations as applicable to an IMS class VIII vessel.

The vessel shall be SPS compliant for 60 persons and accommodation shall be arranged accordingly for crew and special personnel as per GA plan

The Technical specification and general arrangement plan and maker's list shall be integral part of contract. In the event of any contradiction between the contract and this specification and or the general arrangement the provision of contract shall prevail. In the event of any contradiction between General arrangement and technical specification, the technical specification shall prevail.

It is understood that anything not mentioned in the specification but required for this type of vessel or by the Classification Society and regulatory bodies, as applicable on the date of contract signing be provided by the builder.
is to be provided by the builder.

Material and Workmanship

All material /equipment used for construction of the Vessel shall be new and of marine quality suitable for the intended service. Hull material shall have good welding qualities.

All materials in general used shall conform to the requirements of Class/Flag, and where not specified by rules and regulations of Class/Flag, shall conform to BIS or equivalent or any other reputed international standard or as per Builder's standard practice.

The quality of the construction, testing, and trials of the Vessel, its machinery, fittings, equipment, materials, and workmanship shall be in accordance with good



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

shipbuilding practice, the technical specifications, the construction drawings and plans, and the Builder's standard practice.

Structure, machinery, equipment, and outfit shall be arranged keeping in view of easy access and future maintenance as far as practicable.

Steel work to be carried out as per Builder's standards or IACS "Shipbuilding & Repair Quality Standards".

All fabrication and erection shall be as per Builder's standard practice. Requirements of the Buyers and their surveyors in respect of quality of workmanship to be taken into consideration.

All workmanship for the vessel is to comply with the Builder's standard and good shipbuilding practices and is based upon the building practice of the Builder which includes:

- Pre-treatment of materials
- Flame cutting, bending, welding, welding sequence
- Assembling
- Use of tools
- Alignment, fairness, tolerances
- Launching, testing & fitting-out practice
- Temporary access openings
- Building sequence, application of modules, pre-outfitting, painting etc

Ship yard shall submit shipyard's Shipbuilding & Repair Quality Standards for hull, piping, machinery and electrical for buyers reference

1.2 Design Conditions and Basic Requirements

1.2.1 Design Conditions

All components and systems covered by the Rules are to be designed to operate under the following environmental conditions if not otherwise specified in the detail requirements for the component or system:

Sea water temperature	32° C maximum
Ambient air temperature	45° C maximum
Engine Room temperature	55°C
Relative humidity	70%maximum
Air Pressure	1000 m bar

1.2.2 Duties

The VESSEL shall be capable of carrying out the following duties:

- (a) Shall be capable of undertaking world-wide sea voyages excluding ice regions.



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

(b) Shall be capable of working in coastal areas.

(c) Shall have capability to undertake the following multi-function support facilities:

Carrying and unloading to rigs and production platforms, pipe laying barges etc.:

- Deck Cargo;
- Pipes;
- Liquid Cargo;
- Dry bulk;
- Special products incl.methanol/PPD
- Emergency Response & Rescue (Safety Standby) Vessel

(d) The vessel shall be arranged in compliance with OEUK 2024 latest Emergency Response & Rescue Vessel Survey Guidelines Group 'B' (previously known as the UKOOA 'B' ERRV guidelines).

(e) . The requirements of the ERRV guidelines shall be met to the vessel inclusive all functions required for compliance to the ERRV guidelines as shown in the General Arrangement

(f) Good manoeuvrability and station keeping, shall be achieved by using twin azimuth thrusters, and transverse bow thrusters.

(g) Sea worthiness to operate in open waters / adverse weather conditions up to sea state 5. Roll and pitch must not exceed 5° in sea state 5.

(h) Twin manoeuvring consoles shall be fitted in the wheelhouse stations forward and aft.

(i) The wheelhouse is designed to ensure excellent all-round view as far as practicable.

(j) Unobstructed view to the, aft deck and aft overhead shall be ensured by fitting lower level and deck head windows.

(k) The accommodation is well-appointed and centrally air-conditioned.

1.3 Description of the Vessel

1.3.1 General

The Vessel shall be Platform supply vessel with capability to provide various services required in the offshore operations. The vessel shall be all welded steel hull of round bilge construction with bulbous bow and transom stern.

Main machinery space and accommodation shall be arranged forward of midship.



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

The vessel shall be propelled by two numbers variable speed Electric Motor driven fixed pitch propellers in azimuth nozzles. Two tunnel bow thrusters shall be installed to achieve high degree of maneuverability and for station keeping.

The vessel shall have Four (4) main diesel alternators in engine room and one (1) emergency generator shall be installed above main deck.

The main diesel generators shall be capable of dual fuel driven (Diesel & Methanol).

The vessel is designed and arranged according to Clean Design class requirements. Clear Cargo deck area totally approx. 650 m², arranged for four lengths of pipe (12,2 m each) and strengthened for a uniform load of approx. 5.5 t/m².

One (1) pair of passive roll reduction tanks, shall be provided aft of the superstructure.

Well-appointed air-conditioned accommodation for 60 men shall be provided on board.

Vessel shall be SPS 2008 code compliant for carrying not more than 60 persons as per Indian Flag Administration.

1.3.2 Principal Particulars (approximate)

Length Overall	:	84.60 m
Length B.P.	:	76.80 m
Breadth Moulded	:	18.00 m
Depth Moulded	:	7.25 m
Maximum Draft (Scantling)	:	6.25 m
Design Draft	:	5.95 m
Deck cargo c.o.g. 1 m above main deck.	:	1000t
Total clear Cargo deck area approx.	:	650 m ²
Gross Tonnage 1969 international	:	> 2000 GRT
Deadweight at 5.95 m draft	:	Minimum 3000 T

1.3.3 Accommodation

Officers, Crew and Special personnel shall be provided with air-conditioned accommodation as follows:

Master	:	1
Chief Engr. Officer	:	1
Chief officer	:	1
2nd Engr. Officer	:	1
Junior officers/engineers	:	6
Trainee Officers	:	2
Petty officers	:	2
Crew	:	10
Special Personnel	:	36 (2 x 1P + 3 x 2P + 7 x 4P)
Total	:	60



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

1.3.4 Approximate Capacities at 100%

Fuel oil (Cargo in dual tanks)	min.	600 m3
Fuel oil (Propulsion)	min	400 m3
Methanol Fuel	min	400 m3
Ballast/Drill water	min	800 m3
Freshwater	min	650 m3
Dry bulk cargo tanks (Cement / Baryte)	min	300 m3
Base oil	min	200 m3
Mud/Brine (S.G – 2.8 t/m3)	min	800 m3
Special products/Methanol/PPD (2 off tanks)	min	140 m3

All Mud-, Brine-and Base oil tanks shall be designed for the carriage of liquids with a flashpoint above 60 degrees Celsius.

Methanol tanks shall be laid out for safety and pollution hazard substances with flash point below 43 degrees Celsius, according IRS class LFL rules

Electric sockets for 12 No's reefer containers shall be arranged at suitable location on main deck with securing arrangements

1.3.5 Dead weight

The Deadweight consists of:

- Cargo
- Methanol, Fuel oil & lube oil
- Domestic fresh water and drinking water
- Water and oil which are not mentioned in the "Light ship weight"
- Ship's crew, passengers, and their effects
- Provisions, stores, equipment and inventories.
- Others not mentioned in the "Light ship weight"
- Spares over and above the Classification recommendation
- Loose fittings

The deadweight is to be determined by ascertaining the difference between the light ship weight and the displacement including shell and appendages corresponding to the specified load line draught at even keel in sea water of 1.025 specific gravity

Deadweight all included on 5.95m draft to be not less than 3000 t.

1.3.6 Light ship weight

Lightweight is the weight of the Vessel completed, and to consist of the following:

- Hull & Superstructure steel weight



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

- b) Weight of fittings and equipment as stated in the Specifications, but excluding such items as described in "Buyer's supply"
- c) Fresh water and oil in main and auxiliary machinery
- d) Oil and water inside machinery, tanks (FO & LO tanks which are not part of machinery equipment will be excluded.), heat exchangers, pipe and valves in the machinery room directly related to main diesel generator based on minimum quantity required for main diesel generator starting
- e) Spare parts, tools and accessories limited to those required by the specified Rules and regulations
- f) Accommodation & deck outfit
- g) Spare Anchor

The lightweight measurement shall be carried out as per the approved inclining test procedure.

The corrections for trim, heel, deflection of the Vessel and specific gravity of sea water at the lightweight measurement shall be made to the calculation in accordance with the builder's standard practice and class guidelines.

1.3.7 Speed and Endurance

The vessel shall be designed to achieve a design speed of not less than 12.0 knots speed at design draft of 5.95 m and 90% power of propulsion motors with 15% sea margin in weather condition up to BF 3. Speed trials shall be carried out in Design draft condition.

The total fuel capacity including methanol and cargo fuel shall be adequate for an endurance of 45 days with vessel speed of 12 knots at 5.95 m design draft.

1.3.8 Subdivision

The vessel shall have full depth wing tanks all around except for the forepeak region. Double bottom shall be arranged as shown in the General Arrangement Plan.

1.3.9 Main Engines and Auxiliary Machinery

The propulsion system shall have two fixed pitch propellers in azimuthing nozzles, each driven by variable speed AC Motors.

Four (4) sets of diesel engine driven main generators, each suitable rated capacity 690V, 50 Hz / 3Ph shall be installed in engine room. The DG's shall be of IMO Tier II compliance.

One suitable rated emergency generator 415V 50Hz / 3Ph shall be installed above the main deck.

1.4 Classification, Rules, Regulations and Certificates

1.4.1 Classification and Port of Registry

[Handwritten signatures and initials]



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

Vessel shall be classed with IRS with class notation as given below:

Swastika, SUL, MULTIPURPOSE OFFSHORE SUPPORT VESSEL (SUPPLY, OCC, STS, SSR, AGNI 1), SPECIAL PURPOSE SHIP, LPPF (ML), CMF (C3-c-I), IY, IBS, SYJ, DP2, EP, Cys-E, , IN-WATER SURVEY

The ship shall be built according regulations for international trade, and all relevant Indian Merchant Shipping Rules applicable for this type of vessel.

Owners representative shall during the building period have access to the Builder's Yards and workshops for inspection. Builder shall assist the Owner's representative so he can inspect and supervise at the Yard's subcontractors.

Flag of Registry

Flag : India

The vessel shall be registered by the Buyer at its own cost and expenses under the laws of India. The Builder shall submit necessary copies of drawings/documents required for registration of the vessel to the Buyer as applicable as per the provisions of this chapter.

1.4.2 Rules and regulations

The vessel shall be classified, as a "IMS Class VIII" cargo vessel and registered under the Indian Merchant Shipping Act, as amended.

All Indian Merchant Shipping Rules applicable to an IMS Class VIII vessel and Indian Dock Labour board requirements to be complied with.

Rules and regulations

The Vessel and its equipment shall be designed and built in accordance with International Shipbuilding Standards in respect of general hull, marine engineering and electrical equipment and International Rules and Regulations which are in force at signing of Contract. Rules which may come into force after signing of contract shall be treated as modification:

The vessel shall comply with prevailing IMO Conventions & Codes, M.S. Act, M.S. Rules including orders/instructions/circulars of the GOI, but not limited to SOLAS, MARPOL, ICLL, Tonnage Convention, Prevention of Collision at Sea, OSV Chemical Code, COLREG, HKC, AFS and noise code, depending on the date of Keel lay / delivery, as applicable. The vessel shall comply with all applicable IRS Main Rules and Regulations for the Construction and Classification of Steel Ships.

The vessel to be designed and built in compliance with the following but not limited to:

General



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

- a. Classification society rules for Multipurpose Offshore Support vessel
- b. Marine laws and regulations of the government of India, ship's flag.

IMO Convention

- a. International Convention on Load Lines, 1966 and amendments
- b. International Convention on Tonnage Measurement of Ships, 1969 as amended
- c. International Convention for the Safety of Life at Sea, (SOLAS 74/78) including all amendments.
- d. International Convention for Preventing Collision at Sea 1972 and subsequent amendments
- e. International Convention for the Prevention of Pollution from Ships (MARPOL 73/78) including all subsequent amendments. (MARPOL Annex I, II, III, IV, V, VI)
- f. AFS, International convention the control of Harmful Anti fouling system on ships 2001.
- g. International Convention on Standards of Training, Certification and Watch keeping (STCW) 1995
- h. International Convention for the Safe and Environmentally Sound Recycling of Ships

IMO Circulars/Resolution:

- a. IMO MSC/Circ 1053- "Explanatory notes to the standards for ship maneuverability
- b. IMO Resolution MSC.215 (82) Performance Standard for protective coatings for Dedicated Seawater ballast tanks in all types of ships
- c. IMO Resolution A1021(26) Code on Alarms and Indicators
- d. IMO Resolution A708 (17) Navigation Bridge Visibility and Functions
- e. IMO Resolution MSC.337(91) Code on noise levels on board ship
- f. Resolution MEPC. 227 (64) – 2012 Guidelines on Implementation of Effluent Standards and Performance Tests for Sewage Treatment Plants.
- g. Resolution MEPC.282 (70) – 2016 Guidelines for the Development of a Ship Energy Efficiency Management Plan (SEEMP)
- h. Resolution MEPC.245 (66) – 2014 Guidelines on the Method of Calculation of the Attained Energy Efficiency Design Index (EEDI) for New Ships
- i. Resolution MEPC.254 (67) – 2014 Guidelines on Survey and Certification of The Energy Efficiency Design Index (EEDI)
- j. Resolution MSC.128 (75) - Performance Standards for a Bridge Navigational Watch Alarm System (BNWAS)
- k. IMO Res A673 (16) Guidelines for the Transport and Handling of Limited Amounts of Hazardous and Noxious substance in Bulk on offshore supply vessels as amended by IMO Resolutions MSC 236 (18), and MEPC 158 (55).
- l. IMO MSC Circular 1097 Guidance relating to the Implementation of SOLAS Chapter XI-2 and the ISPS Code, the application of ISPS to be limited to below:
- m. Automatic Identification System (AIS)
- n. Ship Security Alert System (SSAS)



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

- o. IMO Number
- p. Resolution MSC.263 (84) – Revised Performance Standards and Functional Requirements for the Long-Range Identification and Tracking of Ships.
- q. MSC Resolution 191 (79) Performance standards for the presentation of Navigation Related Information on ship borne Navigational Displays
- r. IMO Resolution A.952(23) - Graphical Symbols for Shipboard Fire Control Plans
- s. IMO Resolution A.760(18) - Symbols Related to Life-Saving Appliances and Arrangements
- t. IMO Resolution A 237 (82) - Code of Safe Practice for the Carriage of Cargoes and Persons by Offshore Supply Vessels (OSV Code)
- u. MSC Resolution MSC 235(82) "Guidelines for the design and construction of Offshore Supply Vessels" (Replacing IMO 469 (XII)).
- v. ISO 20283-5:2016, Guidelines for measurement, evaluation and reporting of vibration with regard to habitability on passenger and merchant ships
- w. MSC.1/Cir.1586- List of Certificates and documents required to be carried onboard ships
- x. MSC1 Cir.1621 interim guidelines for safety of ships using methanol as fuel

IMO Codes:

- a. SPS Code 2008, IMO MSC.266(84) Code of Safety for Special Purpose Ships
- b. FSS Code - Fire Safety Systems – Resolution MSC.98(73)
- c. 2010 FTP Code – International Code for Application of Fire Test Procedures, 2010
- d. 2008 IS Code – International Code on Intact Stability, 2008
- e. ISPS Code - International Code for the Security of Ships and of Port Facilities
- f. Code of Noise level on board ships – Resolution MSC 337 (91)
- g. NO(x) technical code 2008
- h. Offshore Chemical code (OSV)
- i. OSV code 2006

ISO Standards:

- a. ISO 20283-5:2016– "Mechanical vibration" Guidelines for the measurement, reporting and evaluation of vibration with regard to habitability on merchant ships.
- b. ISO 7547: Air-conditioning and ventilation of accommodation spaces and other enclosed compartments on board ships
- c. ISO 8861: Engine-room ventilation in diesel-engine ships
- d. International Electro technical Commission (IEC) Publication 92 - Electrical Installations in Ships.
- e. ISO 15016:2015- Guidelines for the assessment of speed and power performance by analysis of speed trial data.
- f. IEC 60092 Electrical installation in ships.
- g. IEC 60533 Electrical and electronic installations in ships- Electromagnetic compatibility (EMC) – Ships with metallic hull.
- h. IEC 60950 – Safety of information technology equipment
- i. IEC 60945 – Maritime navigation and radio communication equipment and systems – General requirements - Methods of testing and required test results
- j. IEC 61508: Functional Safety of Electrical/Electronic/Programmable Electronic Safety-related Systems.



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

- k. ITU Radio Regulations - International Telecommunication Union (ITU) - Radio Regulations, 1974, 1982 and Amendments (GMDSS)

1.4.3 Certificates and Documents

Following certificates shall be delivered at the time of delivery of the VESSEL:

- a. Builder Certificate.
- b. Classification certificates for Hull & Machinery.
- c. Safety construction certificate.(Statutory).
- d. Safety equipment certificate (Statutory).
- e. Safety Radio telephony certificate(Statutory).
- f. Record of safety equipment (Statutory)
- g. International load line certificate(Class)
- h. Tonnage certificate and computation (Statutory)
- i. Ship sanitisation exemption certificate (Port authority)
- j. Potable water certificate. (Port authority)
- k. Compass adjustment certificate (Competent authority)
- l. Medical chest certificate. (Statutory authority)
- m. Certificates for LSA, FFA, navigation aids, crane, wire ropes, winches, windlass, anchor, chains, mooring ropes & other mooring equipment, castings and forging etc. (Class/Statutory authority)
- n. Intact stability booklets approved by the Maritime Administration and Classification Society. (Statutory authority)
- o. Deadweight Certificate from shipyard.
- p. Statement of compliance for TBT free anti-fouling paint issued by the paint manufacturer and class.
- q. DP-2 certificate.
- r. International oil pollution certificate.
- s. International sewage pollution prevention certificate
- t. International air pollution prevention certificate
- u. Certificate for light and navigational aids.
- v. Calibrating Certificate for flow meters in cargo system & Machinery spaces
- w. Statement of fact of MARPOL compliance
- x. Maritime labour certificate and a declaration of maritime labour compliance
- y. Ship Recycling Plan and Green Passport with Listing All Hazardous Materials issued by the Builder)
- z. PSPC Compliance Certificate
- aa. Manual for Methanol handling, bunkering and safe operation
- bb. Compliance certificate from class for "OEUK" Emergency Response and Rescue Vessel survey Guidelines for class "B' vessel (2024)
- cc. Any other certificates or plans as required by MSC.1/Circ 1586
- dd. International Pollution Prevention Certificate for Carriage of Noxious Liquid Substances in Bulk.

The following manuals stamped by the class or other assigned authority shall be provided.

- a. Stability booklet in hard copy and on USB drive.
- b. Garbage management manual
- c. Shipboard Marine Oil pollution prevention plan (SOPEP)



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

- d. Ullage table
- e. Procedure and Arrangement Manual for carriage of brine
- f. Cargo Securing Manual
- g. Letter of compliance for carrying dangerous cargo packed good on deck.

Certificates not listed, but required by class, shall be delivered by the shipyard.

Yard also shall prepare with list of equipment and equipment specifications with a brief description of all equipment and with a statement of Make, Type, Production No. Supplier with address, telephone No. Fax No., and other relevant information for effective maintenance of the ship.

This information shall be delivered in paper and on a diskette produced in Word or Excel program.

Builder shall ensure that the ship's crew have the necessary instructions on board for using the equipment fitted.

1.5 Stability, Draught and Trim

On completion of the vessel and before sea trials, an inclining test in the presence of the Class surveyors and buyer's representative shall be carried out by the shipyard to determine the centre of gravity and lightship weight of the vessel in accordance with the approved procedure for carrying out inclining test.

The trim & stability booklet shall be prepared based on the inclining experiment to include the following conditions:

- (i) Lightship condition,
- (ii) Docking condition,
- (iii) Fully loaded departure with cargo distributed below deck and deck cargo specified by position and weight with full stores and fuel, arrival with 50% consumables and arrival with 10% consumables respectively.
- (iv) Ballast arrival condition without cargo but with 10% stores and fuel.
- (v) Ballast condition departure without cargo but with full stores and fuel.
- (vi) The vessel in the worst anticipated operating condition.

Monitor heeling moment shall be examined in the most unfavourable loading condition. The fi-fi monitor heeling moment should not exceed 0.5 times Max. GZ in most unfavourable loading condition

The provisional trim & stability booklet as per IMO Rules with all conditions is to be provided at the time of delivery of the vessel based on the approved inclining experiment report. The final trim & stability booklet with the approval of classification society shall be delivered to the vessel within one month after delivery of the vessel.

Builder should ensure that the vessel does not have any permanent list.

No permanent ballast to be used to correct heel or trim.

1.6 Noise and Vibration Requirements



NOISE

The vessel shall be designed and constructed so far as is practicable to avoid excessive noise and vibration generation and propagation during normal ship operation.

Noise levels in accommodation and working spaces shall be in accordance with the IMO Resolution MSC 337(91) - "Code on Noise Levels on Board Ships".

Noise level shall be measured by the Builder in accordance with above Resolution. A report on noise measurement by third party inspectors shall be submitted.

If the measured noise levels exceed 3 dB than the recommended value, the Builder shall make necessary improvement agreed between the Buyer and the Builder as far as practicable.

In order to reduce the sound and vibration levels in the accommodation and engine rooms, the Builder shall take the following preventive measures into account, this includes, but not limited to:

- (a) Ventilation units, fans, auxiliaries, etc. shall be fitted with elastic mountings and noise traps
- (b) Ventilation and air -conditioning ducts shall be sound insulated
- (c) Machinery control room shall be sound insulated
- (d) Silencers for the generators

VIBRATION

Structural vibration analysis shall be carried out by independent reputed agency

ISO 20283-5:2016, Guidelines for measurement, evaluation and reporting of vibration with regard to habitability on passenger and merchant ships shall be complied with.

Vibration levels in the accommodation and in spaces normally worked in or occupied shall be targeted to be within 5 mm/s (as per IRS CMF (3) requirements applicable for the cargo vessels).

The Builder shall prepare a schedule for recording the level of vibration and measurement to be done in accordance with the Builder's practice at all working range of the main diesel generator during sea trial. A report on vibration measurement by third party inspectors shall be submitted.

If vibrations level exceeds the designed criteria, the builder to make necessary improvement to a practical extent mutually agreed between the Buyer and the builder.



1.7 Materials and Workmanship

All materials and workmanship are to be of good shipbuilding quality. All steel plates, sections, hull forging and castings are to be meet classification's requirement and supplied with test certificates where required by Classification Society. All steel used to be of good welding quality, free from laminations or other harmful defects and to be grit blasted and primed before using. Only mild steel to be used for hull structure. All visible plates are to be smooth and straight wherever applicable.

Approved and accepted equipment and machinery list of all equipment and machinery to be used in the vessel is included in the Makers List.

All woods used to be suitable for the intended purpose and of good quality. All timber to be impregnated against rot, infestation and free from odour,

All smith work or fabricated fittings to be of neat design, strong, smooth and free from defects.

All castings to be of good quality close grained and free from cracks, blow-holes and other defects. Steel castings to be manufactured to classification requirements and approval where required.

1.8 Supervision, Inspection & Testing

The vessel shall be constructed in accordance with the requirements of the class and other regulatory bodies under the approval of Buyer's representative. The buyer's representative shall at all times during working hours, until delivery and acceptance of the vessel, have the right to inspect the vessel, its engines and all accessories, all works in progress, or materials utilized in connection with the construction of the vessel where ever such work is done, or such material is stored including the premises of its suppliers and sub-contractors for the purpose of ensuring that the vessel is being constructed in accordance with the terms of the contract and the specification.

The schedule of tests and trials shall be submitted to the buyer in advance. Inspections shall be scheduled during normal office hours as far as possible.

The notice of inspection shall be given at least one (1) day advance in case of all works such as pre fabrication, painting inspections, piping etc.

In case of all major inspections such as inclining experiment etc one week (7) days advance notice shall be given. Inspections shall always be arranged that there is no overlapping/interloping between inspections on sister vessels and particular departments as far as possible. Inspections shall be so arranged as to enable the inspector to spend sufficient time in careful inspections.

The buyer's supervisor shall attend the inspections and tests according to the builder's application schedule and shall be informed about when and where the test shall be carried out.



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

In case of inspection being held in sub-contractors shop outside of the city where shipyard is located, at least 3 weeks advance notice to be given with a confirmation being not less than 7 days in advance as far as practical.

The vessel shall be constructed and equipped under the supervision of the attending Surveyor of classification society and according to the schedule of work. The classification society Surveyors shall carry out classification surveys and safety and other statutory surveys on behalf of the Flag state.

1.9 Drawings, Schemes, Calculations and Manuals

All Drawings, Nameplates, Instructions, Signs, Markings shall be provided in the English Language.

Plan Approval

Prior to starting work, the Builder shall submit plans/documents to the Buyer for approval in due time of design and construction schedules.

List of plans (indicating plans to be submitted for approval of Buyer) shall be submitted for approval within 45 days from finalization of Ship building Specifications.

Builder shall be responsible for obtaining approval for all plans / all vessel operating manuals from statutory body & class.

Builder shall submit one electronic copy of all the drawings requiring approval by email and hard copies shall be submitted to a maximum of 50 hard copy drawings on request from Buyer.

The Buyer shall forward the drawing approval comments/approval letters to Builder by email within a period of 21 days (10 working days or less for minor drawings). In case the drawings/documents are not approved/commented by the Buyer within the said twenty one (21) days, the drawings shall be deemed to have been approved by the Buyer without any comment, and builder shall send notice by email that drawings are deemed approved by buyer without comments.

The Buyer shall intimate the Builder the dispatch of the approved plans by email or fax.

The drawings/documents approved for the first vessels shall be deemed to be approved for the subsequent vessels of the series subject to no major change in arrangement/layout.

The Builder shall submit one (1) copy of class approved plans and covering letters to the Buyer.

The Builder shall furnish six (6) hard copies of necessary drawings to the Buyer for registration of the Vessel.



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

The Builder shall furnish total four (4) sets (two (2) sets to the Vessel and two (2) sets to the Buyer's office) of 'as fitted' drawings and instruction books of equipment covering the Vessel to the Buyer before delivery of the Vessel.

Plans, documents and certificates mounted in frames with glass shall be installed on-board at such locations as designated by the Buyer's supervisor and as required by rules.

Basic design/Classification design drawings/DGS approved plans with approval letter as per agreed scope and as applicable shall be submitted to the Buyer by the Builder.

1.9.1 Classification approved drawings

The Builder shall prepare all Class, construction / working drawings and submit to Class for approval. The list of drawings requiring buyer approval shall be agreed upon at the time of contract

1.9.2 As Fitted Drawings

The builder shall also furnish, at the time of delivery, 4sets of the As-Fitted plans of all major drawings and an electronic copy of the same.

Three sets of sub-contractor's drawings, reports of various tests and inspections made, inventory list of all machinery, equipment and fittings including lists of all standard and extra spare parts, standard and special tools and, schemes, calculations, all test and trial reports etc. necessary for good operation, maintenance and repair of the vessel shall be submitted to the buyer at the time of delivery.

The following drawings are to be encapsulated in transparent plastic folders, framed and located on board at locations indicated by BUYER Representative:

- General Arrangement Plan.
- Fire control Plan.
- LSA plan
- Capacity Plan.
- Fuel including methanol and Lube Oil System
- Turning circle Williamson Turn
- Stopping distances
- Bunkering Plan and Procedures
- Bilge and Ballast Plans
- CO2 System

1.9.3 Manuals and Instruction books

Three sets of installation/instruction books, operation and maintenance manuals, trouble shooting and Repair manuals, Parts and Spares catalogues given by the original machinery suppliers for all the machinery and instruments installed shall be handed over to the buyer at the time of delivery of the vessel.

As a minimum this operating manuals shall contain:



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

- a. Methanol Handling Manual
- b. Procedures for anchoring and mooring operations
- c. Procedures for adverse weather conditions and platform pull off emergencies
- d. Black out procedure
- e. Stability booklet in hard copy and on USB drive.
- f. Garbage management manual
- g. Shipboard Marine Oil pollution prevention plan (SOPEP)
- h. Ullage table for Fuel oil and Cargo tanks
- i. Procedure and Arrangement Manual for carriage of brine
- j. Cargo Securing Manual
- k. Letter of compliance for carrying dangerous cargo packed good on deck.
- l. DP system & FMEA Manuals
- m. A plan showing safety provisions including location and operation of lifesaving appliances and a procedure for evacuation of personnel from the vessel.

1.10 Spare Parts, Inventories and Tools

Following spares and inventory shall be supplied by the builders:

- (i) Spares as required and recommended by Classification Society/statutory authority including Manufacturer's standard spares for all equipment & machinery.
- (ii) Essential Maker's recommended spares for DGs, Propulsion Thrusters, Propulsion motor, Bow thrusters, Cargo/Ballast pumping systems, Air conditioning plant, Purifier, Deck Crane, OWS, Air compressor, main switch board, Methanol FSS, Methanol transfer pumps and Gas detection plant.
- (iii) All medicine and medical equipment including medical oxygen bottles as required by IMS rules.

All spares to be properly preserved, stowed in Boxes on board and catalogued.

1.11 Tests and Trials

1.11.1 Model Testing

The following tests shall be conducted in an established model testing tank to arrive at an optimum hull form to achieve the design speed.

- (i) Resistance tests and self-propulsion tests (with stock propeller) at design draft and ballast draft.
- (ii) Propellers shall be designed with the available data and open water test shall be carried out with the design propellers.
- (iii) Self-propulsion test using above designed propellers at design draft and ballast draft.
- (iv) Paint flow test or CFD simulations of streamlines for bilge keel and bow thruster tunnel at design draught at service speed.
- (v) Maneuvering & sea keeping calculations.



1.11.2 On-board tests & trials- General

All portions of the vessel and all work there on, including structural fittings, systems and machinery's shall be thoroughly tried out and tested after installation to demonstrate workmanship, proper working order, alignment of all moving parts, suitability for the purpose intended and compliance with the requirements of the specification. All tests and trials required for the vessel shall be performed in compliance with the statutory / Classification Society requirements.

The builder shall prepare and submit a detailed programme of the relevant trials to the Buyer and Classification Society for approval.

The builder shall give advance notice to the Buyer's representative (the time to be agreed by the builder and the Buyer) as to the inspections and tests for the Buyer attendance.

Any reasonable remark with respect to deficiency of performance made by the Classification Society and Buyer representative during the tests and trials shall be attended to by the builder at no extra cost. All costs involved in conducting the tests and trials shall be borne by the builder.

1.11.3 Shop Tests

The vessel's machinery and other equipment such as DG's, Methanol Fuel Supply System thrusters, propulsion motors, bow thrusters, VFD's, emergency generator and MSB shall be inspected, tested and accepted at the subcontractors' premises or at the manufacturers' factories in accordance with the requirements of Classification Society and statutory bodies concerned and to the builder's and/or manufacturers' standard inspection / test schedules prior to installation on board. At least two weeks' advance notice shall be given to buyer for attending these test and trials.

1.11.4 Tank Testing

All tanks and watertight or oil tight compartments shall be tested for tightness/structural strength in the presence of the Surveyor and shall comply with the rule requirements. The tests must be carried out after completion of the construction including tank fittings, deck/ bulkhead pieces in place and prior to the commencement of painting.

1.11.5 Inclining Experiment

Before the sea trials and with the vessel in as complete a condition as possible, an inclining experiment shall be conducted in accordance with the approved test procedure, to ascertain the lightship displacement and the center of gravity in the presence of Classification Society.

1.11.6 Dock Trials



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

Dock trials shall be carried out in accordance with a program to be agreed upon by the Buyer and Classification Society to check the operation of the machinery and equipment. Dock trials procedure shall be submitted for owner's approval in advance at least a month. A minimum of two (2) weeks notice shall be given to the buyer for commencement of dock trials of major machinery.

The dock trials shall include the commissioning of all equipment which includes but not limited to the following:

- Functional tests/trials of all pumps and systems
- Dock trials of all auxiliary machinery
- Main Generators trials
- Air-conditioning machinery, refrigeration machinery and ventilation system
- Navigation equipment and communication equipment
- Safety equipment
- Crane trials
- Alarms, Controls and monitoring system
- Anchor and mooring equipment
- Power Management and other Automation
- Deck Machinery

1.11.7 Sea Trials

All sea trials shall be carried out with methanol as fuel as per builder's standards and as per approved sea trial test & trial procedure by the buyers.

When the vessel is nearly completed, the shipyard shall carryout sea trials of the vessel as described below:

(i) Progressive Speed Test: The progressive speed test shall be carried out as follows:

At 50% of max output	: One double run
At 75% of max output	: One double run
At 90% of max output	: Two double run
At max output	: One double run

(ii) Endurance Test:

The endurance test shall be carried out at full power for four (4) hours. Fuel consumption and all other parameters of D/G Engines shall be measured during the endurance test.

(iii) Maneuvering Tests:

Following tests shall be carried out to check the manoeuvring of the vessel:

- a) Crash stop astern and ahead test.
- b) Astern maneuverability test with and without use of bow thrusters.
- c) Turning circle test
- d) Inertia test.
- e) Emergency steering test.



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

- f) Zig-Zag manoeuvre test
- g) Dynamic positioning test according to manufacturer's recommendation.

(iv) Endurance test which includes 4 hours continuous service with unmanned engine room. All alarms and service data for the main engine shall be noted on a special form. The form shall be enclosed with technical documentation at delivery.

(v) All equipment and systems function, performance and capacity tests shall be carried out during the sea trials.

1.11.8 Other Tests at Sea

The following tests shall be conducted at a proper time during the official sea trial:

- 1) Anchor windlass test
- 2) Operation of bow thruster
- 3) Tests and calibration or adjustment of navigation equipment and instruments such as magnetic compass, etc.
- 4) Measurement of noise levels as per IMO guidelines
- 5) Measurement of hull vibration.
- 6) Black out test
- 7) Electric sea load measurement.
- 8) All cargo pump capacity test (filling and discharge)
- 9) During endurance test, following alarm to be checked.
Fire, general, CO2, E/R alarm, telephone

If during the sea trials or dock trials it becomes apparent that there is a design defect, then modifications are to be done in order to make the ship safe and seaworthy and also satisfactorily meet the intended services within the extent and spirit of the Specifications. The Builder; at its expense, shall carry out such works prior to the delivery.

1.11.8.1 Fuel & Lube Oil for test & trial trips

Any fuel oil, un-broached lubricating oil including unused lubricating oil in storage tanks and greases furnished and paid for by the Builder for the trial runs remaining on board the vessel, at the time of acceptance of the vessel by the Buyer, shall be bought by the Buyer from the Builder at the Builder's purchase price.

1.11.8.2 Reports of Test and Trials

After the trials a report to be worked out for all tests carried out. The report shall be submitted to Buyer two weeks after delivery.

The Buyer's final list of complaints, recommendations and requests for alterations to be handed over to Builder within 24 hours from the end of trial trip.



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

1.12 Ship's model & Progress reports

The builder shall supply one (1) No.s scale models (scale 1:50) of the vessel per vessel in glass case for exhibiting purposes, suitably packed, at the time of delivery of the vessel.

During construction of the Vessel, Progress reports in the form of colored photographs and category-wise bar charts at fortnightly intervals shall be furnished to the Owner, with proper indication of amount of work completed and amount of work shall be done etc.

1.13 Delivery

1.13.1 Scope of Supply

The vessel shall be delivered by the Shipyard to the Owner, complete in all respect and to include all items mentioned in the final specification. The vessel as delivered shall be ready to go into the intended service.

There shall be no items of the Owner's supply except navigation charts, signal codes, sailing books and consumables.

The shipyard shall provide fuel oil(Methanol & MDO) ,lub oil and grease for initial filling of the system.

The buyer will pay cost of fuel oil (Methanol & MDO), lub oil and grease remaining on board after sea trial and before delivery of vessel.

Any item(s) which is/are not mentioned in the specification but which is/are required by any applicable rules and regulations at the time of signing of the contract and any item(s) which is/are not mentioned in the specification but which is/are required for smooth operation of the vessel, in general spirit, shall be furnished by the Builder.

Before delivery of the vessel the complete hull, accommodation, machinery spaces and all dry compartments shall be thoroughly cleaned and one flash coat to be applied where necessary.

All F.W. tanks shall be pressed up with water.

All machinery, equipment and outfits shall be in efficient working condition.
The vessel shall be thoroughly cleaned and ready to sail out for the intended service.

1.13.2 Delivery

The vessel shall be delivered at Shipyard premises. Notice for delivery shall be given to the buyer 4 weeks in advance.



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

1.13.3 Guarantee

The vessel and all its equipment and outfit shall be covered for a period of 12 months from the date of delivery of the vessel for quality of material, workmanship and performance.

The painting of water ballast tanks, fresh water tanks, underwater hull & Methanol tanks shall be guaranteed for Five (5) years.

Should defects arise that fall under the guarantee clause requiring immediate repairs, whether or not such defects require dry docking, the builder shall pay for any cost incurred by the ship-owner without limitations.



CHAPTER 2 HULL STRUCTURE

2.1 General

The vessel shall be of all welded round bilge construction with bulbous bow and transom stern. All structures shall be designed and constructed for adequate strength and minimum vibrations, in accordance with the classification society's requirements of Supply Vessel. Its each space shall be accessible for inspection, maintenance and repair.

Good continuity of structural members in basic hull structure shall be maintained. Where members are discontinuous, the continuity shall be provided by means of suitable tapers, overlaps, and/or brackets. All scantling shall be to the requirements of the classification society. The vessel's bottom shall be suitably reinforced for docking.

Care shall be taken to obtain a smooth hull and proper alignment of important structural members. No steel plating shall be less than 6 mm.

Undulations on the hull and side frames are to be within limits allowed by classification society.

The vessel shall be divided into forepeak space, thruster's compartment, accommodation spaces, DG room, and aft peak space. The vessel shall be designed for Longitudinal/ transverse framing system. All bulkheads will be of plane type construction with vertical stiffener.

Bulwark of 1100 mm height shall be provided all around on the main deck and forecastle deck. The bulwark shall have adequate tumble home and will be supported at every alternate frame.

2.1.1 Material

Hull structure shall be made of steel approved by Class. All steel plates, sections, castings and forgings for the hull/equipment construction are shall be certified by Classification Society.

All materials not specified by classification society shall be in accordance with international standards and test certificates shall be provided if required by buyer for buyer's concurrence.

All structural steel shall be free from rust, pitting, cracks, laminations and similar defects. In case of any such defects being noticed, the same shall be renewed to the extent necessary to the approved quality standards.

Methanol tanks shall be made of steel with class approved coating.



2.1.2 Preparation of Materials and Construction

Rolled steel materials for all plating and profiles shall be supplied with certificates and approved by the classification society.

Steel plates deformed during transport shall be faired before use.

In general, doublers shall be avoided, and where necessary, locally inserted thicker plates with well-rounded corners shall be adopted.

Before the steel plates and rolled sections are used for construction, rust and mill scale shall be removed by means blasting. The surface finish shall be to the standard SA 2.5. Immediately after the blasting, one coat of approved epoxy shop primer shall be applied as a temporary protection.

The vessel shall be of all welded steel construction. All welding shall be as per the requirements of classification society. During the welding operations all necessary precautions shall be taken, so that welds of high standards are obtained. All surfaces shall be well cleaned and free from rust, grease etc. prior to commencement of welding. Plate edge shall be flame cut mechanically as much as possible. Overhead welding should be minimized. The design shall be such that the continuity of all structural members is maintained.

All openings and holes in the structure shall be made meeting the requirements of classification society and shall be suitably compensated for strength, wherever required. The structure will be adequately strengthened by providing inserts/ carlings in way of concentrated loads, discontinuities or any other points where stress concentration may occur. Deck plates IWO deck windlass, mooring winches, Deck crane, Capstan, Tugger winches and boat davits to be 2mm thicker than the surrounding area.

Fitting of plates and stiffeners prior to welding shall be shown to classification society as required. large gaps in fitting materials in welding shall be avoided.

Welding shall be of high quality and shall be performed by skilled and classification society certified personnel, traceability of welders shall be maintained throughout the construction. Necessary precautions shall be taken to eliminate deformations. Approved manual, semi-automatic or automatic welding techniques shall be adopted for the construction using coated electrodes of approved make.

Welding procedure including edge preparation and welding scheme and welding repair procedure shall be approved by the classification society.

Welding in below main deck shall be double continuous, Welding in dry accommodation spaces shall be intermittent type as permitted by class elsewhere double continuous welding shall be applied throughout. Extent of DC welding will be decided during the plan approval stage



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

Weld slag and weld spatter and gas cutting shall be treated as per shipyard standards

The sharp edges caused by gas cutting for water ballast tank, Fresh water tanks and weather exposed decks to be treated by 3C grinding. However the sharp edges of dry spaces such as Engine room, accommodation, void spaces, etc. All edges to be cut and ground smooth.

Burnt out shop primer shall be removed by chipping and wire brushing and the surface repainted immediately after all hot work/welding operations.

The welding shall be performed only with electrodes of approved make. A regular check on the quality of steel weld shall be carried out to the satisfaction of the classification society. Alignment and welding sequence to reduce uneven surface of hull, deckhouse, decks etc. shall be followed. If considered as necessary by classification society additional measures shall be taken to improve the quality of the weld.

Deck plating, bulkheads, deckhouses and other constructions which are deformed due to welding shall be faired to the satisfaction of the Buyer and Class.

Proper consideration should be given in relation to setting of ship's form so that the VESSEL's keel line is held straight on the building berth.

Temporary access openings during construction in way of shell, bulkheads, decks, etc., shall be kept to minimum. Doublers will be provided below all-weather deck drain pipes. Striking plates will be provided under all sounding pipes.

Eye plates or similar pieces fitted to the internal hull structure for assembly shall be removed by cutting and the area in way shall be ground smooth.

On the berth, the hull and sections shall be earthed adequately. Clamps, dogs and other means to bring material and equipment in the right position shall be removed in such a way that no mechanical damages take place and no visual marks are left.

2.1.3 Workmanship

Electric welding and stress relieving

Welding shall be executed in accordance with the Builder's practice approved by the Classification Society. Welding shall be performed for the entire hull structure by manual, Semi-automatic or any other welding including one-side welding.

Non-destructive examination shall be carried out to the satisfaction of the Classification Society. All welding shall be continuous except in dry space of the accommodation where intermittent welding is adopted.



Access opening and temporary pieces

Provisional access may be opened where required for access, communication and/or ventilation, etc. for Builder's workers during the construction and shall be closed by insert plate after completion of the work concerned.

2.1.4 Construction testing

The Hull / tank testing plan shall be prepared and submitted for approval of Class and Buyer.

The leak test shall be carried out by air using detective reagent soapy water on the building berth except shop fillet joints and erection butt joints where on-block air compression test / water hose test / vacuum test may be done, as per builder's practice.

The structural strength test will be carried out for the tanks selected by the Classification Society, by filling with water during the construction or afloat at the Builder's convenience to ensure integrity of tank boundary. Non-destructive test will be carried out in accordance with the Builder's practice under the approval of the Classification Society.

Extent and location of the non-destructive test will be in accordance with the requirements of the Classification Society. Additional 10% NDT tests over and above Class requirement shall be decided by Owner / Owner's Consultant. Welds found faulty by such inspection shall be gouged out and re-welded.

Non-destructive test plan shall be submitted to the Class and Buyer for approval.

All weather tight/water tight doors shall be chalk tested and hose tested as per the class requirements.

2.1.5 Bilge Keel

Bilge keel at both sides of the vessel for approx. 30% of length shall be arranged port and starboard on the bilge plate. The bilge keel is to be of suitable bulb bar tapered at ends and is to terminate on a frame. Notch welding is to be used for the bilge keel and the doubler plate is to be welded continuously to the shell plates.

2.1.6 Bottom Plugs

Each tank shall be fitted with one drain plug in the bottom clear of the keel plate. Drain plugs shall be of stainless steel. Water tanks and oil tanks shall have different plug heads. Suitable keys / spanners shall be supplied. Tank numbers and identification names shall be given.



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

Bottom plugs may be fitted as close as possible to the lowest point of each tank and to be kept clear of points where the keel block is laid beneath in dry dock. Fuel oil tanks shall not be fitted with drain plugs.

2.1.7 Bulwark

The bulwarks of steel plate will be suitably stiffened and fitted with stays at moderate space.

The bulwark plating will be increased in thickness or in plate doubling in way of openings for the fairleads, mooring pipes, etc., if necessary.

2.1.8 Sea Chests

Three (3) sea chests shall be arranged in DG room- one (1) in low position, one (1) in high position and one (1) independent sea chest for distilling plant. One (1) sea chest shall be arranged in suitable location for emergency fire pump intake. The boundary plates thickness in way of sea chests and bilge wells will be 2 mm higher than rule requirements. Two (2) Sea chests shall be provided for Fifi pumps.

Holes for drainage and air passage shall be provided on plating in way of sea chest. Each sea chest shall be provided with hinged type galvanized steel grid. The area of suction sea chest shall be at least 2.0 times of the area of sea suction pipes

2.2 Bottom Construction

Double bottom is to be arranged to the maximum extent practicable. The bottom shell and the inner bottom are framed longitudinally / transversely. The transverse frame spacing shall be as per approved mid ship section.

Plate thickness in way of sea chest and bilge wells shall be at least 2 mm more than required by rules. The bottom plating thickness shall not be less than 8 mm.

Insert plates of higher thickness are to be provided in way of propeller nozzles, etc.

Drainage holes on the bottom of the floors and side girders shall be properly distributed and shall be large enough to ensure proper bilging. Special attention shall be given to stiffeners under engines to minimise vibration.

Sewage tank shall have minimum 10 mm steel plates.

Continuous welding shall be adopted for the stiffeners in way of all tanks.

Sensors of speed log and echo sounder shall not protrude under the keel plate. These sensors shall be able to be removed at sea for maintenance by providing gate valves.



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

Locations shall be as recommended by the equipment maker and shall be indicated on docking plan.

2.3 Side Shell Plating and Framing

The side shell shall be transversely or longitudinally framed. The transverse frame spacing shall be as per class rules. The side shell plating thickness in way of fender shall not be less than 12 mm and elsewhere not less than 8 mm.

Welding of stiffeners in way of fender shall be continuous. Shell plating in way of outlets of hawse pipes, tunnel thrusters and in way of anchor pockets on the vessel's side shall be of increased thickness.

Shell plating in way of outlets of hawse pipes and where anchors rest and come in contact on the ship's side, and chain rubbing areas shall be increased by 4 mm above class requirements.

2.4 Deck Structure

The vessel shall have a main deck, tween deck to the maximum extent, upper and lower forecastle decks and two tiers of deckhouse as shown in General Arrangement Plan.

The main deck is longitudinally framed with deep transverses supported by pillars/long bulkheads. The deck shall be transversely framed at forward side. The main deck aft is to be clear of fittings to the maximum extent possible for the carriage of deck cargo.

The scantlings of the aft main deck (Fr. 0 to Fr. 82) shall be designed for a uniform deck load of approx. 5.5 t/m². Approximately 10 m² area shall be designed for a deck load of 10t/sqm in the aft deck area. The area will be finalised during the plan approval stage. The main deck plating thickness shall be not less than 10 mm in way of the aft working deck between transom (Fr. 0) and Fr. 82; and 8 mm elsewhere.

The decks shall have additional strengthening in way of the crane, capstans, anchor windlass, tugger winches, mooring bollards, etc. as required by Classification Rules.

The cargo deck, inside the line of cargo rails, to be covered with 70 mm thick hardwood laid fore & aft. The timber to be retained by T section steel bars spaced approximately 2400mm apart.

The construction, materials, arrangement and fittings in the accommodation spaces shall comply with the statutory rules applicable to this class of vessel.

2.5 Bulkheads



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

The vessel shall have transverse watertight bulkheads as shown in the General Arrangement Plan. All bulkheads shall be vertically stiffened and horizontal stringers added if required. Where pipes, cables etc. are carried through the watertight bulkhead they shall be provided with necessary watertight arrangement like approved bulkhead fittings, MCT etc.

The Vessel shall have longitudinal bulkheads throughout the length of the VESSEL from collision bulkhead to aft arranged one each on port and starboard side, as shown in the General Arrangement Plan. The longitudinal bulkheads shall be stiffened vertically with horizontal stringers as necessary.

Boundary bulkheads of galley, AHU room, reefer provision rooms, laundry, drying room, day provision store and stairway shall be of steel.

2.6 Skeg

One double plated skeg at centre line aft shall be fitted and shall be strengthened for docking loads as appropriate. Suitable drain plugs shall be provided.

2.7 Keel

The keel plate is to be of flat type constructed of approved shipbuilding quality mild steel plates, the full thickness of the plates being edge prepared and welded, well faired and merged smoothly into the stem. The keel plating thickness shall be 2 mm more than the bottom plate.

2.8 Fore End Construction

The fore end structure shall be stiffened with deep transverses, stringers, breast hooks, etc., to withstand impact loading due to oncoming waves. The soft nose above load water line shall have 12 mm thick plate as minimum. Additional stiffening shall be provided in way of forward fenders. The collision bulkhead shall be vertically stiffened and shall extend to the forecastle deck.

2.8.1 Forepeak Compartment

Fore peak compartment shall be efficiently stiffened and shall be classified as a drill water/ballast space.

2.8.2 Chain Locker

2 nos. chain lockers shall be provided on the main deck as shown in the General Arrangement Plan.

Self-stowing cylindrical chain lockers of sufficient capacity which is forty (40) percent more than chain volume when stored shall be arranged to stow the cables well clear of deck over with a suitable accessible manhole. Chafing ring of steel bar shall be provided in the lower edge of the chain pipe.



Sufficient clearance above the top of stowed chain shall be maintained with arrangements to fix the end links. The structure in way of bitter ends shall be adequately stiffened and provided with all necessary fittings and quick release system. Mud box arrangement of minimum 800 mm depth shall be provided for clearing the mud at the chain locker bottom. Manhole shall be provided for access into mud box area under chain lockers.

Galvanized perforated plating of removable type having a minimum thickness of 20mm shall be laid above the bottom, adequately supported to take the weight of chain.

2.8.3 Bow thruster Compartment

Bow thrusters motor room shall be arranged at the forward of the Vessel. Access for maintenance shall be provided for the bow thrusters' room. The connection with shell plating shall be well rounded. Sides of opening shall be well faired in to the shell plating.

Protective grids of Bow thrusters shall be carbon steel. Clear height in the bow thruster's room shall be min 1900 mm.

Stainless steel ring of width approx. 50mm shall be welded in the tunnels in way of the propeller blades for protection.

2.9 Tanks Construction

All storage tanks shall be built-in to the main structure and stiffened considering the maximum pressure head of the tank in accordance with the rule requirements. Each tank shall have at least one manhole of adequate size for maintenance. Large double bottom and wing tanks shall have two manholes for each tank. Floors in way of tanks shall have adequate lightening/drain holes for easy flow of the liquid for discharge.

All welding of structures inside tanks shall be double continuous.

Arrangements for filling, air, sounding pipes etc., shall be provided for storage tanks from main deck and for all tanks as per classification society requirements.

2.10 Engine Room Structure:

The engine room shall be fitted with solid floors at every frame in way of the main alternator engines. Engine foundations shall be well integrated with the bottom construction with girders arranged under extending fore and aft as far as practicable.

Foundations of auxiliary machinery, pumps, compressors, etc., shall be installed on a foundation and arranged with local strengthening. Suitable reinforcement shall be



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

provided under heavy concentrated loads with brackets or carlings for effective distribution of the loads. Suitable chock fast resin, holding down bolts and /or fitted bolts are to be provided and carefully fitted as required for all items of machinery as per Equipment Supplier recommendation. Drainage to provide to eliminate accumulation of water / oil below generator sets.

Necessary mild steel checkered plate flooring, platforms, railings and ladders shall be arranged in the machinery compartments for the safety of the crew.

Special attention shall be paid to minimize the structural vibration in the machinery spaces.

Soft Patch Hatch of adequate size shall be provided to facilitate easy removal and lowering of major spares of diesel engine. Provision of suitable lifting arrangement either by crane/ other means shall be finalized during detailed design.

2.11 Deckhouse and Bridge Deck

The deckhouse shall be constructed of mild steel and strengthened to meet classification society requirements. Transverse frames shall be provided for the deckhouse deck plating with vertical frames for the bulkheads. Girders and pillars shall be fitted for supporting the deck beams.

Deck house exposed bulkheads and super structure decks shall not be less than 8mm. All accommodation decks shall not have any shear and camber.

Bridge Deck shall be arranged on top of the deckhouse as shown in the General Arrangement Plan. The Bridge Deck shall command good visibility all-around with particular emphasis to the aft working area. Bridge forward and aft windows shall be suitably inclined as per class requirements to prevent reflection of bridge control consoles and panels. Access to the Bridge Deck shall be both external and internal. Arrangement around the Bridge Deck for passage and access to window wipers etc. shall be provided.

Effective drainage from all decks and top of the Bridge Deck shall be arranged. Doubler shall be fitted on decks in way of open drain discharges. Care shall be taken to avoid water puddles on exposed decks.

2.12 Hull Preservation and Painting

2.12.1 General

Painting system shall be generally as per the scheme mentioned in Para 2.12.4. However, the builder shall prepare the painting scheme in consultation with the manufacturer of the paint and submit to buyer for approval.



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

Colour scheme and paint list shall be finalised with the buyer.

No painting shall be applied to polished fittings, woodwork, hardware, window glasses, gaskets and other fittings where the paint would obstruct their function.

Spaces in the structure, to which access is difficult, shall be filled with Paint and drained out.

Fuel oil tanks, lube oil tanks and other tanks for oils shall be cleaned free of rust, dust etc. and immediately surface to be applied with oil and the tank shall be immediately boxed up.

Where galvanising is required, it shall be hot dip galvanising and to be carried out after completion of hot work.

All burning and welding shall precede galvanising. All smaller parts/fittings which are generally exposed to the influence of climate such as sheaves, gratings etc. shall be galvanised.

In the event of hot work becomes necessary subsequent to the finish painting, the affected areas and the surrounding area on both sides shall be mechanically wire brushed/ power tooled and the entire scheme of painting shall be adopted.

2.12.2 Surface Preparation

Prior to the commencement of fabrication, all steel plates and sections shall be shot blasted to SA2.5 minimum and applied one coat of 25 microns DFT epoxy shop primer.

All paints in fresh water tanks shall be certified for drinking purpose.

Paint thickness shall be measured and recorded which shall be submitted to the Owner. Intermediate coats shall be of different colour for easy identification.

Methanol tanks shall be coated with a suitable paint as per paint manufacture's recommendation without any limitation on paint performance.

2.12.3 Execution of Painting

Painting shall be carried out under the supervision of Paint Manufacturer's Representative.

Time intervals between application of coats shall be maintained in accordance with the paint manufacturer's instructions. Subsequent coats shall have different colours for identification. No painting shall be carried out in adverse weather conditions.



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

After block fabrication, prior to the application of main paint system all weld spatters, rust, grease and other contaminants shall be removed by mechanical means. Rough edges, metal burr of sheated edges by gas cutting to be ground smooth. Sharp edges of hull structure in ballast and fresh water tanks to be treated 3C grinding. Extraordinary irregular weld beads to be ground smooth.

Before application of paint, shop primer shall be removed by shot/grit blasting to SA 2.5 standard.

In block fabrication stage, water tight boundary fillet/ butt welds, erection joint edges are suitably protected with a protective tape before application of paints. No painting shall be applied to the weld joints which are to be leak tested before testing is carried out.

The steel surface of fittings such as pipes of 250mm dia above i.e masts, pipe supports, grating supports, aux machinery seats are to be grit blasted. Pipes with 250mm dia below, small pieces of pipes or seats to be generally power cleaned with disc sander to ST3 or pickled.

After completion of welding of erection joints, the joint areas of Main hull are to be again treated to SA 2.5 prior to the final welding.

Non-slip paint shall be applied on the main deck exposed areas and passages. Application of painting shall be done as far as possible with the help of airless spray. Where spraying is not practicable, brush or roller may be employed. In the edges of small holes such as slots, scallops, drain holes, air holes etc and the free edges of structural members where spray application is impractical one stripe coat after each coat of paint is to be applied with a roller or brush.

The painting of exposed structural steel surface such as outside of shell, deck house, funnel etc. to be free from sags and running of paint.

The DFT specified in the painting schedule is to be attained on at least 90% of the measuring points and at least 90% thickness of specified DFT to be attained on remaining 10% measuring points. DFT to be measured after completion of each coat and after completion of final coating.

Small outfitting and fittings may be galvanised instead of painting as per Shipyard's practice.

Galvanised pipes and hand rails for water ballast tank and other weather exposed decks to be treated and painted as per Shipyard's practice.

Every coat except finish coat shall be of a different color for easy identification as per available colours with the Paint manufacturer.

Painting scheme in general shall be as given below. Final Paint Specification and scheme shall be finalised in consultation with Paint manufacturer and the same shall be submitted by builder for buyer approval.



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

PAINTING SCHEME:

Underwater Hull up to load line	2 coats of tar free epoxy paint of up to load line total 250 mic.
	1 coat of vinyl tar 75 mic.
	2 coats of tin-free antifouling paint of DFT recommended by paint maker.
Topsides	Recoatable Epoxy – Two coats system DFT total 250 mic.
Water Ballast tanks, cofferdams	Modified Epoxy – Three coats total 320 mic
Fresh water tanks	Pure epoxy/Solvent free epoxy- total 300 mic
Sewage tanks	Pure epoxy-Three coats total 300 mic
All weather decks, coaming bulwark & crane column	Recoatable epoxy HB-two coats, total 250 mic.
Exposed deck houses	Epoxy/Polyurethane system (as recommended by paint maker)
Inside E.R/Accom./Steering gear	Alkyd paints total 150 mic
FO & LO tanks	Rust inhibitive oil
Side Thruster tunnel	Same as underwater hull
Methanol tanks	According to paint scheme

EQUIPMENT SUBJECT TO GALVANIZING

The following items to be hot dip galvanised or shot blasted and painted as necessary.

- External stairs.
- Pipes and flat bars in external railing.
- Internal ladders in fresh water, ballast and coated cargo tanks
- External cable pipes and trays
- Chain locker perforated plate
- External gratings and walkways, unless PVC
- Flag staff and fitting
- Steel fitting on gang way
- Chain pipe cover
- Hawse pipe cover
- Steel fittings in refrigerated and provision store
- Small steel loose fitting on fore and radar mast

Galvanized equipment shall be painted with suitable primer coat (if needed), after which painting shall be same as surroundings except followings;

- Galvanised steel sheet in accommodation
- Galvanised parts of air handling units
- Galvanised steel sheathing for Calorifier & Exhaust pipes insulation
- Galvanised steel sheet for exhaust pipe covering



2.12.5 Cathodic Protection

ICCP:

An impressed current cathodic protection system shall be provided for protection of the complete underwater hull to the following design condition:

Details of Mean current density

Coated steel:	10 mA/m ²
Bare steel :	10 mA/m ²
Pod body :	250 mA/m ²
Propeller :	1000mA/m ²

SACRIFICIAL ANODES:

Sacrificial Zinc anodes with a life of 5 years of shall be fitted all over the underwater hull, around propeller area, rudders, sea chests, bow thruster tunnel and bilge keel. Mean current density as follows:

Around propellers : 400 mA/sq.m.

Other areas : 40 mA/sq.m.

MGPS shall be provided for the sea chests and crossover pipes. Electrodes shall be designed for a minimum life of five (5) years.

2.13 Miscellaneous

2.13.1 Hull Markings

General

All markings in English shall be done as mentioned below:

Superstructure Markings

A Vessels name board of suitable material shall be installed at both sides at the top of the wheelhouse. Suitable lighting of the name boards shall be provided. Owner's Logo shall be provided on port & stbd sides on the funnel.

Other markings on the superstructures shall be provided as necessary.

Hull Markings

The necessary hull markings, i.e. Vessel's name and port of registry, freeboard and draft marks, bulkhead, thruster marks, tank border marks & tank identification for in-water survey, bottom plug marks, etc.



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

Underwater hull markings are to be weld bead and painted.

Vessel's name and port of registry made of 6 mm cut steel plate and welded on shall be provided at Fwd, Aft P&S as per Owner's requirements. (In English & Hindi)

Draft marks in decimeters shall be cut from 6 mm steel plates and welded at fore, aft and midship region. Manholes shall be marked with weld beads.

Safety Markings

All necessary safety markings such as caution plates, no smoking sign, safety instruction notices, fire equipment designations, etc. shall be provided in machinery spaces, deckhouses and on weather decks according to operational procedures and as required by the applicable rules and regulations.

Notice boards and caution plates exposed to weather shall be of Brass and others shall be of suitable material.

The rescue boat, life rafts and other lifesaving equipment shall bear the ship's name and port of registry.

ISPS Markings.

Ships identification number (IMO number) cut from 6mm plate shall be welded in a visible place on the stern or on either side of hull or super structure and on transverse bulkhead in Engine room as per requirements.

2.13.2 Hull Openings, Watertight Doors & Hatches

All hull openings wherever provided shall be adequately compensated by means of increased thickness, corner plates etc. to the satisfaction of classification society.

Sills above main deck for all doors shall satisfy statutory / classification society requirements.

All hinge pins, toggle bolts, butterfly nuts shall conform to National / International standards and be metric threads. Manhole covers on exposed decks shall have stainless steel stud bolts and nuts.

2.13.3 Foundations

All auxiliary machinery, pumps and equipment shall be erected on foundations. Suitable reinforcement shall be provided under the machinery as required. Thicker plating shall be provided where required instead of doublers under all machinery on the deck.



CHAPTER 3 DECK EQUIPMENT AND OUTFIT

All deck equipment and outfit as per high shipbuilding standards for smooth operation of the vessel are to be fitted / supplied as generally indicated below.

3.1 Steering Equipment

Two (2) azimuthing propeller nozzles shall be fitted at the stern for propulsion and steering of the vessel and controlled from wheelhouse forward and aft consoles.

Control, monitoring and alarm for the steering system shall be in accordance with Class rules.

For details refer to Machinery Section.

3.2 Mooring Equipment

The mooring fittings shall be arranged as shown in the General Arrangement Plan. Mooring fittings shall be arranged to satisfy the requirements of the relevant authorities / buyer.

The materials and dimensions of fittings shall be in accordance with National / International standards and in compliance with classification society Rules.

3.2.1 Mooring Lines

The mooring ropes & fittings shall meet all rules and regulations. Adequately stiffened mooring ports shall be fitted in the bulwarks, forward and aft. Bollards, fairleads, mooring fittings shall be provided as required to owner's approval.

4 x 220 m of polypropylene ropes as loose mooring equipment.

3.2.2 Bollards

Adequate number of double bollards shall be fitted on the port and starboard sides as indicated in the General Arrangement Plan. Under deck structure in way of all mooring fittings shall be strengthened.

3.2.3 Fairleads and Mooring Eyes

Suitable number cast steel panama chocks of appropriate size shall be provided as appropriate for the service of the VESSEL and located suitably for efficient mooring.

3.2.4 Capstans



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

Two (2) hydraulic driven Capstans of approx. 5.0T pull with speed variable from 0-24 m/min shall be fitted on the aft working deck, 1 port and 1 starboard. The operating control stand shall be located adjacent to the capstan.

Hydraulic pump unit

The capstans shall be driven by pump unit consisting of:

1 no. hydraulic pump.

1 no. safety valve.

1 no. flexible coupling.

1 no. electric squirrel cage motor for 440 Volts and 50 Hz. The motor have protection type IP 55 and with anti condensation heater for 220V, 50 Hz.

3.3 Anchor, Anchor Chain and Windlass

3.3.1 Anchors

Two numbers anchors of Stockless high holding power anchor, shall be provided as per Classification requirements. The anchor shanks shall be fully housed in the hawse pipes.

3.3.2 Chain cable and shackle

The stud link chain cable (CC3 type) sizes for the anchors shall be approved by classification society.

Anchor chain shall be fitted with kenter shackles for each 27.5 m length, and properly marked and swivels fitted at each anchor. The end of the anchor chain inside the chain locker shall be fitted with quick release mechanism. Chain pipe shall be fitted on top of the chain lockers with portable galvanised covers. Half chain length(13.5m) next to anchor shall be hot dip galvanized.

Accessories and spare parts for Anchor chain shall be supplied as follows and to be stowed in Bosun Store (fwd):

- 2 no.s spare kenter shackle
- 1 nos spare anchor shackle
- 5 nos spare taper pin for kenter shackle
- 2 nos spare taper pin for anchor shackle
- 2 nos shackle punch
- 2 nos pin punch
- 6 nos chain hook
- 2 nos anchor hammer
- 1 nos disengaging tool for kenter shackle
- 1nos swivel piece

3.3.3 Windlass cum Mooring Winch



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

One (1) no. hydraulic or electric motor driven, windlass cum mooring winch with two mooring drums, twin warping heads and twin gypsy to the approval of Class shall be fitted on f'cle deck on a proper foundation.

Two chain stoppers shall be provided for the windlass. Pull and hauling speed shall be as per classification society requirements. 4 (four) no's heavy eyes for duty anchor lashings are shall be provided.

The windlass shall be provided with a deck controller for local operation.

3.4 Lashing Lugs/ Stanchions

20 numbers of 10T SWL lugs are to be arranged on main deck for lashing and securing deck cargoes.

Approx.20 stanchion pipes of removable type for loading/securing pipes on main deck shall be provided.

3.5 Deck Crane

The vessel shall be fitted with one electro hydraulic operated crane of 15 t SWL at maximum outreach of 15m from side shell on the working deck as shown in the GA.

Capacity:

For shore operation - 15 t SWL at maximum extension of 15m from side shell.

For offshore operation De rated capacity shall be as under

Sea State	1	: 15% less (Approx.)
Sea State	2	: 30% less (Approx.)
Sea State	3	: 45% less (Approx.)
Sea State	4	: 60% less (Approx.)

Type: Hydraulic operated

One portable type hand operated davit for bunker hose handling shall be provided with sockets on port and starboard.

3.6 Tugger Winch

Two (2) units Tugger winch, each consisting of one fixed drum with band brake of 250 meters of 18 mm dia, wire rope, High pressure Hydraulic with brake bands each having capacity of 10 tonnes variable from 0-18 m/min shall be arranged in front of main deck.

Hydraulic pump unit

The capstans shall be driven by pump unit consisting of:

1 no. hydraulic pump.

1 no. safety valve.



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

One (1) no. hydraulic or electric motor driven, windlass cum mooring winch with two mooring drums, twin warping heads and twin gypsy to the approval of Class shall be fitted on f'cle deck on a proper foundation.

Two chain stoppers shall be provided for the windlass. Pull and hauling speed shall be as per classification society requirements. 4 (four) no's heavy eyes for duty anchor lashings are shall be provided.

The windlass shall be provided with a deck controller for local operation.

3.4 Lashing Lugs/ Stanchions

20 numbers of 10T SWL lugs are to be arranged on main deck for lashing and securing deck cargoes.

Approx.20 stanchion pipes of removable type for loading/securing pipes on main deck shall be provided.

3.5 Deck Crane

The vessel shall be fitted with one electro hydraulic operated crane of 15 t SWL at maximum outreach of 15m from side shell on the working deck as shown in the GA.

Capacity:

For shore operation - 15 t SWL at maximum extension of 15m from side shell.

For offshore operation De rated capacity shall be as under

Sea State	1	: 15% less (Approx.)
Sea State	2	: 30% less (Approx.)
Sea State	3	: 45% less (Approx.)
Sea State	4	: 60% less (Approx.)

Type: Hydraulic operated

One portable type hand operated davit for bunker hose handling shall be provided with sockets on port and starboard.

3.6 Tugger Winch

Two (2) units Tugger winch, each consisting of one fixed drum with band brake of 250 meters of 18 mm dia, wire rope, High pressure Hydraulic with brake bands each having capacity of 10 tonnes variable from 0-18 m/min shall be arranged in front of main deck.

Hydraulic pump unit

The capstans shall be driven by pump unit consisting of:

1 no. hydraulic pump.

1 no. safety valve.



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

1 no. flexible coupling.

1 no. electric squirrel cage motor for 440 Volts and 50 Hz. The motor have protection type IP 55 , and with anti condensation heater for 220V, 50 Hz.

3.7 Cargo Rails & Pipe Stanchions

On main deck a cargo rail of box construction shall be fitted on each side approx 6.5-7.5M from ship's center line. Cargo rails made of 8" N.B., Sch. 80 pipes shall be fitted longitudinally along the main deck for the stowage of pipes, etc. on port and starboard sides shall be fitted around cargo area of main deck. The height of cargo rails from deck to top of pipe shall be approx. 3000 mm. Cargo rail outboard shall be closed with steel plate with necessary stiffening arrangement and openings cut in way of fittings and access.

Clear passage width inside cargo rail shall be at least 700 mm.

On the outside of cargo rails a total of approx 40 no's steel eye plates with a min. breaking load of 10 tonnes are to be welded to the cargo deck and cargo rail. 16 no's guiding rollers (8 on each side) type 200NS 2585 shall be arranged.

On cargo deck a total of 8 no's "D"-rings with a min. breaking load of 30 tonnes to be fitted.

Location of steel eye plates, guiding rollers, brackets for stanchions and "D"-rings to be agreed upon by builder and Owner.

3.8 Life Saving Appliances

Life Saving Appliances shall be supplied and installed, by builder, in accordance with the latest SOLAS regulations and will include the following as minimum among others:

- (a) Life boats are to be provided suitable for ships carrying methanol fuel as per Class requirements.
- (b) Inflatable Life rafts with hydrostatic release, (total of 90 persons each side as per SOLAS)
- (c) Two (2) SOLAS approved Fast Rescue Boats with launching davit. Both FRC's and davits to meet OEUK ERRV-B Survey Guidelines

Personnel lifesaving appliances shall be minimum as follows:

- (a) Life buoys, with 30m buoyant line, 5 nos.
- (b) Life buoys, with SI light, 5 nos.
- (c) Life buoys, with SI light and smoke signals (MOB), 2 nos.
- (d) Life jackets, adult standard, 71 nos.



3.9 Fire Fighting Appliances

Fire fighting appliances applicable to this type of vessel as required by the latest SOLAS regulations shall be provided to the approval of classification society. In addition to any other requirement, the following shall be provided:

- (a) Engine room shall be provided with CO₂ fixed fire extinguishing system in accordance with SOLAS rules.
- (b) Local application water based fire fighting system for the fire hazardous locations in engine room as per SOLAS regulations.
- (c) Fire fighting system for methanol fuel oil system shall be as per 5.6 Ship's fuel Oil system
- (d) Fire detection and alarm system shall be provided in accommodation spaces, Bridge Deck, engine room, service spaces, stores, workshop and forward thruster compartment as per SOLAS regulation.
- (e) Fireman's outfit complete with breathing apparatus, 2sets.
- (f) CO₂ fire smothering for the galley hood.
- (g) Two fire blankets, 6' x 4', non-asbestos type, one each for the galley and engine room shall be provided.
- (h) Approved fixed type hydro- carbon gas and H₂S gas detector and alarm system shall be installed. The sensors (5 nos. each) and alarms shall be located throughout the vessel near air-intakes. The system shall work on vessel's main and on emergency power with auto change-over arrangement.
- (i) Fire hydrants and hose boxes with hose and nozzle, 12 sets minimum
- (j) 45 litre foam extinguisher, 1 no.
- (k) Portable Foam applicator unit, 1no.
- (l) Portable extinguishers as required by SOLAS and Classification.
- (m) Fire axes, 2 nos.
- (n) Fire buckets, 4 nos.



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

(o) Remote closing arrangements for the fuel valves, emergency shut down for the vent fans, fuel pumps, etc shall be provided as required by SOLAS rules.

(p) Fire alarm call points, Water mist alarm, H₂S/LEL alarm, general alarm, fire dampers for the air intakes and exhausts, international shore connection, etc shall also be provided as per the Rules.

(q) One approved type electric motor driven emergency fire pump of adequate capacity, with suitable suction and discharge arrangement shall be provided.

External Fire fighting System - Fire Monitors (Water/foam)

The External fire fighting system with capacity in compliance with Agni I notation shall be fitted. The system shall consist of following major components:

(a) 2x1600m³/h at about 16 bar pumps driven by genset diesel engine at the free end through flexible coupling clutch and gears.

(b) 2xseachests(one for each pump)

(c) 2x firefighting monitors, total capacity2400 m³/h at120M Pressure at monitor inlet shall be about 12 bar. The monitors shall be turnable and with operating range as per rule requirement.

(d) Deluge system of suitable capacity as per class notation.

(e) Two no.s separate sea chest valve with necessary valves and controls

(f) Remote controlled from bridge

(g) Necessary loose equipment according to class notation shall be supplied by the yard.

(h) A high pressure compressor with accessories suitable for filling the cylinders of the breathing apparatuses, shall be installed onboard in the safest possible location. The capacity of the compressor shall be at least 75litres/minute. The air intake for the compressor shall be equipped with a filter.

(i) External water spray system shall be arranged according to IRS AGNI 1 requirements.

(j) Approx.400m³/h water shall be supplied from each of the main pumps for water spray for self-protection. The system shall have drainage and venting valves.

Clutches for fire-fighting pumps: Two (2) no's hydraulic clutches for FiFi pumps shall be provided, each connected to free-end PTO of two no's the generator sets via flexible coupling.

All the FFA should comply with applicable SOLAS regulations and should have approval certificates from classification society / Statutory Authority.



Monitor (Fi-Fi1) heeling moment to be examined in the most unfavorable loading condition.

The monitor heeling moment should not exceed 0.5 times max. GZ in most unfavorable loading condition.

3.10 Miscellaneous Deck fittings

3.10.1 Deck Connections

Electric sockets for 12Nos reefer containers shall be arranged at suitable location on main deck.

Stowage arrangement for 12 no. reefer containers on main deck shall be provided.

3.10.2 Hatches

Watertight hatches shall be provided where necessary and shall comply with the rule requirements. All coaming shall be as per Load Line regulations. The hatch-covers (spring assisted/counter-weight) shall be capable of being opened and closed from inside and outside. Locking pin shall be provided for keeping the hatches in open position

Hatches shall be as follows:

- a. Provision hatch (1200 x900) approx
- b. Engine room spare handling hatch of flush type with adequate size on main deck shall be provided to facilitate easy removal and lowering of major spares of diesel engine Area shall be provided with portable guard rails around the hatch opening
- c. Bosun store hatch (900 x900)
- d. Escape hatches on Main deck (900 x 900)
- e. Rope hatch (300 dia)

Large hatches shall be fitted with lifting eyes for easy handling.

All butterfly nuts, swing bolts and hinge pins are to be Stainless Steel material.

ISPS pad locks are to be provided for exposed hatches.

List of hatches shall be per approved deck outfit drawing.

3.10.3 Manholes

Manholes are to be provided for access to the forepeak, chain lockers and all tanks and void spaces where other means of access is provided for inspection. Large wing



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

and double bottom tanks shall have two manholes each. Manholes shall be elliptical in shape (600x400) and shall be flush with the deck / bulkhead and should have stainless steel stud bolts and nuts for the manholes on exposed deck. Manhole covers for vertical sides shall have hand grips.

3.10.4 Fenders and associated fittings

6 no.s each diagonal fitted D-type pipe fenders of minimum 300mm dia shall be fitted on both sides of the vessel.

Steel half round pipe fender to be arranged at sheer strake along the length of the vessel on both sides at main deck, f'cle and upper f'cle deck levels

D-type 300 NB rubber fenders shall be provided at the main deck level and at the upper f'cle deck level on P+S and at transom.

W-type rubber fenders shall be provided at the bow and stern.

Adequate number of tyre fenders with suitable chain arrangement shall be installed above the pipe fenders.

Fender plan shall be submitted to Buyer for concurrence.

3.10.5 Scuppers, Freeing Ports

Scuppers and drains shall be arranged for efficient drainage of water from the exposed decks and continuity to be ensured on each deck. Scupper pipe shall be provided with a striking plate and scupper drains will be provided with perforated plates.

Mechanical rubber plugs shall be provided for scupper drains on Main deck. These shall be clear of any accommodation portholes below.

Freeing ports are to be provided as per rule requirements. These shall be protected by vertical and horizontal bars, as necessary.

3.10.6 Bulwark

The bulwark shall be provided on the main deck, forecastle deck, Officer's deck and bridge deck as shown in the General Arrangement Plan. The bulwark shall have a clear height of 1100 mm above the deck. The bulwark shall be supported by stays and shall be strengthened in way of all openings. 100 NB (may be reduced to 80NB) SCH 80 pipe of heavy duty shall be fitted along the upper edge.

Bulwark plate thickness shall be minimum 8 mm. Thicker insert plates or stiffeners shall be fitted in way of mooring fittings.



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

On top of bulwark, a pipe dia approx 150mm of 10mm thickness shall be double continuously welded to bulwark plate and supports. Freeing ports in bulwark plate shall be provided in accordance with the International Load line Convention.

Access doors/gates shall be arranged in the bulwark on each side on the main deck. Stainless steel hinges, bolts/nuts and bronze bushes shall be provided. Stainless steel locking device shall be considered.

Bulwark on main deck shall be closed type to ensure person safety and ease of cargo operations.

3.10.7 Gangway Opening

One (1) 1000 mm wide opening shall be provided on port and starboard sides in the bulwark on main deck near superstructure aft end and fitted with steel door opening inwards.

3.10.8 Hawse pipes

Welded steel hawse pipe shall be fitted on the bow port and starboard side and located to give satisfactory housing of the anchor shank.

The hawse pipes shall be large enough for the anchor shank and suitably inclined so that the anchors fit well against the hull.

The hull structure in way of bower anchor hawse pipe shall be stiffened as necessary and suitable chaffing pieces shall be incorporated for the protection of the hull and deck plating. The hawse pipes shall be fitted as near as possible to the fore and aft line consistent with adequate housing of the anchors under all service conditions.

Hawse pipes are to be provided with Chain washing nozzle arrangement. Portable cover and guard rail to be provided over hawse pipe opening on deck.

Anchor hawsing arrangement mock up to be prepared and shown to Buyer prior installation of Anchoring arrangement.

3.10.9 Masts

The vessel shall have one fwd mast for fitting navigational lights, sound signals, radar scanner, antennae, etc. and for navigation lights in accordance with COLREG and classification society rules. The mast and foundation shall be strengthened adequately to withstand forces experienced during rough weather.

Suitable stays shall be provided to make mast sturdy. Safe access for maintenance of mast fittings shall be provided.



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

Cable trays provided on the mast for securing of cables shall be of non- corrosive material.

3.10.10 Ladders and Railings

All ladders shall comply with the international shipbuilding standards and class rule requirements. Ladders shall be placed under each manhole and escape hatch. All ladders shall be fitted in such a way that they can be removed whenever required.

Inclined ladders:

Inclined ladders are to be of galvanized steel and shall have minimum width of 700mm. The spacing of steps shall be as uniform as practicable. Non skid surfaces shall be provided at the foot of exposed ladders.

The railings shall be of height at least 1050mm as per National / International standards complying with Load line regulations and classification society rule requirements.

One set of portable aluminum ladder shall be provided and stored on main deck

Pilot ladder on both sides shall be provided. Suitable arrangement for securing and deployment of pilot ladder shall be provided.

3.10.11 Funnels

One funnel shall be arranged, on port side, as shown in the General Arrangement Plan. The funnel shall house the exhaust pipes and shall have louvers with watertight cover. Hot air escape from engine room shall be arranged through the funnel. The funnel bulkheads adjoining the accommodation shall be insulated to A-60 fire integrity.

Funnel to be provided with rungs to access top of the funnel. Fresh water arrangement shall be provided for cleaning the exposed funnel with suitable draining arrangement.

Exposed exhaust pipes shall be of SS material and shall be provided with flame arrestors.

Buyer's insignia shall be marked on minimum 6 mm thick plates and painted on both sides of the funnel.

Exhaust air from engine room shall be led to atmosphere through openings on funnel. These openings and fresh air intakes shall be provided with pneumatic type emergency shut-off fire dampers operable from outside engine room.



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

3.10.12 Gangway

One (1) aluminium gangway, approx. (06) six meter long and 850mm wide, shall be provided for the crew to access the offshore platform / jetty. Suitable arrangement for securing and deployment of gangway ladder shall be provided.

3.10.13 Rescue Zones

5.0 meters long rescue zones shall be established on both sides of the vessel and will meet with the following requirements of regulations:

- (a) Each rescue zone shall be illuminated both on deck and over side with no shadow areas.
- (b) Bulwarks openings shall be secured with portable aluminium boards or wooden planks. The bulwark opening shall be not less than 5.0 m in length.
- (c) Scrambling nets and SOLAS approved Jason's Cradle shall be provided on a roll up drum at ship side for quick deployment and when lowered the net shall be 250 mm away from the shipside. The net shall be 3m wide and of depth up to one meter below light waterline.
- (d) Suitable securing points for scrambling nets, safety lines and rescue craft.
- (e) Slanting zebra markings shall be done with yellow and black.

The requirements as per OEUK ERRV Group "B" Survey Guidelines shall be met with.

3.10.14 Storm Rails

Storm rails and grab rails are to be fitted all round deckhouse and wheelhouse and on exterior bulkheads. Grab rails to be of stainless steel inside accommodation spaces, wheel house spaces. Storm rails also to be fitted in convenient positions in toilets, engine room and bow thruster compartments.

3.10.15 Watertight sliding doors

Hydraulic remote/local operated sliding watertight doors of substantial construction to the approval of classification society shall be fitted to the access opening on the under-deck transverse bulkheads as required.

An independent electro hydraulic system with metal-to-metal type door sealing shall be provided for each door. The watertight sliding doors shall be electrically operated, locally and from the wheelhouse with indication panel on the bridge.

[Handwritten signatures]



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

Two hand pumps, one on each bulkhead side at each door operated by local controls ensures door emergency opening/closing. Provision shall be made for door closing warning acoustic signal. The construction and operation of these doors shall be as per relevant rules and regulations.

Watertight sliding doors shall be arranged in W.T. bulkheads at fr. 19, 26, 86 and 113



CHAPTER 4 ACCOMMODATION

4.1 General

Accommodation for 60 personnel (24 Ship Staff, 36 Special personnel) service spaces and bridge deck shall be arranged generally as shown in the General Arrangement Plan.

MLC 2006 requirements for crew accommodation shall be complied with.

The accommodation requirements for 'survivors' as per OEUK ERRV (Group B vessel) Survey guidelines 2024 shall be met with.

The relevant statutory rules regarding construction, material, space and fire resistant/non-combustible partitioning, etc. shall be complied with. Materials used in the accommodation are to be of marine quality throughout. All joinery work is to be in accordance with standard marine practice.

All accommodation spaces shall be designed to have a clear height of approximately 2100 mm. Width of the corridor in the accommodation shall be about 900 mm or greater as per rules and regulations.

Two berth cabins for ship's crew/special personnel and four berth cabins for special personnel shall be arranged as shown in GA Plan. Each sleeping cabin shall have an attached modular toilet.

Ship's complement shall be composed as follows:

Complement	Number
Captain Class	1
Chief engineer	1
Senior Officer Class	2
Junior Officer Class	6
Trainee Officers	2
Petty Officers	2
Crew: Deck/engine	10
Total complement	24 (12 Officers + 2 Petty Officers+ 10 Crew)

SPS personnel (36) accommodation arrangement shall be as follows:

Cabin type	Number
Single berth cabins	2 (2x 1P)
Two berth cabins	3 (3x 2P)
Four berth cabins	7 (7x4P)



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

Accommodation arrangement shall be complied with ISPS code with necessary fittings and markings.

The galleys and mess rooms shall be arranged in close vicinity.

4.2 Bulkhead, Linings & Ceilings

All internal bulkheads, linings, ceilings and items of built-in furniture are to be installed in a manner suitable for marine application, which will eliminate any vibration induced during operating conditions.

Hinged, labelled panels complete with approved latch fastenings shall be provided where required in way of linings and/or ceilings for access to concealed valves, pipes, cabling and miscellaneous fittings.

All joiner bulkheads shall be secured at the top and bottom.

25mm thick, standard wall panel with mineral wool core, with density as per approved drawings & manufacturer standards shall be provided for the lining & ceiling on interior of exposed steel bulkhead/deck head, stairway/corridors.

50mm thick, standard wall panel with mineral wool core, with density as per approved drawings & manufacturer standards shall be provided for the lining on divisional bulkhead (partition bulkhead).

0.55mm thick stainless steel plates shall be provided for galley spaces where insulation is provided.

The full accommodation space including corridors shall be panelled / lined and provided with ceiling except for the common sanitary spaces, dry provision store, galley and small stores / lockers. The galley shall be provided, with stainless steel lining and ceiling.

4.3 Heat, Fire and Sound Insulation

The decks and bulkheads which are exposed to outside weather or to the machinery/working spaces shall be insulated against fire, heat and noise. The insulation shall be attached to the steel surface by means of anchoring pins, washer and G.I. wire net. There after the surface shall be lined / panelled with 'B' class panels within accommodation spaces and with galvanised sheets or glass cloth in other spaces.

Insulation for fire protection shall be in accordance with the requirements of Classification Society and Regulatory Body.



4.4 Flooring & Deck Coverings

4.4.1 Deck Composition

The floors on corridors shall be laid with vinyl sheet on deck composition with approx. 40 mm (or as per vendor standard) high skirting of PVC.

The spaces within divisional bulkhead and lining panel shall be provided with approximately 40mm high skirting of suitable material shall be fitted as per OEM standard supply.

All deck covering top shall be levelled in each compartment, except slope for water drain in wet space.

The decks in cabins, public spaces, corridors, stairways etc. shall be covered with suitable deck composition and laid with vinyl tiles. All deck composition shall be approved type.

All sanitary spaces and galley shall be laid with mosaic tiles over cement having total thickness of 40mm. Skirting up to 150 mm above floor level in all these spaces also shall be tiled.

The floors of Captain Class and Senior officers cabins shall be provided with wall to wall carpets. All other cabins shall be provided with bed-side runners.

Shock proof rubber mats of 20 mm thickness shall be provided in Navigation. Bridge around console and in ECR in front of switch board. Flooring details plan shall be submitted for buyer's approval.

4.4.2 Cement & Tiles

Ceramic tiles shall be of non-slip square flat or mosaic pattern, and shall be applied including skirting in the following spaces:

- Sanitary space
- Laundry & drying room
- Galley

Tiles shall be laid on cement bed, and sloped toward scupper; except for in prefabricated toilets, where it is to be laid on the floor plate with adhesive.

4.5 Accommodation doors

Cabin doors

All doors shall be of such construction, finish and operation so as to suit their location and purpose.

[Handwritten signatures and initials]



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

All doors opening to hazardous location shall be of gas-tight with self-closing arrangement.

The clear width of the door to have minimum 700 mm opening except for private toilet door which is to be 600 mm. Clear width of the door for dry provision store shall be of 900 mm.

Electric magnetic door holders released from accommodation fire alarm system shall be provided for main stairway doors. Doors shall be provided with necessary ajar hooks, stoppers etc of adequate type to each door.

Self-closing devices shall be provided to the following spaces:

- Galley
- Entrance doors from outside
- Laundry
- Wheelhouse entrance door
- Stairways
- Entrance to engine room

Common toilet doors shall have mortise type latch with engage indicator.

The accommodation doors shall be non-combustible panel doors with vent louvers at the bottom as per regulations. The cabin doors shall be provided with lock and key with a master key for all doors.

Insulated doors for the cold rooms shall be provided as necessary.

Weathertight Doors

All doors exposed to weather shall be weather tight and constructed of steel. The sill height, method of closing and sealing arrangement shall comply with Load line regulations and SOLAS regulations. All doors shall be provided with suitable door-stopper, locks and door eye brow over the exposed weather door.

The Outside Doors in the accommodation are to be steel and with approved closing devices to meet ISPS code requirement.

At the exit of the accommodation to the open deck, inside of Steel Door, a standard inner door for air-lock shall be fitted.

Doors shall be operable with single lever.

4.6 Windows and Scuttles

Windows and scuttles shall be provided as per national / international standards to the approval of Class. All apertures to the windows to have radiused corners. All windows are to have toughened glass and thickness meeting rule requirements. Deadlights shall be fitted in accordance with Load Line requirements.



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

The windows to the accommodation shall be weld-in, non-opening type, rectangular of approx. 400 mm x 560 mm.

The Bridge Deck windows shall be of maximum dimensions possible taking due account of the structural arrangements. Roller type anti-glare screens shall be provided for the wheelhouse windows in line with ERRV guidelines.

4 Nos. horizontal type window wipers and 2 Nos. CVS of de-fogging type shall be provided. No. and size of windows/scuttles shall be as per owners approval.

Steel platform of 600 mm shall be provided in way of wheel house windows to facilitate cleaning. A freshwater washing system with stainless steel piping & SS nozzles shall be arranged for all Bridge Deck windows outside.

Where steel plate is cut to fit the windows/scuttles adequate compensation shall be provided. The scuttles shall be opening type and fitted with deadlights as per rules. The diameter of the scuttles shall be approx. 300 mm. The scuttle and windows shall be approved by Class.

All open type windows and scuttles shall have mosquito screens as per IMS requirements.

All windows and scuttles shall have anodized aluminum or brass glass holders and main frame of mild steel weld on type.

Two numbers windows shall be provided for engine control room (ECR), subject to feasibility during the detailed design.

4.7 Stairways, Ladder and rails in accommodation

Stairways in accommodation shall be made of steel and its stanchions and hand rails shall be made of stainless steel pipe. The steps shall be of steel plate with thickness as per builder's standard and with approved deck composition and vinyl sheet and non skid nosing (Stainless steel with PVC inlay). Stairway width and landing area shall be as per rule requirements.

Grab rails shall be provided in the wheelhouse front wall.

4.8 Furniture and Fittings

All furniture shall be constructed of good quality wood. Generally, all built-in furniture is to be marine standard plywood. All carpentry work shall be high quality international standard as adopted in commercial vessels.

Fire resistant quality of furniture shall be as per SOLAS regulations.



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

Top of the tables, desks and chest of drawers shall be finished with sunmica or equivalent laminate. Steel furniture shall be of durable construction.

The colour scheme shall be submitted for buyer's approval. All furniture fittings shall be of SUS steel wherever applicable. All furniture & fittings to be well upholstered in accordance with maker's standard and builders practice.

All draperies except shower curtains, upholstered furniture and other suspended textile materials used in accommodation shall be fire retardant type in accordance with FTP code.

A frameless mirror (600 mm x 400 mm size) shall be fitted on the inside of the wardrobe's door in living rooms.

Cloth for sofa and chair shall be of fabrics for captain and officer class and vinyl leather for the crews.

The furniture in each cabin shall be openable by the same key except in 2/4-berth cabin where different keys shall be provided.

Two sets of lined curtains shall be provided throughout all officers', and crew's accommodation and public rooms where curtains are specified.

Mattresses with fire-resistant covers are to be provided for all beds. Blankets, sheets & covers will be provided by the buyer.

A galvanized steel waste bin and a flask/glass cabinet shall be provided in each cabin

Two (2) sets of pillows shall be supplied for each bed. Beds shall be arranged in longitudinal direction. Oscillating fans shall be provided in the accommodation spaces.

4.9 Fittings of Furniture

All furniture fittings for passengers shall be of theft-proof type. Fittings on visible part shall be of nickel chrome plated brass in general. Chair fasteners shall be provided. Hat and coat hooks shall be fitted in cabins, public spaces, and toilets. Ball catchers and self-locking locks shall be provided for wardrobes and the uppermost tier of drawer for desk.

Schedule of interior fittings

The following furniture and fixture is for guidance only. Details shall be worked out during design development and shall have Buyer's approval.

Wheel house



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

The Bridge Deck shall be located above the officer's deck and shall have all around clear visibility, especially, the aft working deck area and bow.

Windows shall be arranged for maximum visibility.

The propulsion and manoeuvring control consoles shall be located at both the forward for the main and aft in the Bridge Deck.

The layout of the consoles, navigational and communication equipment shall be finalized in consultation with buyer.

The Bridge Deck shall be provided with settees, table, lockers for charts, flags and various safety equipment, large chart table, bookshelf, etc.

One toilet shall be arranged on the bridge deck as shown in the General Arrangement Plan.

- 1 Chart table with drawers under
- 1 Table for GMDSS equipment
- 1 Computer table (may be included with the GMDSS equipments)
- 1 Tea table
- 2 Helmsman Chair
- 1 Pilot chair
- 1 Stool
- 1 Sofa
- 1 Stationery shelf
- 1 filing cabinet (4 lockers/drawers)
- 1 Flag locker
- 2 Binocular boxes
- 1 Notice board
- 1 Water boiler (10 liter)
- 1 cup rack
- 1 writing desk (Can be joined with computer table)
- 2 book cases
- 3 revolving chairs
- 1 Locker for radio spares
- Wheel house poster in wooden frame

Each sleeping cabin shall be furnished as follows:

Senior Officer's Cabin

Day room shall be arranged for 4 senior officers and furnished suitably with settees, table, chair and cupboards.

Day room

- Writing table with drawers
- Three seater sofa
- 1 no. Revolving Chair
- 1 no easy chair
- 1 no. Book shelf
- 1 no. Side board
- 1 no. Refrigerator
- 1 no. Safe (Only for Master)
- 1 no. Framed picture



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

- File cabinet with 4 drawers
- 1 no. Key box
- 1 no. Shoe locker
- 4 no. Coat hooks
- One (1) Wall fan.
- One (1) waste bin

Bed room

- Double bed with 2 drawers underneath
- 1 no. Bed side table
- 1 no. Ward robe
- 1 no. Full length mirror
- One stool
- 1 cabinet for glasses and carafe.
- 4 no. Coat hooks
- One (1) Wall fan.
- One (1) waste bin

Four nos. refrigerator each 165ltrs.Capacityshall be provided in Master, Ch. Engineer, Chief Officer and 2nd Engineer cabins.

Six (6) TV sets (32"LED type) one each in Master, Ch. Engineer, Chief Officer, 2nd Engineer cabins and officers and crew recreation rooms shall be provided.

JO Cabin

Each officer cabin shall be equipped with:

- One (1) Single bunk with 1 no. mattress and pillows
- Two (2) Drawers below the bed
- One (1) Wardrobe with mirror inside
- One (1) Cushioned arm chair
- One (1) Settee
- One (1) Bed lamp.
- Four (4) Coat hooks.
- One (1) Fixed table with drawers.
- One (1) Wall fan.
- One reading lamp
- One (1) Book rack
- One (1) waste bin

Two berth crew cabins:

- Double bunk bed with mattress and pillows for each crew.
- Two (2) drawers below the lower bed.
- One (1) Wardrobe for each person, full height with life jacket and BA stowage above.
- One (1) armchair for person
- Settee.
- One (1) Bed lamp.
- Eight (8) Coat hooks
- One (1) Toilet cabinet with mirror

In addition to the above, each cabin shall be provided with the following:



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

- One (1) table with drawers and table lamp
- One (1) Wall fan.
- One (1) Mirror with lamp.
- One (1) Bookrack
- One (1) waste bin

PO Cabin:

Each PO cabin shall be equipped with:

- One (1) Single bunk with 1 no. mattress and pillows
- Two (2) Drawers below the bed
- One (1) Wardrobe with mirror inside
- One (1) Cushioned arm chair
- One (1) Settee
- One (1) Bed lamp.
- Four (4) Coat hooks.
- One (1) Fixed table with drawers.
- One (1) Wall fan.
- One reading lamp
- One (1) Book rack
- One (1) waste bin

Sanitary spaces

Attached toilet and shower (toilet modules) shall be provided for each cabin as shown in the General Arrangement Plan.

The sanitary spaces shall be provided with the following:

- One (1) Wash basin with
- One (1) cabinet with mirror and lamp.
- One (1) set of soap dish, cloth hook and towel holder in each shower space.
- One (1) European WC with water tap, toilet paper holder, grab rail and cloth hook in the toilet space.
- One (1) shower cubicle with shower mixer, curtain, soap dish, towel rack, grab rail
- One anti skid shower mat

Drains for basins and showers shall be designed to ensure satisfactory drainage. Adequate lighting and ventilation shall be provided.

Washrooms shall be provided with hot and cold water.

Each Modular & common Toilet shall contain

- One (1) Wash basin with mirror and lamp.
- One (1) set of soap dish, cloth hook and towel holder in each shower space.
- One (1) European WC with water tap, toilet paper holder, grab rail and cloth hook in the toilet space.



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

- One (1) shower cubicle with shower mixer, curtain, soap dish, towel rack, grab rail
- One anti skid shower mat

Ship office

- One (1) no. L- Shaped writing desk with rack of drawers
- Four (4) no. Office chair
- One (1) no. Bookshelf
- Two (2) File cabinet

Ship's Hospital

- Two (2) Fixed beds
- Two (2) ward robes
- One (1) Writing desk
- One (1) Office chair
- One (1) Medicine locker
- One (1) Hand wash basin with cupboard underneath
- One (1) full dispensary
- One (1) toilet
- One small refrigerator

SPS Mess room

One separate mess for SPS Personnel shall be arranged with three tables and 12 no. chairs within the existing space by means of suitable partitions

Officer's Mess cum recreation room

One large space with separate mess for officers shall be arranged and furnished for recreations also as shown in the General Arrangement Plan.

The space shall be furnished with all modern amenities for dining and entertainment with sufficient seating capacity. Sufficient settees with built in stowage under, chairs with armrest, soft seats & backrest and tables with anti-skid tabletops shall be provided.

- Two (2) No. Dining tables
- Eight (8) No. Chairs
- A self-serving area to be provided adjacent to the galley entrance.
- 1 Wash basins with mirror, soap holder and towel rails
- 2 Framed picture
- 4 Flower stand
- 1 Serving window
- 1 Serving table
- 1 Settee (3-seater)
- 1 Notice board
- Towel and hat/coat hooks of suitable quantity

Officer's recreation room

- 1 Coffee table
- 1 Framed picture



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

- 2 Settee (2 seater)
- 2 Flower stand
- 1 Book case for magazine
- 1 TV shelf
- 1 Music centre cabinet
- 1 Game locker
- 1 DVD player

Crew's Mess cum Recreation room

One large space with separate mess for crew shall be arranged and furnished for recreations also as shown in the General Arrangement Plan.

The space shall be furnished with all modern amenities for dining and entertainment with sufficient seating capacity. Sufficient settees with built in stowage under, chairs with armrest, soft seats & backrest and tables with anti-skid tabletops shall be provided.

- Two (2) Dining tables
- Eight (8) arm Chairs
- A self-serving area to be provided adjacent to the galley entrance.
- 1 Wash basins with mirror, soap holder and towel rails
- 2 Framed picture
- 2 Flower stand
- 1 Serving window
- 1 Serving table
- 1 Settee (3 seater)
- 1 Notice board
- Towel and hat/coat hooks of suitable quantity

Crew recreation room

- 1 Reception table
- 1 Framed picture
- 2 Settee (2 seater)
- 2 Flower stand
- 1 Book case for magazine
- 1 TV shelf
- 1 Music centre cabinet
- 1 Game locker
- 1 DVD player

Change room

Change room shall be arranged on main deck. Cabinets / Lockers are to be provided for keeping oilskin and work clothes. Change room/ Oilskin locker shall be walk-in type with direct access from main deck.

The space shall have 2 Wash basins, 2 shower and 2 Commodes.



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

- Twenty four (24) Steel lockers
- Two (2) Wash basin with 3 stands, large type
- Two (2) showers
- Two (2) WC

Ship's laundry

- 2 Industrial type fully automatic washing machine of 8 kg with hydro extractor along the passage way
- 1 Industrial type automatic washing machine of 10kg with hydro extractor
- 2 Tumble dryer of 10 kg
- 1 Ironing roller
- 1 Sink
- 1 Electric hand iron
- 1 Electric heater 2.0 kW (in drying room)
- 1 Folding iron board
- 1 Shelf
- Adequate capacity of steel lockers

Common Galley

Galley in general shall be arranged as given on the arrangement drawing.

A working bench of stainless steel with two wash basins with common hot and cold-water taps. Separate hand wash basin to be provided with hot and cold-water taps.

Drawers and lockers shall be arranged as place permits and to common practice. One working bench shall be arranged with drawers and lockers. Working benches, shelves, drawers and lockers shall be of stainless steel.

Plug sockets for galley machinery to be arranged. A ventilation hood of stainless steel with grease trap channel / drain and removable filter of stainless-steel mesh shall be arranged above the galley range and gyro pan.

Galley shall have lowered gutter with drain in each corner. Removable Stainless-steel covers on top of gutter mounted flush with floor.

All the equipment shall be mounted 300 mm clear of the floor for easy cleaning under. Galley fixed firefighting system shall be installed

The galley shall include the following appliances as minimum requirement:

- (a) 1 - Electric cooking range with six hot plates of total 16 kW and one (1) oven of auto-thermal control type with built in switch, necessary accessories and fittings each.
- (b) 1 - Electric mixer with the necessary attachment
- (c) 1 - Wet grinder.



- (d) 1-Electricwater boiler (22.5ltrs.) of stainless steel.
- (e) 1-Microwaveoven (30ltr.) convection type.
- (f) 2-Toasters(4slice).
- (g) 1-Dough mixing trough of stainlesssteel with hardwood top.
- (h) 1-Hardwood meat block
- (i) 1 - Rice boiler 20L capacity
- (j) 2-Refrigerator, 300ltrs, (Galley and mess room)
- (k) 1 – Potato peeling machine with 4 kg new filling
- (l) 2-Dresser units
- (m) 1 – dishwasher
- (n) Idli maker
- (o) Mincing machine
- (p) Water cooler at suitable locations (3 to 5Ltrs capacity)

4.10 Drinking water fountains

Drink water fountains to be fitted as follows, maybe adjusted and confirmed during detail design stage:

- 1- Officer's mess room
- 1- Crew's mess room
- 1- Corridor on upper deck
- 1- Near Engine control room
- 1- Wheelhouse

4.11 Waste Compactor

One waste (garbage) compactor of suitable type/size shall be provided meeting IMO regulations.

4.12 Dry Provision stores

The dry provision stores shall be located near Galley as shown in the General Arrangement plan. This space shall be adequately arranged with shelves and racks to store provisions. Sufficient lighting and ventilation shall be provided. Suitable provision of Air conditioning shall be provided for store room. Provision store arrangement drawing shall be submitted for buyers' approval.



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

4.13 Bosun's stores

Bosun stores and rope stores for storing ropes, hawsers etc. shall be arranged in the forward region above main deck as shown in the General Arrangement Plan.

Sufficient storage capacity in all stores by means of open racks shall be provided. Suitable hatch shall be provided for entrance to the store from the forecastle deck.

4.14 Paint Store

One paint store with racks shall be arranged on main deck and fitted with forced ventilation using explosion proof fan and lights. Fire protection of the store shall be provided as per class rule requirements. Heat sensor for the fire alarm system shall be provided for the paint store. All electrical fittings shall be explosion proof. Suitable warning signs shall be provided and also one (1) portable fire extinguisher shall be provided near the entrance/door.

4.15 Cold Storage Space

General

Measurement of volume to be taken to the inner surface of insulation and lining. Volume of each compartment may be adjusted in accordance with detail design of the accommodation arrangement.

In general, finished ceiling height of compartments to be not less than 2.1 meters.

Room	Approx. Volume	Temp.
Freezer room	15cu.m.	-18degc.
Chiller room	15cu.m.	+2degC

Design Conditions

L. T. cooling F.W. temperature 36 deg. C

Ambient temperature 35 deg. C

Door

Door type: Air-tight pontoon, hinged type.

Material: Stainless steel filled with PUF insulation.

Dimensions: Abt. 800mm x 1,700mm

Freezer doors shall be fitted with defrosting heating element.



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

Necessary door fittings such as locking device, open able and unlocking device from inside and door holder, etc. shall be provided.

4.16 Furnishing

Freezer and chiller rooms to be fitted with 3-tier shelves made of stainless steel. Shelves shall be of perforated type.

Thermal expansion valve control panel to be fitted on the air cooler unit in the chamber. A remote reading thermometer to be fitted for each room and an indicator to be mounted in the passage in vicinity of the lobby.

Alarm bell to be fitted in galley with signal light outside the compartment and push button arranged in each chamber and lobby. Other details refer to "Part IX - Electric Part".

A meat chopping block and small stainless steel sink with hot & cold water to be provided in lobby.

A stainless overhead rail with meat hooks shall be provided in the freezer room.

Water seal scupper to be provided for each compartment.

Plastic gratings shall be fitted on the floor.

4.17 Provision refrigeration Plant

Refrigeration plant to maintain temperatures in freezer and chiller rooms shall be provided consisting of two condensing units (each 100% capacity). Plant shall be designed to run on R-134A refrigerant or equivalent.

Two (2) sets of condensing unit to be arranged in Air conditioning unit room (one as stand-by) and each unit to be consisted of compressor and condenser and necessary accessories as per Maker's standard.

Cooling water shall be supplied by low temperature cooling F.W. system in engine room. The refrigerating plant to be capable to maintain the specified temperatures with one (1) compressor working at full load not more than 18 hours per day. The other compressor shall serve as standby. Cooling down to specified temperatures to be worked by two compressors. Ambient temperature of atmosphere to be based on 35°C and cooling water temperature of 36°C. Compressors shall be automatically started and stopped to maintain the specified temperatures.

Each compartment to be cooled by one (1) ceiling unit cooler. Diffuser shall consist of an aluminum fin cooling coil and an electric fan contained in a metal case. Drain pan to be fitted and drain pipe to be directly connected to the scupper system for the ACC.



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

Unit cooler, drain pan and pipe to be equipped with electric heating coils for defrosting(auto operation) for freezer room and chiller room. Thermostat, pressure gauges, remote reading thermometers, necessary valves and safety valves, level gauges, and gas charging device, etc., to be fitted completely.

The plant shall be direct expansion type; the cooling elements are equipped with electric de-icing with drip tray underneath.

4.18 ERRV Requirements

(a) The vessel shall comply with requirement of SOLAS convention for cargo ships as amended till date and OEUK guidelines for —Standing by Duty Offshore Installations (Group B), as per the following:

(aa) Survivors seats: 50 Nos. Inclusive of temporary arrangement of seats. Space shall be designated. This includes seats in the Reception Area, available for survivors use and additional to those provided in crew accommodation, with as many persons as possible with seating.

(ab) Hand basins for washings: 10 Nos. WHB available in crew accommodation area to be included to meet the requirement.

(ac) Showers: 10 Nos. Showers available in crew accommodation area to be included to meet the requirement.

(ad) W/Cs: 10 Nos. W/Cs available in crew accommodation area to be included to meet the requirement.

(ae) Water requirement for survivors: 5 Ton

(af) Treatment area (Hospital): Existing hospital on board. Existing hospital on the vessel to be designated.

(b) Survivor berths: 20 Nos. (Accommodated in Special Personnel cabins on main deck) In an emergency, survivors may be accommodated in crew accommodation except for sanitary accommodation, galley, berths for the Master and two crew members, the radio room (where provided), the wheelhouse and main access passageways, which should be kept clear. Mattresses to be provided if sufficient berths are not available.

(c) Single berth: 2 Nos.

(d) The showers, W/Cs, & wash hand basin in the recovery area: 4 Each. Existing facility available on the vessel is to be used.

(e) Corpses (capacity in the morgue): 4 Nos. As per requirement of ERRV-B Alternatively, one of the fridge room can be designated for use in case of requirement.



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

- (f) Rescue zone area length: 5 Metres
- (g) Medical Store: 1 No. Existing medicines/medical equipment as per MS Rules are to be provided.
- (h) Protective cloth and helmet: 4 Nos.
- (i) VHF Radio equipment of FRC: 1 Unit
- (j) A portable search light of FRC: 1 No.
- (k) A compass of FRC: 1 No.
- (l) A first aid kit of FRC: 1 Kit
- (m) A net or cradle of FRC: 1 Unit
- (n) Satisfactory maximum freeboard at the rescue area: Existing freeboard and rescue area are acceptable.
- (o) Lifebuoys with Self-igniting electrical lights & smoke signals: 2 Nos.
- (p) Lifebuoys with Self-lighting electrical lights: 2 Nos.
- (q) Lifebuoys with 30 meter buoyant lines 8 Nos.
- (r) Fast Rescue Craft (FRC) along with their launching arrangements: 2 Nos. (15 person each)
- (s) Man overboard Alarm: 1 No.
- (t) Compass stabilized radars: 2 Nos.
- (u) Position/direction finding equipment equal to GPS: 1 Unit
- (v) Daylight signal lamp provided to bridge deck: 1 No.
- (w) Status board mount on the bridge deck: 1 No.
- (x) Directional search light: 2 Nos.
- (y) Soup and Stew portions: 50 Persons.
- (z) Fruit cordial: 20 litres
- (aa) Boiling fresh water: 75 litres
- (bb) Oxygen bottles for treatment area and recovery area: 2 Nos.
- (cc) High luminance illumination with especial note taken of lighting directly above the treatment table: 1 Unit



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

- (dd) Fixed frames for holding two stretchers: 1 Unit
- (ee) Waste bin: 1 No.
- (ff) Cupboards: 1 No.
- (gg) Desk with file drawers: 1 No.
- (hh) Bulkhead mounted clock: 1 No.
- (ii) Skin degreaser in survivor showers: 35 litres
- (jj) MF-HF: 1 Unit
- (kk) Portable VHF of GMDSS: 3 Nos.
- (ll) Type approved Scrambling net (P &S): 2 Nos.
- (mm) Type approved Rescue basket: 1 No
- (nn) Line throwing apparatus (up to 30m): 2 Nos.
- (oo) Dutch hooks: 2 Nos.
- (pp) Portable battery operated loudhailer: 1 No.
- (qq) Internal communication system: Sufficient to provide communication
- (rr) Voice/fax/data sitcom (Fleet broad band for email, voice and data): 1 Unit
- (ss) Mobile phone (FBB): 1 Unit
- (tt) Safety harness: 2 Nos

The arrangements for meeting the ERRV shall be as shown in the GA Plan.

4.19 Workshop

One workspace for the repair/maintenance of machinery/equipment and store shall be provided on BT Thruster Compartment

Following equipment to be provided in workshop:

- Steel work bench of builder's standard complete with one 5" Engineers vice.
- 2 no. lockable lockers for engine stores.
- 1no.wash basin of stainless steel with hot and cold water. 1 no. injector test pump.
- 1 no. electricians test panel 415V/230V/24V.



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

- 1 no. lathe with 1000 mm length and 180 mm center height. The lathe to be equipped with 1 no. chuck with diameter 160 mm and three jaws.
- 1 no. drilling machine. The drilling machine to be equipped with 1 no. drilling chuck and 1 no. drilling bushing. 1 no. wheel grinder PSDs model 2 or similar.
- 1 no. welding transformer.
- 1 no. socket for welding transformer.
- Above work bench tool boards for hand tools to be arranged.

Workshop/store on Main Deck

- A work bench with a vice to be fitted. Some store shelf to be fitted.

Service air connection shall be arranged in the workshop.

4.20 Engine Control Room

Engine Control Room shall be installed with all necessary controls and equipment required by Class. The control room should be provided with good air conditioning arrangement.

The Engine control room shall air conditioned.

The ECR shall be fitted with:

- Main Switchboard
- ECR console with control, indication and alarm
- Telephone, SPT and Talk back, console mounted type with audio visual indication in Engine room
- PA facility and PA speaker
- 2 Chairs
- Rubber mat all around the switch board
- Tanks Gauging System

4.21 Air-conditioning, Refrigeration & Ventilation

The ventilation of all spaces shall be carefully designed to suit the atmosphere of tropical climate and mechanical/natural ventilation as applicable shall be fitted. The rate of air circulation in each space will be as per class / statutory rules. Load Line, Fire fighting and classification society rules apply to all ventilation intakes/exhaust on decks, trunking, shut-off flaps and remote stop of blowers. All mechanical ventilation equipment shall be arranged for easy maintenance. Wire nets shall be installed at all intakes and outlets of ducts and shall be provided at the air-conditioning units air intake.

The arrangement, capacity calculations and other details of the ventilation and air-conditioning system shall be submitted to class & buyers for approval.

The H₂S, hydrocarbon gas and smoke/fire detection and alarm system shall be linked with the ventilation and air-conditioning system for automatic shut-down or closed recirculation as per class rule requirement as applicable.

Accommodation Spaces



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

The vessel shall be provided with central single duct type air conditioning system. The system shall consist of one (1) set of air handling units having 100% of total required air load capacity. Two complete automatic sets of compressors/condensing units shall be provided (one working and one standby). Refrigerating units shall be cross connected.

Air-Conditioning system shall be based on following conditions:

OUTSIDE

INSIDE

35°C at 85%RH

25°C at 50%RH

Sea water temperature 32degC

Re-circulation shall be not more than 50%.

Water temp. for cooling condenser shall be 32°C.

Cooling water to condensers shall be provided from central fresh water cooling system.

After the completion of air conditioning system following tests shall be performed in accordance with builder's practice.

-Vacuum and pressure test of the refrigerant (R134A) line

-Air volume test

- Cooling test.

ISO7547, Ship building—Air-conditioning and ventilation of accommodation spaces on board ships – Design conditions and basis of calculations

AC plant

Refrigerating plants shall be designed to run on environment friendly refrigerant (R134a or equivalent) conforming to Clean design requirements. The compressors are "back-up" for each other. The plant shall be direct expansion type, the cooling elements are equipped with electric de-icing with drip tray underneath.

Ventilation:

Mechanical ventilation shall be provided for Aft thrusters compartment, CO2 room, bow thruster rooms, battery room, bosun store, A/C Unit room, sanitary space and in stores below main deck.

Other spaces shall be provided with natural ventilation.

Engine Room



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

Mechanical ventilation system shall be provided for the engine room with amount of air supply corresponding to approx. 150% of air consumption of main engines, auxiliary engines and air compressors.

Two(2) nos. mechanical supply (One no. reversible) and natural exhaust through funnel flaps.

The engine room vent fans shall be 2-speed fans and one of the supply fans shall be reversible type and shall be fed from emergency switch board. Total air supply to be calculated on basis of design requirements in ISO 8861:1988 Ventilation inlets and outlets to be well protected against ingress of seawater and exhaust. Air intakes to be equipped with mist eliminator. Necessary noise traps and sound isolation to be fitted in inlet ducts.

4.22 Miscellaneous

Signs, symbols and markings shall be provided in the accommodation and machinery spaces as required by Class/ Statutory regulations Hand wheels of valves will be provided with identifying brass plats with brass screws.



CHAPTER 5 MACHINERY

5.1 General

All equipment, machinery, instruments, and installations shall be of the latest design and construction and as per best shipbuilding practice. They shall be of the reputed make and suitable for tropical, humid marine climate. Similar machinery, equipment etc. shall be so selected as to have maximum inter-changeability of their parts wherever possible.

All machinery will be first class marine type with all normal outfitting and accessories. Machinery in this group to fulfil Class rules and ISO 3046/1 for capacity or effect under the following ambient reference conditions:

- a. Total barometric pressure 1 bar
- b. Ambient outside air temperature 0 °C to 45 °C
- c. Relative humidity of air 70 %
- d. Sea water temperature 32 °C

Components and systems in this group covered by the Classification will be designed to operate under the following environmental conditions according to Class rules but with reduced power in conditions with air temperature over 45 °C:

- a. Air temperature in the machinery space between 0°C and 55 °C.
- b. Relative humidity of air in the machinery space up to 95%.
- c. Sea water temperature up to 32 °C.
- d. List rolling, trim and pitch according to limits for the Classification notes.

Deck machinery, epoxy resin chocks will be used for chocking. Medium components such as pumps etc. will be mounted directly to foundation.

Diesel generator sets, air compressors will be resiliently mounted.

Where applicable for machinery, equipment or components international standards shall be followed. Modern systems, machinery, equipment shall be provided for fuel and energy efficiency and shall have adequate controls, gauges, alarms and safety measures.

The vessel shall be equipped with modern remote-control arrangements so that the manoeuvring with the propulsion machinery can be controlled from the Bridge Deck.

The vessel shall be designed and constructed to have minimum noise and vibration levels.

Necessary torsional vibration calculations shall be carried out to the approval of classification society.

The exhaust emissions of the diesel engines shall meet the MARPOL 73/78 Annex VI requirements.

The main machinery installation comprises of the following:



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

- (a) Two (2) main propulsion Azimuth Thrusters with nozzle driven by variable speed AC motor of 1600 kW approx.
- (b) Four (4) medium speed marine diesel engines each of 1440 kW each driving the Main Alternators, each of 1368 kWe installed in the Engine Room.
- (c) The diesel engines driving main alternators shall be capable of dual fuel driven (Diesel & Methanol).
- (d) One (1) auxiliary diesel engine driving an emergency generator, installed in the emergency generator room above main deck.
- (e) Two (2) Tunnel bow thrusters with CP Propellers driven by electric motor.

Flexible anti-vibration mounts shall be used for auxiliary engines/generating sets, exhaust system, etc., for isolation of noise and vibration.

5.2 Main Propulsion & Main Diesel Generating Sets

Main propulsion:

Two (2) azimuth thrusters shall be installed, at the aft for propulsion and for station keeping of the Vessel.

Drives

Each thruster shall be driven by variable speed motor with specifications as mentioned below:

Power	:	1600 kW approx.
Duty	:	S1 – Continuous
Motor efficiency	:	95%
Voltage/Freq	:	690V / 60Hz
Enclosure	:	IP 44
Cooling	:	Fresh water cooling
Insulation	:	Class F
Temperature Rise	:	Class B
Bearing	:	Sleeve bearing shall be provided at both ends. Bearings and winding temperature monitoring shall be provided and connected to central UMS alarm

2 nos. AFE units, fresh water cooled, shall be installed in air-conditioned room, for the thrusters speed control.

Main Diesel Generating Sets

Four (4) identical generating sets are to be installed.



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

Main diesel engines are to be of medium speed, four stroke, turbocharged and shall be as follows:

Make/Model	: HYUNDAI (HHI-EMD) / 6H22CDF-LM, IMO Tier II
MCR	: 1440 kW
RPM	: 1000
Fuel type	: Methanol & MDO
SFOC at 85% MCR	: Methanol 346.8gm/kwh, 25.8gm/kwh
PTO	: 2 no's gen. sets to have PTO for external Fi-Fi
Type	: 4 stroke Fuel Engine for Marine Genset
Alternator rating	: 1368 kWe

Bearings shall be provided at drive end and non drive ends of the alternator.

Engine & alternator coupling: Direct disc coupling with lamination disc plates on alternator shaft

Common base frame with resilient rubber mountings for complete DG set

Fuel oil system:

Normal operation with Distillate Fuel Oil in accordance with ISO8217 (2017) DMA/DFA/DMZ/DFZ/DMB/DFB or equivalent except some properties.

- Fuel injection pump on each cylinder
- Combined fuel injection valve on each cylinder
- High pressure injection pipe or block on each cylinder
- Fuel oil leakage tank
- Level switch for leakage alarm
- Fuel oil filter, Duplex manual cleaning with fineness 50 micron

N2 system – For purging and inerting

Lubricating oil system:

- Lubricating oil viscosity, SAE 40
- Wet oil sump incorporated in common base frame
- Engine driven lubricating oil pump, Gear type
- Electric motor driven pre lubricating pump
- Lubricating oil cooler, Plate type in stainless steel plates
- Lubricating oil temperature control valve, Wax-thermostat type
- Lubricating oil filter, Duplex paper cartridge with fineness 15 micron
- Lubricating oil centrifugal by-pass filter

Cooling water system:

- HT-Cooling water for cooling;
 - . Cylinder jackets
 - . Cylinder heads
 - . Exhaust valve seats
 - . Charge air cooler



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

- LT-Cooling water for cooling;
 - . Lubricating oil cooler
 - . Charge air cooler
- Coolant for both HT-circuit and LT-circuit as fresh water only
- LT-Cooling water inlet temperature based on 36°C
- 2-String connection as HT & LT-circuit separated
- Steel pipe treated parkerizing for both HT & LT-water piping
- Engine driven LT circulating pump, Centrifugal type
- Engine driven HT circulating pump, Centrifugal type
- Temperature control valve, Wax-thermostat type
- Hot water from running engine via venting connection
- Electric element type preheater built on engine

Compressed air system:

Engine Starting Equipment:

Engine started by compressed air with injected directly into the cylinders

- Main starting valve
- Pilot starting valves in starting order
- Starting valves on cylinder heads

Air Intake & Exhaust System:

- 1-Stage charge air cooler designed LT & HT-water cooling stack
- Turbocharger equipped with dry air filter.
- Turbocharger located at Free-end side (Opposite to flywheel)
- Exhaust gas outlet, Vertical direction
- Water-cleaning provision for both compressor and turbine side
- Water container for compressor side, built-on engine
- One (1) /ship loose delivered water hose with reducing valve for turbine cleaning

Spare pumps:

Spare pumps as below (per ship set) shall be provided for redundancy as per class rules / OEM standard.

- 01 x LT cooling pump
- 01 x HT cooling pump
- 01 x LO pump

The diesel generators shall also be suitable for operating with bio-fuels.

The DGs will be equipped with electronic remote control from bridge, and instruments according to DG manufacturer's standard and class requirements. All attached pumps shall have electric motor driven standby units having same capacity.

Generators shall be designed for continuous parallel operation in any combinations. Provisions for auto start, auto load sharing and auto synchronization shall be



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

provided. The cooling of engines shall be done by individual heat exchangers cooled by sea water.

The engines shall be complete with accessories for efficient running of the engines, control, monitoring and alarms in commensurate with the design of the engines and meeting CLASSIFICATION SOCIETY and statutory requirements.

Basic Design Characteristics: -

- Heat exchanger cooled
- Air start
- 4 stroke
- Engine mounted L.O, fresh water, fuel oil and
- Engine mounted L.O. and fresh water coolers
- Remote start from Engine Control Room
- Resilient mounting
- Brushless type
- Insulation Class F with temperature rise "B"

Two (2) engines shall be provided with one (1) each P.T.O at one end to drive a fire pump via a step-up gear box with clutch (if required) to match the RPM complete with isolation switch.

The engine shall comply with latest IMO Tier II regulations for SOx and NOx emissions with EIAPP certificate.

- a) The DG sets shall be continuous duty type, four-stroke, trunk type, turbocharged, Medium speed (up to 1000 RPM), 50 Hz and non-reversible type marine diesel engines directly coupled to generator and Tier II compliant.
- b) The enclosure shall be IP 44.
- c) Temperature rise B and insulation class F.
- d) The generators shall be 3 phase synchronous brush less, self-excited type, self-regulated and to be installed including all associated systems and accessories.
- e) 2 out of 4 Gen sets to be provided with PTO for driving External Firefighting pumps.
- f) Main generator sets shall be suitable for continuous parallel operation.
- g) Each main generator set shall be supplied as a complete unit on a common skid.
- h) Engines equipped with all necessary devices including all temp. and pressure gauges, oil mist detection on the engine and electronic governors (speed drop 3-5%, 0-100% load), all according to the latest maker's standard.
- i) The automatic voltage regulator shall have the voltage adjustment from the main switchboard.
- j) There need to be performed a full torsional vibration analysis for engine, PTO and Fi-Fi pump.
- k) The safety and alarm system of the main generator engines will be connected to
- l) Vessel's automation system.
- m) Pre-lube pumps and fuel feed pumps have to run before start-up of diesel engines, each



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

- n) Pre-lube pump and fuel feed pump shall be fed from both main switchboard and emergency switchboard (automatic change-over) for sufficient black-out recovery.
- o) Each engine shall be fitted with local operation console with Tachometer, lube. Oil pressure gauge, cooling water thermometer, oil temp gauge, hour Counter and start/stop button.
- p) The automation, alarm and safety system and accessories and other details are to be elaborated in this section once the Generator engine OEM is finalized.
- q) The generator to be equipped with:
- Anti-condensation heaters, 230V
 - Excitation equipment (AVR to be mounted in a switchboard) incl. Over-voltage/Excitation fault detection system according to Class
 - Winding temperature sensors (2 sets)
 - Bearings temperature sensors
 - Cooler leakage detector
 - Control and monitoring system shall be interfaced with IAS
 - Transformers for differential protection
 - Single Sleeve bearings (natural cooling)

DG Monitoring and Alarms:

Engine automation equipment:

Main control panel, mounted on engine

- Complete engine control, alarm & safety function
- Driving of injections (methanol, pilot oil and main fuel oil), mounted on engine

LCP.

- Monitoring and operation of engine, mounted on engine
- All monitoring, complete engine operation & alarm
- Push buttons for start/stop/reset/emc'y stop
- Switches for Local/Remote, Inc/Dec speed or load, Diesel/Methanol fuel mode
- Independent and redundant engine shutdown
- Auxiliary Operation Panel

The Slave monitoring and control panels for each DG set shall be provided in ECR and Wheelhouse (only monitoring) also which serves all functions stated above.

An integrated control, monitoring and alarm system shall be provided meeting periodically unmanned machinery space requirements.

Monitoring instrument panel in engine control rooms and in Bridge Deck consoles shall be fitted. Group repeater alarm in engineer's cabins, mess room shall be provided as per CLASSIFICATION SOCIETY.

Monitoring and alarms as per CLASSIFICATION SOCIETY and SOLAS requirements. Alarms and safety shut downs for the diesel engines according to the engine manufacturer's standards and Classification requirement



5.3 Emergency Diesel Generator

One class approved diesel generating set of 99 kW, 1500 rpm arranged for emergency load shall be installed above main deck in accordance with Class requirements.

Engine power (MCR) : 120 KW

Type : 3-phase, synchronous brush less, self-excited and self-regulated

Engine speed : 1500 RPM

Cooling : Radiator

IP rating : IP 23

The generator engine shall be equipped with:

- An engine's governor system of electronic speed setting type.
- Electric starting motor and manual start system, one of each.
- Local control and monitoring system
- Safety system

The generator shall be equipped with:

- Automatic Voltage Regulator (AVR) according Classification Society requirements
- Anti condensation heater
- Winding temperature sensors

The engine shall be radiator cooled type with electric and manual starting arrangements as per class requirements.

5.4 Main Propulsion Thrusters and Maneuvering Thrusters

5.4.1 Azimuth Propulsion System

Two azimuth thrusters with variable speed control Active front end type (AFE) shall be installed, at the aft for propulsion and steering of the Vessel. Each azimuth thrusters shall be driven by the A.C. Electric Motors. The electric motors shall have ball bearings and cable entry MCT.

Each Thruster shall include:

- Standard horizontal drive thrusters for bolt-in type mounting for installation in the thrusters' room.
- Four bladed Ni Al bronze and ISO 484 Class 1 propeller with working in a flow accelerating nozzle.
- The nozzle shall be of mild steel with Stainless steel lining in way of propeller.
- Hydraulic steering gear, capable of rotating thrusters through 360°
- Sealing arrangement shall be as per OEM recommendations. Seals shall be of Viton.
- Lubricating oil system with Oil cooler
- Steering and RPM control systems with steering controls for single position control to be located in two places (forward & Aft) in Wheelhouse.
- Steering and RPM controls for Engine room console
- Local & Emergency control at the thrusters location.



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

- Monitoring and alarm systems for Wheelhouse consoles.

5.4.2 Remote Control (Maneuvering and control equipment)

Control, Monitoring and Alarm system

A centralized control, monitoring and alarm system shall be provided in ECR and extension alarms in Bridge (on both consoles), Engineer's cabin as per Class rules.

Forward and aft maneuvering control console shall be installed at the bridge and fitted with all required control, alarm and monitoring system. Propulsion system, steering and bow thruster shall be controlled remotely by electrical power from the wheelhouse consoles including all safety features for safe operation of the vessel from the wheelhouse.

The command, control, monitoring and communication systems will be completely duplicated on forward and aft consoles. All instruments used on the aft console shall be suitable for operating the vessel when looking aft.

An integrated joystick and DP control system shall be provided at both control stations

Interface shall be arranged for:

- Frequency converters
- Autopilot
- DP system
- Joystick
- Alarm and monitoring system
- Voyage data recorder
- Conning system.
- Speed log

The purpose of the control stations is:

- Selection and indication of panel In Command
- Selection and indication of operational modes, settings and functions
- Selection and indication of thruster status and thruster settings.
- System and operational alarm indication
- Monitoring of signals

Thruster Operator stations:

Workstations at fwd Bridge:

- One (1) Lever/ Input/ Indicator device for each thruster (2xMain propulsion, 2xTunnel)
- One (1) Panel for helmsman operation
- One (1) Command panel

Workstations at SB Bridge:

- One (1) Multi indicator display for each main propulsion thruster
- One (1) Lever/ Input/ Indicator device for each thruster (2xMain propulsion, 2xTunnel)
- One (1) Panel for helmsman operation



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

- One (1) Command panel

Workstations at PS Bridge:

- One (1) Multi indicator display for each main propulsion thruster
- One (1) Lever/ Input/ Indicator device for each thruster (2xMain propulsion, 2xTunnel)
- One (1) Panel for helmsman operation
- One (1) Command panel

Workstations at Aft Bridge:

- One (1) Multi indicator display for each main propulsion thruster
- One (1) Lever/ Input/ Indicator device for each thruster (2xMain propulsion, 2xTunnel)
- One (1) Panel for helmsman operation
- One (1) Command panel

5.4.3 Propulsion motors

Two (2) AC asynchronous high efficiency (95%), Fresh water-cooled motors for marine installation with anti-friction bearings shall be installed, one for each propulsion unit.

The drives shall be of low harmonic type meeting Class requirement.

The motors shall be adequately over-sized to take the additional heat losses caused by harmonic distortion.

The motors shall be equipped with:

- Winding temp. Sensors, (2 sets),
- bearing temp. Sensors, (2 sets),
- cooler leakage detector,
- anti-condensation heater etc.

The Electric motors shall be equipped with vibration sensors for Motor bearing at both drive and non-drive ends. Motors shall have temperature rise B and insulation class F.

Line harmonics / voltage and current distortion (THD): Frequency Drives/Convertors shall meet Class requirement for voltage, current and total harmonics.

The system shall be designed for continuous operation in compliance with Classification Society / SOLAS requirements.

5.4.4 Tunnel Thrusters

Two (2) tunnel thrusters with CPP propeller of about 800 KW approx shall be installed at the bow. The thrusters shall be driven by a fixed speed electric motor of suitable capacity as required.

The thruster unit shall be complete with hydraulic pump unit, header tank, alarms, etc. Electronic remote control system shall be provided complete with monitoring and



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

alarm system at the wheelhouse consoles. The units shall be provided with local controls as per Classification Society requirements.

The drive motor shall be air cooled, 690V/ 50Hz, IP23 enclosure / Class B temperature rise and Class F insulation. The motor shall be rated for continuous duty (S1) and provided with soft starter.

5.5 Pumps

5.5.1 General

Each pump shall have the suction capacity enough to meet the respective service.

All pumps shall be of marine type and of an acceptable design for the service intended and of reputed make.

All water pumps shall have cast iron body, bronze impeller with stainless steel shaft. Mechanical seals shall be provided for the pumps.

Each pump shall be fitted with pressure and vacuum gauges with cocks for isolation.

The pump and the motor shall be flexibly coupled and mounted on a common base frame.

The capacities of pumps indicated herein are approximate and the requirement of Classification Society and SOLAS shall be met.

The motors for the pumps to be totally enclosed fan cooled, IP44, Insulation class F continuous rated.

All pumps shall have locally mounted start / stop panel with running indication lights in addition to remote start/stop. The start / stop and running indication to be provided on ECR console.

5.5.2 Bilge/ Ballast water Pump

Two (2) Bilge /Ballast pumps, electric motor driven, self-priming centrifugal type, shall be installed. The capacity of shall be approx. 100 m³/h at 90 m head. These pumps shall also be used for fire duty.

Bilge system shall be designed to meet SPS 2008 regulations.

5.5.3 GS / Fire Pump

One (1) GS/Fire Pump, electric motor driven, self-priming centrifugal type, shall be installed. The capacity of shall be approx. 100 m³/h at 90 m head.

5.5.4 Emergency Fire pump

One (1) emergency fire pump, electric motor driven, self-priming centrifugal type of 35 m³/h at 45 m head shall also be installed.



5.5.5 Bilge Transfer Pump

The positive displacement type Bilge transfer pump of 5 m³/h approx shall be installed for installing E/R bilges to Oily bilge holding tank.

5.6 Ship's Fuel Oil System

5.6.1 Diesel mode

Main engines fuel oil system shall be divided into two independent systems and to have fuel supply from either of the service tanks.

Velocity in FO pipes shall generally not exceed 1.5 m/s.

A complete FO overflow system with dedicated overflow tank shall be provided.

Two (2) Day Tank and Two (2) Settling Tank in Engine Room (Automatic Start/Stop for filling of settling tank)

One (1) Fuel oil drain tank

One (1) no FO separator, self cleaning type, Automatic with capacity according to engine make.

Two (2) nos fuel oil transfer pump of adequate capacity.

One (1) no FO service tank for emergency generator

One (1) FO Transfer Pump, remote operated, w/ filling line to Day Tank for Emergency. generator and for filling of rescue boats.

Remote quick closing arrangements for fuel valves, emergency shut down for fuel pumps, etc. shall be provided as required by SOLAS regulations.

Mass Flow meters shall be provided at inlet and outlet for MDGs.

5.6.2 Methanol Mode (Low Flash Point Fuel Supply System)

Shipyard shall tie-up with an experienced integrator to develop philosophy to integrate engine fuel supply system with external fuel supply and control system for Low flashpoint fuels, as necessary.

The bunkering, storage, fuel supply for gensets, cargo discharge of Methanol and the fire, ventilation and safety requirements shall be arranged in accordance with IMO interim guidelines as per circular MSC.1 / 1621 to the approval of IRS.

5.6.2.1 Risk Assessment

A risk assessment along with HAZID HAZOP studies as approved by class shall be conducted to ensure that risks arising from the use of methanol fuel affecting persons on board, the environment, the structural strength, or the integrity of the ship are addressed. Consideration shall be given to the hazards associated with



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

physical layout, operation and maintenance, following any reasonably foreseeable failure.

The risks shall be analysed using acceptable and recognized risk analysis techniques. Loss of function, component damage, fire, explosion, toxicity and electric shock shall, as a minimum, be considered. The analysis shall ensure that risks are eliminated wherever possible. Risks which cannot be eliminated shall be mitigated as necessary. Details of risks, and the means by which they are mitigated, shall be documented to the satisfaction of the Class.

5.6.2.2 Tank Arrangement

Two separate storage tanks for Methanol cargo and two storage tanks for Fuel supply are arranged at the aft. The tanks are of integral type.

Two day tanks are arranged for supply of fuel to genset engines. The capacity of each day tank is sufficient for 8 hours operating DG engines during sailing.

Cofferdams/void spaces are arranged around the tanks as per Regulation. Integral fuel tanks shall be surrounded by protective cofferdams, except on those surfaces bound by shell plating below the lowest possible waterline, other fuel tanks containing methyl alcohol, or fuel preparation space.

Overflow tanks, drain tanks shall be provided as necessary.

Direct access from main deck shall be provided to the tanks and the cofferdams. The fuel preparation space will have direct access and when this is not possible, access through airlock with two gas tight doors shall be provided.

The airlock space shall be mechanically ventilated with overpressure compared to the adjacent space.

An audible and visual alarm system to give a warning on both sides of the airlock shall be provided to indicate if more than one door is moved from the closed position.

5.6.2.3 Bunkering

Two (2) bunker stations for filling the methanol storage tanks shall be arranged on main deck aft Port and starboard side for filling and discharging methanol tanks having Liquid line and vapour line sizes as per bunkering rate of the vessel".

The bunkering manifold shall be designed to withstand the external loads during bunkering. The bunkering rate shall be approx 100 cubic meter/hr.



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

The connections at the bunkering station shall be of dry-disconnect type equipped with additional safety dry break-away coupling/self-sealing quick release. The couplings shall be of a standard type

Means shall be provided for draining any fuel from the bunkering lines upon completion of operation.

Bunkering lines shall be arranged for inerting and gas freeing. When not engaged in bunkering, the bunkering lines shall be free of gas,

A ship-shore link (SSL) or an equivalent means for automatic and manual ESD communication to the bunkering source shall be fitted. In the bunkering line, as close to the connection point as possible, there shall be a manually operated stop valve and a remotely operated shutdown valve arranged in series. It shall be possible to operate this remotely operated valve from the bunkering control station.

Bunkering lines are arranged with a cross-over and suitable isolation arrangements are provided to ensure that fuel cannot be transferred inadvertently to the ship side not in use for bunkering.

5.6.2.4 Provisions for fuel tanks venting and gas freeing system

The fuel tanks shall be fitted with a controlled tank venting system.

A fixed piping system shall be arranged to enable each fuel tank to be safely gas freed, and to be safely filled with fuel from a gas-free condition.

Pressure and vacuum relief valves, two (2) – (one main and second one for redundancy) shall be fitted to each fuel tank to limit the pressure or vacuum in the fuel tank. The tank venting system consists of individual vents from each fuel tank. Design and arrangement shall prevent flame propagation into the fuel containment system.

PV valves are fitted in the vent line, the vent outlet shall be fitted with a flame arrestor.

The fuel tank-controlled venting system shall be designed with redundancy for the relief of full flow overpressure and/or vacuum. shall vent to a safe location on open deck and shall be of a type which allows the functioning of the valve to be easily checked.

The design loading/unloading rate shall be 100 m³/h for the purpose of venting design.

The fuel tank vent system shall be connected to the highest point of each tank and vent lines shall be self-draining under all normal operating conditions.



5.6.2.5 Inerting and atmospheric control within the fuel storage system

All fuel tanks shall be inerted at all times during normal operation using N2 gas.

Cofferdams shall be arranged either for purging with N2 gas.

Emptying the cofferdams shall be done by a separate drainage system, e.g. bilge ejector.

To prevent the return of flammable liquid and vapour to the inert gas system, the inert gas supply line shall be fitted with two shutoff valves in series with a venting valve in between (double block and bleed valves). In addition, a closable non-return valve shall be installed between the double block and bleed arrangement and the fuel system. These valves shall be located inside hazardous spaces.

Blanking arrangements via spool piece shall be fitted in the inert gas supply line to individual tanks.

Fuel tank vent outlets shall be situated normally not less than 3 m above the deck.

5.6.2.6 Inert gas availability on board

Inert gas shall be available permanently on board in order to achieve at least one trip from port to oil field and back considering maximum consumption of fuel expected and maximum length of trip expected, and to keep tanks inerted during 2 weeks in harbour with minimum port consumption.

The production plant, if fitted, shall be capable of producing inert gas with oxygen content at no time greater than 5% by volume. A continuous-reading oxygen content meter shall be fitted to the inert gas supply from the equipment and shall be fitted with an alarm set at a maximum of 5% oxygen content by volume. The system shall be designed to ensure that if the oxygen content exceeds 5% by volume, the inert gas shall be automatically vented to atmosphere.

The system shall be able to maintain an atmosphere with an oxygen content not exceeding 8% by volume in any part of any fuel tank.

An inert gas system shall have pressure controls and monitoring arrangements appropriate to the fuel containment system.

Where a nitrogen generator or nitrogen storage facilities are installed in a separate compartment outside of the engine-room, the separate compartment shall be fitted with an independent mechanical extraction ventilation system, providing a minimum of six air changes per hour.



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

If the oxygen content is below 19% in the separate compartment, an alarm shall be given. A minimum of two oxygen sensors shall be provided in each space. Visual and audible alarms shall be placed at each entrance to the inert gas room.

Nitrogen pipes shall only be led through well-ventilated spaces. Nitrogen pipes in enclosed spaces shall have only a minimum of flange connections as needed for fitting of valves and be fully welded; and be as short as possible.

5.6.2.7 Fuel Supply System for DG Engines

Normal operation with Methanol in accordance with engine manufacturer's standard.

There shall be two (2) methanol fuel storage tanks and two service tanks, integral type shall be provided. Cofferdams around the tanks as per Class requirements shall be provided.

Submersible/Deepwell pumps shall be provided for each storage tank for transferring the methanol from storage tanks to service tanks. A backup arrangement shall be provided for transfer of Methanol from storage tank to service tank in case of failure of dedicated pump. The Methanol transfer pump shall start automatically once the level of service tank is reached below certain level and the automatic sequence of start/stop shall be decided at later stage.

Two (2) bunker stations for filling the methanol storage tanks shall be arranged on main deck aft Port and starboard side.

One (1) LFSS for four (4) Main Generator Engines (One (1) per ship) with one (1) Glycol-water (G/W) Heating / cooling unit for LFSS (One (1) per ship) shall be installed in pump room. One (1) LFSS pump shall be provided as standby.

Four (4) Fuel Valve train (FVT) (one per engine) shall be installed in pump room.

LFSS system for DG Engines:

- Supply pump (1 x 100%) equipped with electric motor (VFD)
- One (1) set of Heat Exchanger (shell & plate heat exchanger or equivalent)
- Duplex Filter (metal mesh, absolute fineness 10 μ m)
- One (1) set of mass flow meter
- Control valves, on-off valves
- Throttling discharge isolation valve at LFSS outlet lines

Common G/W system

- Glycol expansion tank
- G/W circulating pump (1 x 100%)
- G/W-F/W Heat Exchanger

Purging & Drain System

- Permanently connected N2 purging lines in LFSS skid
- Permanently connected drain lines



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

- One (1) set of air-driven drain pump (transferring or draining to the fuel service tank)

Instrumentation

- Pressure transmitters, Temperature transmitters, Level Switches
- Starters
- MeOH Pump, Glycol W. pump starter
- Control cabinet
- LFSS Controller
- LFSS I/O Module

Four (4) Fuel Valve train (FVT) (one per engine) shall be installed in pump room.

FVT including following equipment

- Manual shut-off valve
- Auto double block & bleed valves on main methanol supply line
- Auto double block & bleed valves on inert gas line for purge
- Necessary pressure & temperature transmitters and gauges.
- Inert gas filter etc.

Methanol supply equipment for engines:

- Combined fuel injection valve on each cylinder
- Double-walled methanol supply pipe in ER (high pressure)
- Pressure transmitter (high pressure)
- Safety valve
- Control & Sealing LO line
- L.O. HP pump
- E-HBU (Electro-Hydraulic Boosting Unit) for H22CDF-LM

When LFSS system fails, the DG engines will continue to operate with MDO fuel and suitable automatic change-over arrangements.

The following equipment shall also be installed:

One (1) set inert gas system (N2 generator system) of 60m³/h capacity x 97% -65 deg C 13barg x Compressor/Reservoir included). The capacity shall be verified at detailed design stage. No. of compressors shall be as per class requirement.

Permanently connected N2 purging line shall be provided for the fuel lines as recommended by OEM.

5.6.2.8 Fire Safety

A fixed fire detection and fire alarm system complying with Fire Safety System Code shall be provided for all compartments containing the methyl/ethyl alcohol fuel system.

Suitable detectors shall be selected based on the fire characteristics of the fuel. Smoke detectors shall be used in combination with detectors which can more effectively detect methyl/ethyl alcohol fires.

Following shall be arranged as per Regulations:



i. Deck Foam System for Bunkering station :

Machinery space and fuel preparation space where methyl alcohol-fuelled engines or fuel pumps are arranged shall be protected by an approved fixed fire-extinguishing system in accordance with SOLAS regulation II-2/10 and the FSS Code.

In addition, the fire-extinguishing medium used shall be suitable for the extinguishing of methyl/ethyl alcohol fires.

An approved alcohol-resistant foam system covering the tank top and bilge area under the floor plates shall be arranged for machinery space category A and fuel preparation space containing methyl alcohol.

5.6.2.9 Area classification

The object of the classification is to allow the selection of electrical apparatus able to be operated safely in these areas.

In order to facilitate the selection of appropriate electrical apparatus and the design of suitable electrical installations, hazardous areas are divided into zones 0, 1 and 2.

Ventilation ducts shall have the same area classification as the ventilated space.

Hazardous area zone 0

This zone includes, but is not limited to, the interiors of methyl fuel tanks, any pipework for pressure-relief or other venting systems for fuel tanks, pipes and equipment containing methyl/ethyl fuel.

Hazardous area zone 1

This zone includes, but is not limited to:

- (a) cofferdams and other protective spaces surrounding the fuel tanks;
- (b) fuel preparation spaces;
- (c) areas on open deck, or semi-enclosed spaces on deck, within 3 m of any methyl fuel tank outlet, gas or vapor outlet, bunker manifold valve, other methyl/ethyl fuel valve, methyl/ethyl fuel pipe flange, methyl fuel preparation space ventilation outlets;
- (d) Areas on open deck or semi-enclosed spaces on deck in the vicinity of the fuel tank P/V outlets, within a vertical cylinder of unlimited height and 6 m radius centered upon the center of the outlet and within a hemisphere of 6 m radius below the outlet.
- (e) Areas on open deck or semi-enclosed spaces on deck, within 1.5 m of fuel preparation space entrances, fuel preparation space ventilation inlets and other openings into zone 1 spaces.



- (f) Areas on the open deck within spillage coamings surrounding methyl/ethyl fuel bunker manifold valves and 3 m beyond these, up to a height of 2.4 m above the deck;
- (g) Enclosed or semi-enclosed spaces in which pipes containing methyl/ethyl fuel are located, e.g. ducts around methyl/ethyl fuel pipes, semi-enclosed bunkering stations; and
- (h) A space protected by an airlock is considered as a non-hazardous area during normal operation, but will require equipment to operate following loss of differential pressure between the protected space and the hazardous area to be certified as suitable for zone 1.

Hazardous area zone 2

This zone includes, but is not limited to:

- (a) Areas 4 m beyond the cylinder and 4 m beyond the sphere defined in Zone 1.
- (b) Areas within 1.5 m surrounding other open or semi-enclosed spaces of zone 1 and .
- (c) Airlocks.

5.6.2.10 Ventilation

Ventilation inlets and outlets for spaces required to be fitted with mechanical Ventilation shall be located such that according to the International Convention on Load Lines, they will not be required to have closing appliances.

Any ducting used for the ventilation of hazardous spaces shall be separate from that used for the ventilation of non-hazardous spaces. The ventilation shall function at all temperatures and environmental conditions the ship will be operating in.

Electric motors for ventilation fans shall not be located in ventilation ducts for hazardous spaces unless the motors are certified for the same hazard zone as the space served.

Ventilation fans shall not produce a source of vapour ignition in either the ventilated space or the ventilation system associated with the space;

Ventilation fans and fan ducts, in way of fans only, shall be of non-sparking construction.

The ventilation system shall be of a mechanical exhaust type, with extraction inlets located such as to avoid accumulation of vapour from leaked fuel.

5.6.2.11 For Fuel preparation spaces

Fuel preparation spaces shall be provided with an effective mechanical forced ventilation system of extraction type. During normal operation the ventilation shall be at least 30 air changes per hour.



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

The number and power of the ventilation fans shall be such that the capacity is not reduced by more than 50% if a fan with a separate circuit from the main switchboard or emergency switchboard or a group of fans with common circuit from the main switchboard or emergency switchboard is inoperable.

5.6.2.12 Provisions for ducts and double wall pipes

Ducts and double wall pipes containing fuel piping shall be inerted with N₂ gas. Suitable leakage detection and Gas detection system to be provided for detection of leakage in annulled space of double walled pipes.

The inlet opening shall be fitted with a suitable wire mesh guard and protected from ingress of water.

5.6.2.13 Electrical installations

Electrical equipment or wiring shall not be installed in hazardous areas unless essential for operational purposes or safety enhancement.

Where electrical equipment is installed in hazardous areas, it shall be selected, installed and maintained in accordance with IEC standards or other standards at least equivalent to those acceptable to the Class.

The lighting system in hazardous areas shall be divided between at least two branch circuits. All switches and protective devices shall interrupt all poles or phases and shall be located in a non-hazardous area.

The onboard installation of the electrical equipment units shall be such as to ensure the safe bonding to the hull of the units themselves.

5.6.2.14 Control, monitoring and safety systems

5.6.2.14.1 Following guidelines are to provide for the arrangement of control, monitoring and safety systems that support an efficient and safe operation of the fuel installations:

- (a) The Control system for engine fuel supply system and external fuel supply system (such as system valves, tank valves, tank alarms, transfer pumps, ship shore link, etc) shall be interfaced and also with ships Alarm monitoring system.
- (b) the control, monitoring and safety systems of the methanol installations shall be arranged such that there is not an unacceptable loss of power in the event of a single failure;
- (c) a fuel safety system shall be arranged to close down the fuel supply system automatically, upon failure in systems as described in table 1 and upon other fault conditions which may develop too fast for manual intervention;



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

(d) the safety functions shall be arranged in a dedicated fuel safety system that is independent of the fuel control system in order to avoid possible common cause failures; this includes power supplies and input and output signal;

(e) the safety systems including the field instrumentation shall be arranged to avoid spurious shutdown, e.g. as a result of a faulty vapour detector or a wire break in a sensor loop; and

(f) All valves in methanol fuel supply and transfer system shall be remotely operated from separate Control station in ECR. Actuation of valves of methanol system (Pneumatic type/Hydraulic type) shall be indicated. For methanol cargo, the transfer system shall be provided in WH along with local control system.

5.6.2.14.2 General provisions

Suitable instrumentation devices shall be fitted to allow a local and a remote reading of essential parameters to ensure safe management of the whole fuel equipment including bunkering.

Liquid leakage detection shall be installed in the protective cofferdams surrounding the fuel tanks, in all ducts around fuel pipes, in fuel preparation spaces, and in other enclosed spaces containing single walled fuel piping or other fuel equipment.

The annular space in a double walled piping system shall be monitored for leakages and the monitoring system shall be connected to an alarm system. Any leakage detected shall lead to shutdown of the affected fuel supply line in accordance with table 1.

At least one bilge well with a level indicator shall be provided for each enclosed space, where an independent storage tank without a protective cofferdam is located.

A high-level bilge alarm shall be provided. The leakage detection system shall trigger an alarm and the safety functions in accordance with Table 1.

5.6.2.15 Provisions for bunkering and fuel tank monitoring

(a) Level indicators for fuel tanks

Each fuel tank shall be fitted with closed level gauging devices (Radar type), arranged to ensure a level reading is always obtainable and unless any necessary maintenance can be carried out while the fuel tank is in service, two devices shall be installed.

(b) Overflow control

Each fuel tank shall be fitted with a visual and audible high-level alarm. This shall be able to be function tested from the outside of the tank and will be common with the level gauging system (configured as an alarm on the gauging transmitter), but shall be independent of the high-high-level alarm.

An additional sensor (high-high-level) operating independently of the high liquid level alarm shall automatically actuate a shut-off valve to avoid excessive liquid pressure in the bunkering line and prevent the tank from becoming liquid full.



(c) Provisions for bunkering control

Bunkering control shall be from a safe remote location. At this safe remote location:

- (i) tank level shall be capable of being monitored;
- (ii) the remote-control valves shall be capable of being operated from this location; closing of the bunkering shutdown valve shall be possible from the control location for bunkering and from another safe location; and
- (iii) overfill alarms and automatic shutdown shall also be indicated at this location.

If the ventilation in the ducting enclosure or annular spaces of the double walled bunkering lines stops, an audible and visual alarm shall be activated at the bunkering control location.

If fuel leakage is detected in ducting enclosure or the annular spaces of the double walled bunkering lines, an audible and visual alarm and emergency shutdown of the bunkering valve shall automatically be activated.

(d) Provisions for gas detection

Permanently installed gas detectors shall be fitted in:

- (i) all ventilated annular spaces of the double walled fuel pipes;
- (ii) machinery spaces containing fuel equipment or consumers;
- (iii) fuel preparation spaces;
- (iv) other enclosed spaces containing fuel piping or other fuel equipment without ducting;
- (v) other enclosed or semi-enclosed spaces where fuel vapours may accumulate;
- (vi) cofferdams and fuel storage hold spaces surrounding fuel tanks;
- (viii) airlocks; and
- (ix) Ventilation inlets to accommodation and machinery spaces, if required, based on the risk assessment.

An audible and visible alarm shall be activated at a fuel vapour concentration of 20% of the lower explosion limit (LEL). The safety system shall be activated at 40% of LEL at two detectors.

For ventilated ducts and annular spaces around fuel pipes in the machinery spaces containing methyl alcohol-fuelled engines, the alarm limit shall be set to 20% of LEL.

The safety system shall be activated at 40% of LEL at two detectors.

Audible and visible alarms from the fuel vapour detection equipment shall be located on the navigation bridge, in the continuously manned central control station, safety centre and at the control location for bunkering as well as locally.

(e) Provisions for fire detection

Fire detection in machinery space containing methyl alcohol engines and fuel storage hold spaces shall give audible and visual alarms on the navigation bridge and in a continuously manned central control station or safety centre as well as locally.



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

(f) Provisions for ventilation

Any loss of the required ventilating capacity shall give an audible and visual alarm on the navigation bridge, and in a continuously manned central control station or safety centre as well as locally.

(g) Provisions on safety functions of fuel supply systems

If the fuel supply is shut off due to activation of an automatic valve, the fuel supply shall not be opened until the reason for the disconnection is ascertained and the necessary precautions taken. A readily visible notice giving instruction to this effect shall be placed at the operating station for the shut-off valves in the fuel supply lines. If there is shutdown of fuel supply system due to an alarm the engine shall not be stopped and there should be immediate switch to LSHFSD as fuel.

If a fuel leak leading to a fuel supply shutdown occurs, the fuel supply shall not be operated until the leak has been found and dealt with. Instructions to this effect shall be placed in a prominent position in the machinery space.

A caution placard or signboard shall be permanently fitted in the machinery space containing methyl/ethyl-fuelled engines stating that heavy lifting, implying danger of damage to the fuel pipes, shall not be done when the engine(s) is running on methanol.

Pumps and fuel supply shall be arranged for manual remote emergency stop from the following locations as applicable:

- (i) navigation bridge;
- (ii) cargo control room;
- (iii) onboard safety centre;
- (iv) engine control room;
- (v) fire control station; and
- (vi) adjacent to the exit of fuel preparation spaces.

Table 1: Monitoring of methyl alcohol supply system to engines

Parameter	Alarm	Automatic shutdown of tank (valve(s) referred to in 9.6.2 MSC.1/Circ.1621	Automatic shutdown of master fuel valve (valve(s) referred to in 9.6.3 MSC.1/Circ.1621	Automatic shutdown of bunkering valve	Comments
High level fuel tank	X			X	
High level fuel tank	X			X	
Loss of ventilation in the annular space in the bunkering line	X			X	
Gas detection in	X			X	



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

Parameter	Alarm	Automatic shutdown of tank (valve(s) referred to in 9.6.2 MSC.1/Circ.1621	Automatic shutdown of master fuel valve (valve(s) referred to in 9.6.3 MSC.1/Circ.1621	Automatic shutdown of bunkering valve	Comments
the annular space in the bunkering line					
Loss of ventilation in ventilated areas	X				
Manual shutdown				X	
Liquid methyl/ethyl alcohol detection in the annular space of the double walled bunkering line	X			X	
Vapour detection in ducts around fuel pipes	X				
Vapour detection in cofferdams surrounding fuel tanks. One detector giving 20% of LEL	X				
Vapour detection in airlocks	X				
Vapour detection in cofferdams surrounding fuel tanks. Two detectors giving 40% of LEL, 1)	X	X		X	



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

Parameter	Alarm	Automatic shutdown of tank (valve(s) referred to in 9.6.2 MSC.1/Circ.1621	Automatic shutdown of master fuel valve (valve(s) referred to in 9.6.3 MSC.1/Circ.1621	Automatic shutdown of bunkering valve	Comments
Vapour detection in ducts around double walled pipes, 20% of LEL	X				
Vapour detection in ducts around double walled pipes, 40% of LEL, 1)	X	X	X		Two gas detectors to give min.40% of LEL before shutdown
Liquid leak detection in annular space of double walled pipes	X	X	X		
Liquid leak detection in engine-room	X	X			
Liquid leak detection in fuel preparation space	X	X			
Liquid leakage detection in protective cofferdams surrounding fuel tanks	X				

5.7 Calorifier



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

Two (2) no calorifier with One working One standby arrangement electric powered water heater shall be provided.

The calorifier shall be equipped with el. heating element with all safety cut outs. Capacity of tank shall be approx. 650 litre. Two (2) no hot water circulating pumps to be provided for transferring hot water to accommodation.

5.8 Cooling Water Preheater

One (1) electric cooling water FW pre-heater shall be provided for the Main engines in accordance with Maker's recommendations.

5.9 Dirty Oil / Sludge pump

One (1) no sludge pump with capacity max. 2.5 m³/h – single speed shall be provided. Sludge pump to have discharge to IMO standard flange on deck. One no sludge tank shall be arranged in double bottom in engine room.

The sludge pump also to serve as stripping pump for fuel oil tanks.

5.10 L.O. Transfer Pump.

One (1) nos Lub oil transfer pump shall be installed. Cap.: approx. 3 m³/h - 2 bar, el. motor.

One (1) no lub. oil separator, self cleaning automatic shall be installed.

The separator shall be of automatic self cleaning type with electric heater and separate electric driven supply pump.

Capacity shall be according to main engine manufacturer's recommendations. Automatic change over between engines shall be arranged.

5.11 RO Plant

The vessel shall have a fresh water generator capable to making 15 tons per day on reverse osmosis principle. Control and regulators shall be arranged according to main engine manufacturer's recommendations. The fresh water generators shall be arranged for delivery to the fresh water tanks, via dolomite filter / water softener etc. The product shall be potable water. One (1) U.V Sterilizer and mineraliser of suitable capacity shall be installed.

5.12 Domestic FW and SW system

Two (2) freshwater and Two (2) sea water pressure pumps with one working and one standby arrangement, self-priming centrifugal shall be installed in the bow thruster room. The capacity of each pump shall be 5 m³/h at 40 mwc. The pumps shall be arranged for auto start-stop operation in association with Hydrophore pressure tanks.



5.13 Cooling System

5.13.1 Sea Water Cooling System:

The Sea main pipes across the sea chest serving the cooling system shall be fabricated of CuNi 90/10 and all other SW cooling system shall be fabricated of MS SCH80, duly galvanised. The pipes shall be fitted with weld on / slip on flanges to suit the respective joining configuration

Pipes below ND40 shall be fitted with bronze compression ring fittings. Valves shall be cast iron with non-ferrous internal and spindles. Butterfly valves shall be used to the greatest possible extent. Valves below ND40 shall be of gun metal. Valves fitted on ship side shall be of nodular cast iron or cast steel. Chemical dosing system for sea water system shall be arranged. Pumps for seawater to have housing and impeller of NiAl Bronze and shaft of stainless steel. The electric driven pumps shall be equipped with DOL / Star delta / soft starters depending on the rating of the motors as defined electrical section. Permanent Backflush arrangement shall be included.

5.13.2 Fresh Water Cooling System

Pipes general shall be seamless steel with mild steel flanges welded on, or coupling type. Piping below ND40 shall be fitted with compression ring fittings. Valves general shall be cast iron with non-ferrous internal and spindles. Valves below ND40 shall be of gun metal. The cooling fresh water temperature at cooler outlet side shall be automatically controlled by temperature control valve

Butterfly valves shall be used to the greatest possible extent.

5.14 Starting Air Compressors

Two (2) sets of starting-air compressor, Air cooled and electric driven, direct coupled type, shall be installed onboard. The capacity of each unit is to be approx. 32 m³/h at 30 bar. The compressors shall be direct driven by 415V, 3 phase 50Hz electric motor through a flexible coupling.

Compressor and motor shall be mounted on a common skid/foundation with resilient mounting.

Air compressors shall have automatic start/stop with pre selection switch.

5.15 Starting Air Receivers

Two (2) main starting air receivers, each with sufficient volume at 30 bar in accordance with class requirement shall be installed in the engine room. The receivers shall be of all welded steel construction with necessary fittings such as safety valves, drain valves, etc.



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

5.16 Service Air Compressor

One (1) service air compressor, suitable capacity at 7 bar inbuilt with air receiver shall be installed.

Working air shall be back-up supplied from starting air system by means of reduction valve 30 - 7 bar.

Approximately total number of Ten (10) outlets for working air shall be arranged at various locations

5.17 Oily Bilge Separator

One no. oily bilge separator of 1.00 m³/hr capacity complying with latest MARPOL regulations shall be installed in the engine room. The separator shall be fitted with automatic 15 ppm alarm with bypass arrangement. The Oily bilge separator shall meet MEPC 107 (49).

5.18 Sewage Treatment Unit

The sewage treatment unit, gravity type, USCG type II compliant Aeration type. Sufficient for an accommodation of 60 persons as per MEPC 227 (64) requirement, shall be installed in the engine room. The unit shall be suitable for marine environment and complete with built-in collection tank by gravity feed, level alarms, controls and a discharge pump.

- 1 no sewage tank as hull tank
- 1 no Sewage transfer pump
- 2 no aeration blowers

Two (2) Sewage discharge pump shall be arranged for discharge to deck PS and SB with IMO flange and overboard below water line.

Grey water from washstands and scuppers to discharge to sewage tank or directly overboard.

5.19 Lifting Equipment

Trolley I-beams with SWL of 2 tons, for removal of pistons/liners shall be arranged above Main engines, fitted with trolley and chain hoist of adequate size. Sufficient trolley beams for spare parts transport shall be arranged with routing up to engine room spare hatch.

Lifting lugs suitable for use of chain blocks are shall be fitted above main equipment and pumps

5.20 Minor Tanks

The independent tanks for various systems as required shall be sited in the engine room/elsewhere as necessary and arranged with all necessary filling, drain and outlet connections, air pipes, manholes, level indicators etc.

5.21 Floor Plates, Handrails and Gratings



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

Ladders and gratings shall be furnished to provide adequate access to equipment; handrails and stanchions being fitted as required.

- Mild steel checkered floor plates shall be fitted in the following compartments:
Engine room, steering compartment and bow thruster room, cargo machinery spaces around all equipment.
- Floor plates shall be supported on angle steel supports and shall be of removable for access to tank tops and provided with lifting holes.



CHAPTER 6 PIPING SYSTEM

6.1 General

All piping systems shall be installed in such a way that satisfactory functioning of the installations shall be possible to the approval of CLASSIFICATION SOCIETY and PURCHASER's Representative. They shall be installed together with all fittings such as flow control valves, cocks, filters, pressure gauges, thermometers, etc. according to the standard marine practice.

The requirements of the CLASSIFICATION SOCIETY and Statutory body are to be met where applicable.

The design and lay-out of the piping system, material, installation and testing shall meet relevant rules of the Class and Regulations.

All pipes shall be of manageable length and properly arranged for easy normal maintenance.

Pipelines to run as directly as practicable with a minimum number of bends and sufficient joints for easy access and removal.

Pipes shall be adequately supported to prevent undue vibration. All systems shall be tested prior to use or fill up of these systems as per class requirements.

Oil piping shall be kept away from hot surfaces as possible and shall not pass above or below the switchboard.

The pipes shall be carefully clipped and where necessary fitted with drain plugs and bleeding valves.

All piping shall be marked with coloured bands to denote the nature of fluid or gas passing through it. Where required for their duty flexible pipe connections shall be used.

All Skin fitting valves fitted to the hull shall be of approved type and certified by CLASSIFICATION SOCIETY. Valves, Extended spindles shall be provided for the valves located in inaccessible positions.

6.2 Material (Piping and valves)

The materials in piping systems are to be suitable for the medium and service the system is intended.

The pipelines to be constructed in the following materials:

SW main piping	:	Cu. Nickel (90/10)
SW cooling	:	Seamless steel Sch 80 duly galvanised
FW cooling	:	Seamless steel Sch 40
FO system	:	Seamless steel Sch 40
LO system	:	Seamless steel Sch 40
Starting air/working air	:	Precision steel tubes



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

Instrument air	:	Copper
Domestic/sanitary FW	:	Certified plastic (CPVC) Piping meeting the smoke & toxicity criteria specified in Annex 1, Part 2 of IMO Resolution MSC.61 (67) may be installed in concealed spaces in accommodation, service & control space. Pipes shall have safe potable drinking water certification
Sanitary discharge piping	:	Certified Plastic pipes (CPVC) above main deck Piping meeting the smoke & toxicity criteria specified in Annex 1, Part 2 of IMO Resolution MSC.61(67) may be installed in concealed spaces in accommodation, service & control space. Galvanized Carbon steel pipes Sch 80 below Main deck and in exposed areas
Bilge	:	Galvanised steel Sch 80
Ballast	:	Galvanised steel Sch 80
Fire and deck wash	:	Galvanised steel Sch 80
Hydraulic piping	:	Precision steel tubes, Stainless steel 316

6.3 Sea Water Cooling Systems

Arrangement for draining and venting of the cooling water piping shall be fitted. Pipe joints to be flanged or couplings of approved type, below ND40 to be fitted with sea water resistant bronze compression ring fittings.

Butterfly valves to be used to the greatest possible extent.

Valves to be suitable for Cu.Ni. (90/10) systems, and to be of sea water resistant material. Valves fitted on the shipside to be of nodular cast iron or cast steel.

Arrangement for dosing additives into the sea chests to be provided.

6.4 Fresh Water Cooling System

Pipes in general to be seamless steel. Pipe joints to be mild steel flanges welded on or couplings of owners approved type, piping below ND40 to be fitted with compression ring fittings. Valves in general to be of cast iron with non-ferrous internal and spindles. Valves below ND40 to be of gun metal. Butterfly valves to be used to the greatest possible extent.

6.5 Fuel Oil System

Pipes general to be seamless steel. Pipe joints to be mild flanges welded on, below ND40 to be precision steel tubes with compression ring fittings. Valves general of cast iron with internal and spindles of non-ferrous material. Valves below ND40 to be of gun metal.

6.6 Workmanship



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

For Cu. Nickel (90/10) pipes, flat steel clamps with linings to be applied. For steel pipes galvanized round bar steel clamps to be used.

Lub oil pipes, fuel oil pipes and pressure air pipes to be cleaned thoroughly in accordance with the engine maker standard.

Testing, cleaning and flushing procedures for FO, LO and hydraulic pipes to be according to the NAS cleaning standard required by OEM.

Where necessary, the pipe lines to be equipped with expansion joints or to be laid with expansion bends. Where fuel oil pipe and lub oil pipe are laid on hot areas, screens to be arranged. Possibility to drain off pipelines exposed to frost to be provided.

Air pockets to be eliminated. If unavoidable air vent valves with plugs to be provided. All pumps shall be fitted with pressure gauges on inlet/outlet side. Inlet/outlets of coolers to be fitted with thermometers.

Inlet/outlets on SW and FW side of coolers to be fitted with connections for diff. manometers.

Valves

Butterfly valves to be used wherever practical.

Butterfly valves applied to be of "Lugs" type where nothing else is specified.

Marking

All operable valves, valve chests, pumps, tanks, machinery, starters, armatures etc. to be marked with engraved brass signs, in the English language.

Colour coding of pipes

All pipes to be fitted with color code as per ISO 14726 with flow code labels showing medium and flow direction.

6.7 Fuel Oil System (MDO)

6.7.1 General

The ship to be arranged with a fuel oil system based on fuel oil according to ISO 8217 for the Main generator sets engines, emergency set engine.

The main gen. set engines fuel oil system to be divided into two independent systems and to have fuel supply from either of the service tanks.

Two (2) no's Service tanks and one (1) no. Settling tank to be arranged with drain pots.



The tanks to be equipped with waste tray, drain, overflow and oil level gauge according to Class rules. The tanks also to be equipped with high and low level alarms.

6.7.2 Fuel Oil Filling and Transfer System

Two (2) no's service- and one no. settling tank for fuel oil to be arranged. Two (2) off transfer pumps to be installed.

Capacity each: Suitable capacity @ 2 bar.

Fuel oil bunkering line shall be provided with a relief valve leading to overflow tank. Class approved drip sampling flange shall be provided at the bunkering station on port and stbd side with save all trays of suitable capacity shall be provided at bunker station and to be connected to the nearest fuel oil filling pipe.

The pumps to be of positive displacement pump and to be arranged as back-up for each other.

The transfer pumps to have suction from fuel oil storage tanks for automatic filling of settling tank and manual filling of service tanks. They should also have provision of transferring Fuel oil from Fuel oil cargo tank to settling/storage tank with non-return valve. The fuel oil tanks to be arranged with a fuel oil sampling system.

The system to include separate pipe to bottom of tanks, a self closing valve and a portable hand pump.

Fuel Oil Overflow tank to be arranged and sized in accordance with regulations.

Fuel oil pumps are to be provided with remote shut down arrangement operable from above main deck. All fuel tanks are to be fitted with pneumatic quick closing type valves fitted at the bulkhead and arranged for closing from above main deck.

6.7.3 Stripping and sampling system

The sludge pump to be utilized for stripping of fuel oil tanks.

One no. stripping system with branch lines to all fuel oil tanks to be connected to the sludge pump for discharge to sludge tank and to fuel oil separator for discharge to service tanks. (Arrangement to be according to Class rules).

6.7.3.1 Overflow tank



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

One (1) no. Fuel oil overflow tank to be arranged according to tank plan. The tank to have overflow from all fuel oil tanks. Overflow line to be provided with sight glass of brass type and also overflow alarm to be provided with an overflow alarm.

One (1) no. fuel oil overflow/drain tank to be arranged in engine room. The tank to have overflow from service to settling tank and also from storage tank to overflow tank.

6.7.3.2 Fuel Oil Purification Plant

The vessel is to be equipped with one (1) automatic self-cleaning separator for LSHFSD. The separator to have suction from respective storage tanks, FO drain/overflow tank, service- and settling tanks with delivery to service- and settling tanks.

Capacity shall be according to engine supplier's recommendations.

6.7.4 Fuel Oil Supply System

Main generator sets

Fuel oil system for Main generator set engines to be divided in two separate systems as follows:

System no. 1: Port side main gen. set engines. Suction from port service tank.

System no. 2: Starboard side main gen. set engines. Suction from starboard service tank.

Both systems to have back-up supply from opposite tank.

Each main generator set engine to have built-on fuel pump. The system to be according to engine manufacturers recommendations.

Duplex filter or similar to be arranged in the supply lines. The filter shall be arranged with water alarm and to have 100% engine consumption in back-up capacity.

Each main engines fuel oil consumption to be measured by separate Coriolis type mass flow-meters as per ISO/IEC 17025 standards at supply and return lines for all Generator engines.

The fuel consumption to be recorded and displayed in Alarm and monitoring system and to be connected to EFMS and provision for the online monitoring from shore shall be provided. The fuel oil sampling points to be provided at inlet and outlet of all generator engines.

Fuel oil system for Emergency generator engine

The generator set to be located in a separate room and to have service tank for Fuel oil with a capacity according to class society.

Fuel oil system to be designed according to supplier's recommendation. Duplex filter or similar to be arranged in the supply line.



MOB-boat (FRC)

FO filling station at MOB-boat to be arranged on P&S.

6.8 Lubrication Oil System

6.8.1 Lub. Oil system - Drain and Transfer System

General

Each engine, thruster and auxiliary engine shall have its own independent lubricating oil system with engine/unit driven LO pumps. Priming arrangement of engines shall be in accordance with Maker's recommendation.

The lub oil shall be cooled by the lub oil coolers fitted on the respective units using sea water/freshwater.

Two storage tanks are located in the engine room and fitted with self-closing draw-off cocks.

Drip trays shall be fitted under the cocks.

One electric motor driven lub oil transfer pump shall be provided for filling and emptying engines as per Engine OEM recommendation.

The built-in sludge and dirty oil tanks shall be provided in the aft engine room. One electric driven dirty oil pump shall be provided for draining the tanks.

Loose tanks of adequate capacity with air, filling and sounding pipes and suction arrangement shall be fitted for storing each grade of oil / hydraulic oil used for the machinery on board.

Independent lubrication oil system shall be provided for each of the following equipment:

- Main DG set
- Thrusters

DG Sets & Thrusters shall have its own independent lubricating oil system with engine/unit driven LO pumps. Priming arrangement of engines shall be in accordance with Maker's recommendation.

The lub oil shall be cooled by the lub oil coolers fitted on the respective units using sea water/freshwater as per OEM std.

The Lubrication purification & transfer shall be as under:

There shall be two tanks – one used oil tank and one purified oil tank. Purifier takes the oil from used oil tank and sends back to the same tank till a level of purification is reached. Then the oil can be transferred to purified oil tank. The lub oil transfer pump shall transfer the oil from either purified oil tank or ship's service tank to engine sump as & when required.



Two storage tanks are located in the engine room and fitted with self-closing draw-off cocks.

Drip trays shall be fitted under the cocks.

One electric motor driven lub oil transfer pump shall be provided for filling and emptying engines as per Engine OEM recommendation.

Free standing stores tanks

The tanks to be installed and located adequate for following purposes:

- One (1) min. 210 l stores tank for capstan
- One (1) min. 210 l stores tank for windlass and tuggers
- One (1) min. 210 l for general use

6.8.2 Lub.Oil System for Main Propulsion System

The system to be arranged according to manufacturer's recommendation.

Separate system for each propulsion unit to be arranged. Connection points to be arranged for separation of thrusters oil systems with portable separator filter unit.

6.8.3 Lub.Oil System for Main Generator Sets

Main generator set

The main generator set engines to have lub. oil systems built-on.

Used oil to be pumped by means of an engine built-on el. driven pump to dirty oil tank as per OEM standard.

If electric priming pumps are required, two of these are to be supplied from emergency generator in case of a dead ship recovery situation.

Lub. Oil System Emergency Generator Set

The engine to have lub.oil systems built on. A hand pump for emptying the sump to the dirty oil tank to be arranged.

6.9 Cooling System

6.9.1 General

Two no's main cooling water systems to be installed in aftship.

Two no's main cooling water systems to be arranged in engine room.

The various machinery components cooling requirements to be distributed from the systems in a practical way aiming for high redundancy.



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

Seawater velocity in Cu.Nickel (90/10) pipes shall in general not exceed 2, 5 m/s.
Freshwater velocity in pipes shall in general not exceed 3 m/s.

6.9.2 Cooling system with sea water

General

Seawater pumps capacity to be based on seawater temperature of max. +32 °C.

Electrically driven seawater pumps to be of centrifugal type and provided with automatic ejector.

Pumps for seawater to have housing and impeller of NiAlBronze and shaft of stainless steel.

Corrosion pieces of mild steel to be arranged in SW pipe systems. One set of spare corrosion pieces to be delivered.

Necessary valves for system balancing purpose to be arranged.

All SW/FW heat exchangers to be of plate type with plates in titanium material. Min. 25 %fouling to be included, where nothing else is specified.

The heat exchangers to be fitted with "in-line" filter on SW inlet side.

Central FW cooling system for various equipment such as Main diesel generator engines, Air conditioning plant, Refrigeration compressors, Hydraulic power pack, Bow thrusters, , BHS compressors oil coolers, Azimuth thrusters, AFE drives etc

6.9.3 Main sea cooling systems

Each SW cooling pump to have capacity of 100% of cooling water requirement for per system.

Permanent backflush arrangement to be provided for cleaning of coolers.

Following SW cooling pumps to be installed:

- One SW cooling pumps for aftship, equipped with DOL / Star delta / soft starters depending on the rating of the motors as defined electrical section para 8.8
- One back-up SW cooling pump for aftship, equipped with DOL / Star delta / soft starters depending on the rating of the motors as defined electrical section
- Two no's SW cooling pump for engine room, equipped with DOL / Star delta / soft starters depending on the rating of the motors as defined electrical section
- One back-up SW cooling pump for engine room, equipped with DOL / Star delta / soft starters depending on the rating of the motors as defined electrical section para para 8.8
- Backup pump shall be auto standby to main SW pumps with pressure switch at discharge side.



6.9.4 Fresh Water cooling systems

General

Electric driven freshwater pumps to be of centrifugal type and to have housing of cast iron, impeller of NiAlBronze and shaft of stainless steel. Max. 1800 rpm.

Drain system for the cooling water systems in engine room area to be arranged. The system to include a drain tank, a 6 m³/h drain pump, drain lines from the cooling water systems and refilling via expansion tanks.

Main fresh Water cooling systems in aft ship

Two (2) cooling systems to be arranged in the aft ship. Each system to include cooling for the el. motor, frequency converter, hydraulic system etc. for the propulsion system.

AC-cooling units for AFE room to be cooled from FW cooling systems in aftship. Each system to include one (1) FW circulation pumps and a thermostatic valve, further a third pump to be arranged as common back-up for both systems. Crossover connection to be arranged. The thermostatic valve type to be according to supplier's recommendations.

Main fresh water cooling system in Engine room

Two (2) off cooling water systems to be arranged in the engine room. Each system to include cooling for two (2) off main generator sets and one tunnel thruster system in fore ship. One of the tunnel thruster to be connected to one of the systems, and the other tunnel thruster to be connected to the other system.

The following systems to be splitted between the two main systems as equal as possible:

- AC refrigeration condenser supplying air condition units accommodation, engine control room, switchboard room, etc.
- Tunnel thrusters
- Oil cooler hydraulic power pack(s)
- BHS compressors coolers and BHS air dryers
- Main air compressor

The following fresh water circulation pumps to be arranged:

- Two (2) no's el. driven FW circ. pump to be arranged, one for each system..
- One (1) common back-up FW circ. pump to be arranged. El. driven type.
- Main generator engines to have built-on mechanically driven FW cooling pumps

Back-up between the two cooling water systems to be arranged. The el. driven FW circulation pumps to be of centrifugal type.



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

Each system to be arranged in accordance with engine manufacturer's recommendation. Generator to be cooled from LT side-.

Low temperature circuit to be based on 36 °C delivery after thermostatic valve. Thermostatic valves for LT systems to be in accordance with supplier's recommendations. Each main generator's diesel engine to be equipped with stand still heating.

Heat Exchangers

The heaters and coolers shall be provided with automatic temperature control.

(1) Design condition of the central fresh water coolers in Engine room shall be as follows.

Number of sets : 2 sets, 100% capacity each
Cooled fluid : Fresh water (36 °C at cooler outlet)
Cooling medium : Sea water (32°C at cooler inlet)
Cleanliness factor : 85%

Note: The capacity and sizing of coolers shall be derived as per 100% sea load condition of all machinery being served.

(ii) Number of sets: 2 sets, 100% capacity each in Aft thruster room

Cooled fluid : Fresh water (36 °C at cooler outlet)
Cooling medium : Sea water (32°C at cooler inlet)
Cleanliness factor : 85%

Note: The capacity and sizing of coolers shall be derived as per 100% sea load condition of all machinery being served.

6.10 Air Pressure System

6.10.1 Starting air system and manoeuvring system

Two (2) no's Air-cooled starting air compressors, piston type, to be installed.
Capacity: according class rules.

Two (2) no's air bottles with capacity according to class rules, to be installed.
(Approx. 1000 l capacity for each air bottle) with drainage valves.

Air pressure of 30 bar to be applied as starting air for the main generator engines.

Emergency air reservoir of suitable capacity to be provided.

One of the compressors shall be supplied with alternate source of power from emergency generator.

6.10.2 Working air system in engine room etc.

One (1) no. working air / instrument air compressor, screw type, to be arranged.
Compressor capacity min 15 m³/h - 7 bar. Air dryer to be provided.



Air bottle capacity 750 l.

Back-up from starting air system by means of reduction valve 30 > 7 bar.

Working- and instrument- air- systems to be separated under normal working conditions(separate pipe systems after air bottle).

Three (3) no's outlets for working air to be arranged in the engine room, One (1) off outlet in workshop,

Two (2) no's outlets in cement tank room, One (1) outlet in cargo pump room, One (1) off outlet in bow thruster room and One (1) outlet in main propulsion room and One (1) in Emergency generator room.

6.10.3 Working air system for deck etc.

A total number of ten (10) outlets for working air to be arranged. Three (3) no's outlets for working air to be arranged in the engine room, One(1)outlet in workshop, Two (2) no's outlets in cement tank room, One(1 outlet in cargo pump room, One (1) outlet in bow thruster room and One(1) outlet in main propulsion room and One (1) in Emergency generator room.

6.10.4 Instrument air

Instrument air be supplied from working air system and with back-up from starting air systemby means of reduction valves 30 - 7 bar.

One (1) air refrigerated type air dryers and one (1) 60 l instrument air buffer tank to be installed. The airdryers to be arranged as back-up for each other.

6.10.5 Breathing air compressor

Compressor approved for recharging breathing device. One (1) high pressure compressor with accessories suitable for filling the cylinders of breathing apparatuses shall be installed on board with power supply from emergency switch board. The capacity shall be at least 75 litres/minute and air intake shall be equipped with a filter.

6.11 Exhaust Systems And Air Intakes

Exhaust pipe and silencers

Exhaust pipes to be made of welded steel pipes and bends, and to be equipped with expansion compensators where necessary according to manufacturer's recommendations.

All exhaust pipes to be laid to the top of the funnel, and directed 45° outwards and aft wards. Penetration in funnel top plate to have watertight collar. The pipes to be



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

clamped in such a way that they can freely expand. The exhaust pipes to be of stainless steel above funnel top plate. Special attention to suspension of pipes and adjoining accommodation areas to be given.

In exhaust pipe from diesel engines to be arranged spark arrestors and silencers with minimum 35 dB attenuation. The exhaust pipes and the silencers to be resiliently suspended.

The exhaust pipes to be insulated with mineral wool.

Insulation thickness to be 50 mm for the main generator set engines and 40 mm for the emergency generator set engine. The insulation to be covered with galvanised steel lining, and stainless steel pop rivets.

Drain from exhaust pipes to be arranged.

Exhaust pipes from all the engines shall be insulated by rock wool with adequate thickness and fastened by galvanised steel wire, covered with close weave glass cloth and finished with 1.50mm thick galvanised steel sheet.

6.12 Sea Chests

Two sea inlets to be arranged in engine room, one low suction and one high suction. Sea inlets to be connected to each other via valves and cross-over pipe.

The sea inlet valves to be double butterfly valves of nodular cast iron or globe valve of cast steel before strainer. The sea inlet filters to be of cast iron, rubber lined, with strainer of stainless steel.

Marine Growth prevention System (MGPS) for the sea chests.

Sea water inlet chests, two in each engine room, two for Fi-Fi and One sea chest for after machinery room and emergency sea chest to be provided, integral with Vessel's structure, each sufficient for total required water sea water capacity. Each inlet chest is to be provided with galvanised gratings. The two sea chests are to be inter-connected with isolating valves as necessary. Emergency fire pump shall have independent sea chest outside engine room.

The gratings shall not protrude below the hull and shall be secured with stainless steel nuts and bolts. The inlet chests are to be provided with vent pipes to the prescribed height above the free board deck. Sacrificial anodes shall be fitted in the sea chests.

Suitable blanks and fittings shall be provided for "In Water Survey" meeting IWS notation.

A compressed air connection with blow through shall be fitted to each of the sea chest grating.



6.13 Bilge and Ballast System

The bilge pumping system shall be capable of pumping and draining any compartment. Efficient means are to be provided for draining all tank tops and other watertight flats.

Bilge and Ballast systems are to be kept separated.

All watertight compartments other than tanks carrying other liquids and ballast are to be connected to the bilge system. A cross connection is to be provided between the bilge and GS/Fire systems at the engine room, to enable the Bilge/ General Service pump to interchange between each other. Suction pipes are to be led to the combined bilge suction distribution pieces. Mud boxes are to be provided to all bilges in the engine room and the tail pipes are to be as straight and vertical as possible. Strainers are to be fitted at the suction end of the bilge pipes.

Bilges are to be fitted with high level alarms in accordance with rules.

The ballast tanks are to be connected to the ballast system served by the ballast pumps in the engine room with a cross connection. The pumps shall be able to transfer the ballast from tank to tank or to discharge overboard or to main deck discharge connection.

All distribution boxes and manually operated valves in the system shall be in easily accessible positions. Provision shall be made to prevent the compartment served by any bilge suction pipe being flooded in the event of the pipe being damaged by collision or grounding in any other compartment.

An ejector system to be provided to drain the chain locker and forepeak stores.

All bilge suctions will be provided with strainers, LAH and non-return valves.

Overboard discharges are to be led through the oily bilge separator or to the bilge water holding tank in accordance with Annexe I of MARPOL 73 / 78. Shore discharge from the oily bilges to be arranged through a standard flange on main deck.

Emergency bilge arrangement to be provided as per class rules.

All main tanks extending to bottom, including the Skeg to have 40mm diameter screw fittings, stainless steel docking plugs fitted at their lowest point as far as practicable.

6.14 Air Vent, Filling and Sounding pipes



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

All the tanks and void spaces are to be fitted with vent pipes at the highest level practicable. Where tanks are not fitted with overflow pipes, the air vent diameter is to be not less than 125% of the filling pipe diameter. When air pipes extend above the freeboard deck, the height of flooding point above the deck to be in accordance with Load line regulations.

Draft-soundings: The vessel to be provided with remote draft-sounding forward and aft.

Piping below closing valve to be in heavy wall-thickness galvanized steel material.

Sewage tank and smaller tanks in engine room double bottom to be arranged with only manual sounding pipes. Lub. oil, hydraulic oil, stores tanks and fuel oil day and settling tanks to have vertical level gauges.

Fuel oil tanks shall be arranged with common overflow/air pipe arrangement leading to overflow tank. The fuel oil tank air pipes to be fitted with corrosion resistant flame screen to the approval of Class. The vent pipes are to be arranged to provide adequate drainage under normal circumstances.

All tanks and void spaces are to be provided with effective means of sounding. Striking pads are to be fitted under the sounding pipes in all tanks and compartments.

When sounding pipe for the double bottom tank terminates below the deck, short sounding cock with quick acting, self-closing arrangement is to be provided and an test cock below the valve. The Fuel oil day tanks and lub-oil tanks are to be fitted with gauge glasses of flat glass type with self-closing cocks at both ends.

The filling station for the fuel oil tanks shall be located on the main deck port and starboard. Save-all trays shall be located under all the manifolds with drains. The filling pipes shall extend above the deck and fitted with blank flange. International standard coupling flange shall be provided for the fuel and lub oil filling connections. Save-alls shall be arranged around each fuel, lub oil, waste oil, crankcase vents, which terminate on deck in compliance with applicable regulations.

Remote tank gauging with continuous level indication to be provided for all Fuel oil Tanks, Fresh Water Tanks, Ballast Water Tanks, all cargo tanks. Remote tank gauging shall be suitable to care of the trim and heel corrections. High level alarms for all fuel oil tanks and low level alarms for Fuel oil Settling & Service tanks to be able to set from the remote tank gauging system. Additionally, all cargo tanks will be provided with one (1) no. manual sounding pipe with relevant sounding tables.

6.15 Environmental Protection Equipment

(a) **Anti-pollution Dispersant System**



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

One no Hull integrated dispersant tank of capacity . 10 m³ , one no common pump and one spray boom on each side of the vessel to be arranged. Storage racks to arranged for booms when not in use. System to allow for use of neat and dilute dispersant (Two sets of nozzles)

(b) Save Alls / Deck Drainage system:

Vessel to be provided with save alls / coamings from deck areas which are exposed to oil spill.

Following areas to be covered as a minimum:

- Cargo loading / discharge stations
- Ventilation heads for oil tanks
- Dedicated areas for washing operations on deck

Save-alls / coamings are to be provided with a draining system leading to a below decks drainage tank of adequate capacity.

Transfer from tank via bilge pump to bilge tank then via Oily Water Separator

One dedicated SOPEP lockers to be provided with items as per SOPEP plan

6.16 Scuppers and Discharge, Sanitary Piping

Scuppers sufficient in number and size are to be fitted, if necessary in all-weather exposed decks of deckhouse and led to the lower deck. Scuppers from the main deck shall be led overboard. Scupper pipes in floors in sanitary spaces, galley, passages etc. are to be provided with a water lock and led to the main drain and overboard.

The drains from the other scuppers and wash basins located below the main deck and hospital/treatment room shall be led to the sewage holding tank. Overboard discharges at the shell plating shall be fitted with non-return valves having positive closing arrangement. The valves shall have open-shut indicator fitted.

The discharges from the water closets and the scuppers within the water closets shall be led to the sewage treatment plant direct and with a by-pass arrangement for direct overboard discharge or to the holding tank. One sewage holding DB tank is arranged in the forward thruster room or in engine room and shall be connected to the sewage pump for shore discharge. Grease trap shall be provided for drains from galley.

The sewage shall be treated with an approved type sewage treatment plant. The overboard discharge from the treatment plant shall be fitted with an approved type valve fitted at the shell and arranged for operation from above the main deck. One standard sewage discharge connection as per MARPOL shall be fitted on the forecastle deck for shore discharge using the sewage transfer pump.



6.10 Fire-fighting and General Service system

The combined firefighting and deck washing system is to be supplied from the bilge pump and fire pumps. The farthest and highest hydrant shall be minimum required pressure as per rules.

Fire main systems shall be provided with drains, circulation loops or other means of cold weather protection. The place and the number of fire hydrants and the diameter of the piping shall be in accordance with the requirements of Classification Society and SOLAS. Two international shore connection couplings complying with Regulations are to be provided, one on either side of the vessel.

Materials readily rendered ineffective are not to be used in the fire system. The valves and hydrants that incorporate resilient seating are to be subjected to standard fire test to the approval of Class.

Each hawse pipe is to be connected to the system for flushing the anchor chain.

6.12 Sanitary Fresh and Sea water system

The fresh water storage tanks shall be filled from filling stations on the main deck.

The fresh water generator shall discharge clean water to forward double bottom tanks.

The forward freshwater tanks shall be used for ship's use.

The fresh water requirement for the wash places, galley, laundry, engines, etc., shall be met by one 500-lit Hydrophore tank working with a pressure range of 3 to 4 bar. The tank shall be filled by a FW hydrophore pump with standby pump with auto start-stop arrangement.

One UV-steriliser, mineraliser and micro filter shall be fitted to the potable water supply line.

One (1) Hot water system shall be fitted in the fresh water pressure system for supply of hot water to the showers, wash basins, laundry and galley. The hot water line shall be insulated and arranged for circulation through a hot water circulating pump.

Sea water shall be arranged for the flushing of toilets through the pressure system identical to the fresh water system.

6.13 Exhaust System



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

All diesel engine exhaust gas pipes shall be made of steel, fitted with expansion bellows at the engines and shall be secured with brackets. Additional expansion joints may be required considering the length of the exhaust runs. The clamping of pipes shall permit free expansion of the pipes. The silencers shall be resiliently mounted to be free to expand.

All silencers are to be high sound attenuation with spark arrestors. Independent exhaust pipes from the diesel engines shall be led to the funnels located port and starboard sides. The exhaust pipes shall be adequately sized to reduce the back pressure.

All precautions shall be taken to eliminate heat radiation from exhaust gas pipes to the surrounding areas and exhaust fumes shall be led away from the accommodation. Necessary drains from exhaust gas pipes shall be arranged. The exhaust pipe arrangement shall be approved by the engine manufacturer.

6.14 Hydraulic System

The tunnel thrusters are to have electro hydraulic system as per Maker's recommendation meeting Class requirements.

The steering hydraulics shall be independent with power packs located in the steering gear room.

Two common hydraulic power packs one in the for'd and one in the aft shall be installed for necessary equipment. Each power pack shall have minimum of two hydraulic pumps of 50% capacity each.

6.15 EFMS System

Electronic fuel monitoring system (EFMS) shall be provided to measure flow of FO, Methanol, FW and base oil cargo. Mass flow meter duly calibrated (accuracy plus or minus 0.5%) with printer output to be provided for FO, Methanol, FW and base oil cargo. Dedicated printer shall be available for the purpose. Printer output shall include Mass, Volume, Density and Temperature. The EFMS system shall be provided with provision for online shore monitoring.

The daily fuel consumption shall be supported by record from electronic fuel monitoring system. The time for which all stored data items are retained should be at least 60 days.



CHAPTER 7 ELECTRICAL

7.1 General

The complete electrical equipment, installation and workmanship on-board shall be in accordance with the rules and regulations of the Classification Society and statutory authority applicable to this type of VESSEL. For the electrical installations, IEC standards or the latest international standards are to be followed.

All heavy electrical machinery shall be provided with Temperature class F and Insulation class B.

The relative humidity of the ambient temperature shall be considered as 70%.

All the electrical and other equipment fitted on the working open main deck shall comply with normal area requirements.

All electrical equipment shall work satisfactorily when permanently inclined athwart ships and trimmed fore and aft and roll in degrees as stipulated by CLASSIFICATION SOCIETY Rules.

The operation of all equipment shall be satisfactory under the condition of vibration and shock as would arise in normal practice.

All equipment and devices shall function satisfactorily under the voltage and frequency fluctuations as specified by CLASSIFICATION SOCIETY Rules.

All the electrical equipment shall be arranged for easy accessibility for repair and replacement.

Each control panel shall be provided with relevant drawing, wherein the fuse ratings of feeders shall be clearly mentioned.

The BUILDER shall exercise due care in design, construction and fitting out of the VESSEL to minimize noise and vibration.

Generators and associated pipe work and connections to the engines and generators to be flexible mounted and maximum care taken to reduce vibration into the hull of the VESSEL to give as low noise factor as possible.

7.2 Power Supply

7.2.1 General

The power supply in the VESSEL shall be as follows:

- 690 Volts A.C. 3 phase, 50 Hz for main propulsion and thrusters
- 415Volts, 3 Phase, 50 Hz for power consumers.
- 230Volts, 1 Phase, 50 Hz-for general lighting and power less than 3KW.
- 24V D.C. for alarms, controls, radio and navigation aids and navigation lights.
- 415/230V, 3Phase, 50 Hz, emergency generator for emergency lighting, communication, alarms.



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

Provision for shore supply connection shall be made for powering the VESSEL while the VESSEL is at harbour.

7.2.2 Main Generators

A complete load analysis for the VESSEL's various operating conditions shall be prepared by the BUILDER and submitted to the buyers & CLASSIFICATION SOCIETY for approval. The analysis shall show for each of the VESSEL's functional operating modes, including maximum power during navigation, cargo transfer modes. The analysis shall also include a tabulation of the Port loads and emergency loads.

Prior to the delivery of the VESSEL the BUILDER shall prepare and submit a final load analysis based on actual installation. The BUILDER shall ensure during any circumstances that the number and power of the generators will be able to supply all the required electrical load of the VESSEL with a margin of about 15%.

The main generators shall be continuously rated for marine duty and shall be marine synchronous type, have Class 'F', enclosure IP44 (minimum), water / air cooled, two bearings, anti-condensation heating and droop kit for parallel operation. They shall be designed for a temperature rise B, after continuous full load working, not exceeding the temperature limits specified by the Classification Society.

Four (4) diesel engine driven main alternators, each of 1368 kWe approx. capacity to meet the requirement shall be installed in the engine room.

The diesel alternators shall have automatic voltage regulators to maintain constant voltage within the permissible limits specified by classification rules, shall be arranged for continuous parallel operation for load sharing.

7.2.3 Emergency Generator

One emergency generator of suitable capacity as per class rule requirements, 415V, AC, 50 Hz shall be provided above main deck in the emergency generator room and shall be driven by an air-cooled diesel engine. The generator shall be arranged for automatic starting and connected to the emergency switchboard on failure of the main supply. The engine shall be battery started with hand hydraulic gear cranking or other means as stand by starting, all meeting the CLASSIFICATION SOCIETY requirements.

The construction of emergency generator shall meet same standards as for the main generators and CLASSIFICATION SOCIETY requirements.

7.2.4 Shore Supply Connection



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

Arrangement for connecting shore power., 415Volts,3Phase,50 Hz to the switchboard through suitable interlock shall be provided.

Shore Power supply system meeting DG Shipping (Engg) Circular 9 of 2025 dated 12.03.2025 Guidelines to be provided. Main switchboard is to be designed accordingly.

One watertight shore supply box complete with supply cable with necessary w.t. plug and socket fittings, necessary switch, fuses, voltmeter, ammeter, frequency meter and phase sequence indicator shall be provided on the main deck.

7.3 Supply and Distribution

7.3.1 Main Switchboards

One main 690V switchboard shall be installed in engine control room for power distribution.

The Switchboard shall include:

- Breakers to connect four main generators

- Synchronising panel

- Power supply to azimuth thruster motor/control systems and bow thruster motors

- Breakers to connect to transformers 690V/415V

- Power management system

One 415V Switchboard shall be installed in the control room adjacent to 690V switchboard and shall include:

- Breakers to connect to 690V Switchboard

- Shore supply

- Feeders to 415V consumers and to ESB

- Feeders to 230V switchboard

The Switchboards of metal clad, drip proof, dead front type, self-standing shall be fitted on resilient mountings. Sufficient working space shall be provided in the front and rear of the switchboard. Insulated hand rails shall be fitted in both front and rear of the switchboard.

Ingress protection of the MSB & ESB shall be IP23.

Air circuit breakers are to be of draw out type, Moulded case circuit breakers are to be plug in type.

All switchboard cubicles shall be so divided that flash over in one cubicle cannot propagate in to the adjacent cubicles.



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

All doors shall be flanged and have gaskets to prevent ingress of dirt and moisture. All doors shall be fitted with lockable type fastening with common key.

The switchboards shall have meters for the measurement of voltage, current, frequency and power, and earth leakage detection/alarm in accordance with Class rules.

The alternators shall be protected through circuit breakers of adequate capacity and shall have necessary protective circuits for under voltage, over current and short circuit. All the outgoing feeders and the shore supply, shall be protected through suitable moulded case circuit breakers. Non-essential load tripping arrangements shall be incorporated in the main switchboard in accordance with Class requirement.

The switchboards shall be partitioned into two parts, and the bus-bars in each section shall be interconnected with a Bus tie. Power supply to the consumers shall be arranged in such a way that, when one section of the switchboard is not available due to any fault, the second section shall supply power to the duplicated consumers.

The busbars shall be designed for operation of three generators simultaneously at full load.

At least 10% spare feeders shall be fitted for future use.

Small wiring shall be connected to approved type of connection strips in each cubicle. All similar circuits shall be grouped and DC & AC circuits segregated. Suitable rated terminal blocks shall be provided for the incoming and outgoing cables. These terminals shall be suitably numbered. All wiring shall be identified by permanently numbered ferrules at the terminations of all conductors. Numbering shall be given a pattern to enable identification of voltage and system.

Wherever practical, the type of components shall be standardised throughout the switchboard.

The switchboard shall be designed and installed with ample space for repairs and maintenance.

The construction and installation of switchboard shall be as per rules and they shall be fitted with all necessary alarms, fuse and switch gear.

Rubber mats shall be fitted in front and back of the switchboards.

The main switchboard shall be factory tested in presence of Owner's representative and Classification Society Surveyor.

Power Management System



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

Power Management System (PMS) to cater for paralleling and continuous operation of DG sets.

The system shall monitor the power demand and accordingly start / stops the DG to cater to demanded power.

7.3.2 Emergency Switchboard

The emergency switchboard will be installed in the emergency generator room in way of deck house.

The construction of the switchboard shall meet the requirement of the main switchboard as applicable.

The emergency switchboard will be normally fed from the main switchboard.

Emergency controller will be fitted in the switchboard for automatic starting of the emergency generator and connection to the power supply and disconnection of the main switchboard.

The emergency generator shall supply power to the emergency fire pump, one of the start air compressors, rescue boat davit, 220v transformer units, 24V rectifier units, search lights, flood lights and other emergency loads as per SOLAS regulations and 3 spare feeders.

7.3.3 Distribution Boards

Suitable number of lighting distribution boards and power distribution boards shall be provided. All the panels shall be drip proof type, sheet metal enclosed and shall be provided with suitable schematic drawings.

Group starter panels shall be provided, if found necessary.

Wherever electrical equipment is located at a distance from its distribution board, a local control panel shall be provided. The local control panel shall have necessary control switches and ammeter.

7.3.4 Transformers

Transformers are to be of the dry, natural, air cooled marine type with a temperature rise of Class F. Windings are to be treated to resist moisture, sea air and oil vapours.

Two (2) transformers, 690V/415V capacity is 900kVA approx. shall be provided.

Two (2) transformers, 415V/230V, approx. 90 kVA each, shall be provided for 230V/24V supply.

Two (2) transformers emergency, 415V/230V, approx. 15 KVA as applicable



The capacity each of transformer shall be finalised on the basis of class approved load analysis.

The transformers shall be provided with adequate venting arrangement to the satisfaction of Class.

IP rating of the transformers is to be specified and is to be minimum IP23, suitable to the location of installation.

7.3.5 Motors (To check with Electrical engineer)

In general, totally enclosed squirrel cage induction motors of marine type suitable for 3 phase, fan cooled shall be used. Motors below 1.0 kW are to be suitable for use on a single-phase, 50 HZ, 2 wire insulated system.

The motors rating generally shall be as follows:

Engine room:	IP44
In thruster room:	IP54
Thruster motors:	IP 55
Open deck:	IP56

Propulsion motors are to be IE-4 (minimum 95%) efficiency.

All motors shall be provided with waterproof terminal boxes with glands and removable cover.

In general Class 'B' insulation for small motors (up to 15 KW) and Class 'F' for large motors (above 15 KW) and continuous operation motors shall be provided.

Ammeter shall be provided on starter panel of motors having capacity 15 KW above. Also essential pump motors for DG system shall be provided with ammeter.

Intrinsically safe, Explosion-proof motors are to be fitted in locations within the designated hazardous zones.

In general, motors to be fitted with duty plates engraved stating the details of the motor. For specific equipment like fans, etc. motors shall be as supplied by the manufacturer and shall meet the rule requirements of Classification Society as applicable. All motors shall be protected through fuse/MCB, overload relay and single phasing protection.

Every starter panel shall have the load break insulator mechanically interlocked with the case door, ensuring power is off when door is opened. All outgoing cable terminations shall be located above in removable gland plate located in the base of the case thus providing ready access to terminals and glands.



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

In general, motors up to 15 kW shall be direct on line starting type and above 15 kW shall have star-delta starters. Soft starters shall be provided for large motors including thruster motors considering voltage drop during starting. Remote stops shall be provided for motors driving oil pumps, purifiers, vent fans, etc., in accordance with Classification Society requirements.

7.3.6 Battery / Rectifier units

Lead acid type accumulators of adequate numbers as per rules shall be installed for the following purpose:

- (i) Main Generator and emergency generator drive engine starting if applicable
- (ii) Navigational & communication system as independent standby supply
- (iii) Emergency transient power / lighting, control power, PC, PA, Fire Detection, H2S

The batteries shall be placed on a raised platform, in a well-ventilated box fitted with non-absorbent insulating supports and shall be secured properly to avoid any movement during sailing.

The batteries shall be of Maintenance free type of batteries.

Two battery banks for general service, alarms and Transient lighting with charger and Two battery banks for radio battery with chargers.

The controls for Azimuth Thrusters, Main Generators, Bow Thrusters shall be provided through independent UPS with AC – DC converter in accordance with OEM recommendation. Emergency or back-up supply shall be taken from ship 24 V supply through independent DC-DC converter as per Class requirement. All battery / UPS back shall be rated for 24 hrs continuous operations.

Battery chargers as per Class requirement shall be provided with necessary meters for recording the battery charging voltage, charging current and load current. The charger shall have necessary protective circuits for over current and reverse current and shall have provision for distribution of 24V D.C circuits.

One set of step down Transformer rectifier to have 24DC supply from 220V AC for navigation light panel shall be provided

7.4 Cables

7.4.1 Type

All cables shall be marine type, halogen free, constructed to IEC 92 standards with flammability criteria of IEC 332-3 / IEC 331 and approved by CLASSIFICATION



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

SOCIETY. The voltage rating of the cables shall be as per the specific requirement of the installation and in accordance with the rules of CLASSIFICATION SOCIETY.

All the power and control cables, in general, shall be of XLPE insulated, PCP/ CSP sheathed with heat resisting, oil resisting and flame retardant properties.

Cables in the E/R and open deck and main power cables shall be armoured type.

Power cables throughout the vessel shall be of 0.6/1.0 kV grade insulation for 690 & 440/415V and 250V insulation for 230V and 24V power supply. All cables, in general, have multi-core and multi-stranded construction with annealed, tinned copper conductors and having cross sectional area not less than 1.50 m² Multi single core cables in parallel may be used for high power circuits.

Cables installed in locations liable to damage during normal operation of the VESSEL shall be provided with metallic sheath.

Special cables such as compensating cables, screened cables, coaxial cables shall be used where necessary. Pair cables of minimum 250V grade insulation with copper screening shall be used for communication, alarm plant, remote control, etc.

Multi cable transit shall be used for deck / bulkhead penetrations.

7.4.2 Installation

All cables shall be installed in accordance with CLASSIFICATION SOCIETY rules. All the cable runs shall be as far as practicable straight and accessible. Cable runs shall be located as far away as practicable from spaces exposed to excessive heat, exhaust gas and moisture. Cables shall be installed on galvanised trays / hangars and shall be secured properly with metal clips with rolled edges or rubber inserts spaced suitably. Cables exposed to weather shall be secured with stainless steel hoops and buckles.

Power cables shall be bunched and clamped as per standard shipbuilding practice and sufficient clearance to be provided between the bunches as per applicable Rules or builder's standard. Sufficient clearance from the decks/bulkheads shall also be provided to permit painting.

Cables passing above main deck, tank tops, passing through decks and where ever there is a risk of mechanical damage shall be led through galvanised pipes. Conduit pipes shall be earthed and are to be mechanically and electrically continuous across all joints.

Cables passing through water tight decks and bulkheads shall be led through suitable multi-cable transits. The piercing shall be filled with approved filling material for water tightness as applicable. Allowance should be made to leave 10% spare capacity in each transit frame suitably packed with appropriate filler blocks.



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

Structural fire integrity shall be maintained at locations where cables penetrate the decks and bulkheads. Where cables pass through non water tight decks and bulkheads shall be protected by suitable coamings.

The cables in accommodation spaces, where panelling is applied shall be concealed as far as practicable. The cables shall not be embedded inside the insulation according to CLASSIFICATION SOCIETY Rules.

Cables are to enter equipment from the bottom generally unless required otherwise. Connections for cables of size 2.5mm² and upwards are to be by crimped cable sockets. All connections are to have washers, nuts and lock nuts.

Cables passing close to radio and navigation equipment shall be properly screened. As far as possible cables for automation and instrumentation shall be laid in separate trays or when laid on same channel the distance between them shall be as per the rules.

7.5 Lighting

General

The main lighting installation shall be 230 V AC system. Generally, marine type fluorescent /LED light fittings shall be used. Incandescent lamps to be used for decorative purposes in accommodation and where fluorescent fixtures are unpractical.

All the light fittings in general shall be surface mounting type and shall be of following type depending upon their location:

Spaces exposed to weather	- Water proof Type
Living quarters, wheelhouse, etc	- Non watertight type
Engine room, galley, sanitary spaces, and other wet spaces	- Splash proof Type
Battery room, paint room and within hazardous areas	- Explosion proof type
Main deck area	- Water proof type

Illumination levels in various areas shall comply with the regulations of flag rules and relevant statutory authorities as applicable to this class of VESSEL. As far as practicable the fittings shall be installed for easy maintenance.

Fixtures located in the engine room shall be fitted with anti – vibration mountings. All fixtures shall be metallic and other approved material construction.

Emergency Lights

24 V D.C system shall be used for emergency transient lighting. Shall meet to SPS 2008 & ERRV Requirements.



Lighting for Accommodation:

All the cabin and passage lights shall be of LED type. Switches and sockets in accommodation shall be of flush type. Cabins are to be fitted with light fittings at the following locations as minimum:

Deck head to give general illumination
Over mirror
Over berth (Reading light)
Over the desk
In shower and toilet compartments.

Watertight LED type fittings shall be used in the toilets and galley.

Bridge Deck is to be fitted with down lights with compact tubes and ceiling LED light fittings, spotlights with dimmer above consoles, chart table and radio station. The chart table shall be fitted with an incandescent type lamp with movable arms and dimmer.

Machinery Room Lighting:

Watertight fluorescent/LED type light fittings shall be used in the engine room for general illumination. Incandescent type lamps shall be used for tank level gauges. All the switches and sockets used shall be of watertight type.

Suitable number of flood lights shall be provided in the engine room to the satisfaction of the buyer.

Apart from the general illumination of each compartment, particular attention shall be given for adequate local illumination of such items as gauge boards, sight glasses, working table, some instrument panels, etc.

Deck Lighting

Ample illumination of the working deck area of the VESSEL shall be provided by the use of LED lamps.

Floodlights shall be arranged in such a way as not to hinder the visibility of the Master when the VESSEL is engaged in manoeuvres.

Floodlights shall be supplied from 230V emergency switchboard and controlled in Bridge consoles in suitable groups.

Illumination of open spaces and decks around the vessel to meet ISPS requirements



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

8 x 1000 W flood lights shall be fitted as minimum

One suitable high intensity over side lamp is to be installed in way of each survival craft launching station and supply is to be arranged from emergency switchboard.

Portable Lights:

Four (4) 60 watts, 230/110V maximum, portable hand lamps shall be provided with watertight socket and 8 meters flexible cable.

Sockets

15 amp (230V/1/50 Hz) switched sockets, double ganged, are to be installed in all cabins, Bridge Deck, engine room, offices, service spaces, workshop, thruster room, to BUYER approval.

On working deck:

4 nos. 230V, 16A (2P+E)

4 nos. 415V, 63A (4P+E)

2 nos. 110V, 6A

Sockets for 12 no's reefer containers shall be provided in main deck at suitable location.

7.6 Alarms/Monitoring System

All control, monitoring and alarm systems with Integrated Control and Monitoring system shall to comply with CLASSIFICATION SOCIETY and statutory body requirements meeting unattended machinery space requirements and shall be arranged with all necessary features for safe operation of the propulsion plant from bridge and machinery control desk.

One (1) wheel house control panel for control of the following:

- (a) Indication lights for clutch on/off
- (b) Emergency release
- (c) Instrument reading for system oil pressure, oil temperature
- (d) Start/stop of main pumps with running lights
- (e) Start/stop of servo pumps with running lights
- (f) Grease lubrication system
- (g) Long time towing indication
- (h) Alarm for high oil temperature in main system, high speed of hyd motor, low pressure and level of expansion system, low pressure in brake cylinders, and low level/temperature alarm on servo units.
- (i) Signal Lights
- (j) Measuring instruments for 690V system



7.6.1 Fire detection system

An electrically operated smoke detection system to be installed with smoke detectors all over the ship according class requirements.

A central announcement panel, containing the necessary electronic equipment, push buttons, switches and signal lights to be installed together with a power supply unit on the bridge. Indication of fire to be made according to Class requirements.

Manual call points to be installed near all accommodation entrance doors and engine room entrances and to be connected to the nearest zone.

7.6.2 General alarm

An integrated general alarm in combination with above FDA system to be provided and installed.

The control panel and microphone of the general alarm system to be positioned in the wheelhouse.

CO2 alarm

Fixed Fire Fighting Systems for Machinery compartment shall be provided meeting IRS class rule requirements.

Flooding detection

It shall be provided as per IRS class rule requirements

Methanol fire:

It shall be provided as applicable vide IRS class rules.

Dead man alarm

It shall be provided as applicable vide IRS class rules.

Engineer call alarm

It shall be provided as applicable vide IRS class rules.

Hospital call alarm

It shall be provided as applicable vide IRS class rules.

Refrigeration leak alarm

It shall be provided as required vide IRS class rules.

Cold room lock alarm

It shall be provided as required vide IRS class rules.

Alarm column shall be provided in engine room, thruster room and pump room.



7.7 Earthing

In general all the metal parts of electrical motors, control panels and generators, etc., unless specified by the supplier, shall be earthed as per the rules. Suitable size of conductor shall be used for earthing purpose depending upon the current capacity of the appliance. The conductor shall be properly crimped at both the ends and one end shall be connected to the earth bolt provided on the equipment, the other end to an earth bolt welded to the steel structure. Suitable washers and conductor terminals shall be used so that a reliable contact is made.

Installations where static electricity may be induced must be effectively bonded and earthed. Non-conducting mats shall be provided at the front and rear of the electrical switchboards.

7.8 Automation system

7.8.1 General

The automation shall be as per the Class notation (equivalent to DNV-E0). The following automation is for guidance only and specifies minimum requirements.

7.8.2 Maneuver Desks, Main Console, Instruments

All consoles shall be made of steel plates. The equipment shall generally be mounted on the top of the console. The consoles to have detachable covers in the front or where practicable according to arrangement.

Engine room console shall be installed in engine control room. The following equipment shall be installed in the console:

Azimuth thruster control/monitoring panel.

A necessary number of indicating lamps for aux engines.

All other necessary equipment for controlling the main engines, according to the main engine manufacturer's specification.

Push buttons for starting and stopping of main engine's aux.-and standby pumps.
Switch for selecting manual/auto for stand by pumps.

Indicating lamps for main engine's aux.- and stand by pumps running.

Push buttons for starting and stopping engine room ventilation fans. Indicating lamps for ventilation fans running.

Push buttons for remote start/stop of pumps for capstans and tugger winches. Push buttons for remote start/stop of fire pumps.



1 amplified telephone

1 alarm plant (E0) for main engines, propeller plant and other equipment.1 synchronizing panel with mimic for MSB.

7.8.3 Bridge consoles.

Two consoles forward bridge and three consoles aft bridge shall be installed.

(i) Bridge console forward port shall include the following equipment:
An adequate number of switches for external lights, searchlights, compass light etc.

- Engine room telegraphs
- 1 Morse light switch
- 1 Fire alarm central including life boat (general) alarm1 Push button for fire alarm
- 1Pushbuttonforlifeboatalarm
- 1 Remote control panel for bow thrusters
- 1 Remote control panel for stern thruster
- 1 Push button for maneuver light Window wiper control panel(s)
- Emergency stop push buttons with cover, for emergency stop to be provided as per rule requirements
- 1Group alarm panel connected to eng.alarm(E0) plant
- 1Push button for remote start/stop of hydr.pump for windlass and winches and capstans on the forecastle deck

(ii) Bridge console forward starboard shall include the following equipment:

- 1 Auto pilot with gyro repeater and off-course alarm
- 1 Steering gear control panel w/rudder indicators
- 1 Steering gear alarm panel
- 1 Intercom. telephone
- 1Amplified telephone
- Remote control panel for the thrusters.
- 1 VHF radio set Window wiper control panel(s)
- 1 Typhoon controller
- 1Digital log repeater

(iii) Bridge console stern port shall include the following equipment:

An adequate number of switches for external lights.

Steering gear control panel, rudder indicators in separate cabinet.

Remote start/stop with indication light for all cargo pumps

Push-button for emergency closing of cement discharge valves.



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

- (iv) Bridge console stern centre:
- 1 Push button for typhoon
 - 1 Intercom telephone
 - 1 Amplified telephone
 - Remote control panel for bow thrusters Remote control panel for stern thruster
 - 1 VHF radio set
 - Window wiper control panels
- (v) In the bridge consoles shall all manoeuvring handles, revolution counters, rudder indicators and pitch indicators and all instruments be illuminated.
- (vi) All lights in the manoeuvring desk exclusive the warning lights shall be provided with step less dimming.

7.8.4 Alarm/monitoring system

The alarm and monitoring plant shall be equivalent to DNV-E0 Class.

The system shall include a Color TFT Monitors (23"), a printers at bridge and engine control room and a watch/responsibility panel as well as alarm panels for cabins and mess.

One (1) no monitoring unit at bridge and Two (2) Monitoring units at engine control room shall be installed.

Each unit includes-one (1) 23" LCD colour monitors, one (1) PC with keyboard, one (1) pointing device, one (1) alarm buzzer and one Suitable (1) UPS

Common for the two ECR workstations; One (1) alarm printer and one (1) graphic colour printer. All installed in a separate console.

Data logger shall be provided with provision for remote access.

Navigation light Panel Emergency power supply shall be obtained from transformer rectifier.

The system shall have reset for alarm and acoustical and visual signal for each alarm which comes into function simultaneously with the alarm. There shall be common rotating/flash lights and sirens in the engine rooms. The acoustic signal shall have a loudness that can be heard in the engine room when the machinery is in service.

The alarms will be divided into several groups based on their importance and which machinery they come from. When alarm is given the group will be indicated on the alarm panel in the bridge console.

The monitor in the engine control room can display the alarms individually.



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

For display on the monitor, the different alarm items shall be arranged in picture(s) for the different machinery systems.

The alarm plant shall include both analogous and binary(on/off) alarms. Relevant items on the main machinery shall have analogous sensors.

7.8.5 Aux. Engine Safety System

A safety system for protection and control of the aux. engine shall be provided. The safety system shall be similar to the safety system for the main engine.

The safety system for the aux. engine may include alarm and monitoring of the engine as well. If so, the alarm shall be clearly indicated on the safety system panel/cabinet. In addition, a common alarm for the aux. engine shall be given to the central alarm plant.

Alarm repeaters shall be also provided in the wheelhouse.

The safety panel/cabinet shall be located in the engine control room.



CHAPTER 8 NAVIGATION AND COMMUNICATION EQUIPMENT

8.1 Navigational Lights and Shapes

Two tier Navigational lights shall be provided as per COLREG Rules.

Navigational lights shall be controlled from a control panel mounted on the forward bridge console. The panel should show the status of the lamps and shall give an audible/visual alarm in case of fused bulb. Panel shall be supplied from two separate circuits, in accordance with rules.

Lights shall be of type approved as per regulations. Lights shall be fitted in such a manner they are easily accessible for maintenance.

One portable day light signalling lamp of waterproof type shall be provided and stowed in the Bridge Deck. Shapes and bell as per COLREG shall be provided.

8.2 Search Lights

In addition to normal light fittings, two electric remote operated search lights (swivelling type) of 2000 watts each, 220 V AC, to be fitted on the Bridge Deck top. The control for these lamps shall be within the Bridge Deck.

8.3 Radar, signal observation and antenna masts

Fore mast

The mast to be constructed from mild steel tube, and have necessary brackets for light signals.

Main signal mast

Main signal mast shall be located on wheelhouse top.

Wheelhouse top to be sufficient reinforced with extra girders below the mast.

The mast shall be equipped with foundation for radars, VHF-antennas, flag staff etc.

The mast also shall be equipped with brackets for light and sound signals. Ladder and steps to be provided for access to all equipment fitted on mast.

Stern mast

A short collapsible pole mast shall be arranged at stern to carry the anchor lights.

8.4 Navigational Equipment



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

8.4.1 The following navigational equipment as follows complying with SOLAS / IMO regulations shall be provided:

- 1 no S-band (10 cm ARPA radar 23" LCD display of suitable power output, antenna according to manufacturer's standard
- 1 no X-band (3cm)ARPA radar with LCD display,10kW transmitter, antenna according to manufacturers' standard. Radar inter-switch shall be provided. Radar video interface with ECDIS UPS for both radars.
- 2 nos DGPS navigator shall be installed.
- 1 no Helicopter frequency Homer
- 1no Aero VHF
- 1no Gyrocompass system with repeaters and Recorder
- 1no Autopilot system
- 2no Magnetic compass(transmitting type) with 8-10" compass card and spare one will be as a spare
- 1 no Echo sounder recorder with depth indicator and alarm.
- 1 no Doppler speed log.
- 1 no Weather fax Receiver
- 1 No AIS
- 1No LRIT System
-
- 2No's ECDIS with radar over lay feature

UPS shall be provided for RADAR and ECDIS

Conning display shall be provided for ECDIS

Gate valve shall be provided for Echosounder and speed log transducers

8.4.2 Miscellaneous Nautical Equipment

The following equipment shall be delivered according to regulations in force:

- 1 no Aneroid barometer
- 1no Drum sextant
- 2nos Binoculars 7 x 50 with case and binocular box
- 1 no Night vision binoculars, type ITT
- 6 nos 6"chromed 6days ship clocks
- 1no Chronometer
- 1 no Radio clock
- 1no Parallel ruler



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

- 2nos Thermometers
- 2nos Torches with spare battery and bulb
- 1no Black signal beacon
- 1nos Electric wind indicator (anemometer), force and direction
- 2 nos Anchor signal balls

Approved certificates shall be delivered.

8.5 Consoles

The Bridge Deck shall be fitted with the main navigating console forward with secondary navigating console at the aft end for navigational and communicational equipment. The console shall be ergonomically designed and the equipment functionally grouped.

8.6 Communication Equipment

8.6.1 Radio Communication

The complete Radio equipment for the operational sea areas A1, A2 and A3 shall be provided as per GMDSS rules applicable for this class of VESSEL and also comply with Merchant Shipping notice 4 of 2024 Dated 11.11.2024.

However the following shall be included as minimum:

Radio Plant

- 2 nos DSC VHF sets 25 Watts.
- 1 no. DSC watch receiver with printer
- 1 no MF/HF DSC transceiver 250W and DSC watch receiver
- 1 no dual frequency type Navtex receiver
- 1 no Additional VHF set without DSC
- 01 IMMARSAT – C with satellite communication with ECG function
- 01 IMMARSAT – C with LRIT
- 1 No. SSAS (independent system with its own antenna and transceiver.)
- Two (2) sets of alert buttons shall be provided, one under the radio table and the other in the location which will be decided later.
- 01 no. BNWAS
- 01 no. VDR/SVDR

FRC Equipment as per rules.

One set of Fleet Broadband satellite communication equipment complete with all accessories to be provided.

The equipment to have Email, Telefax, Telephones (3 mini M quality, 1 ISDN video) & High speed data transmission facility and it is to be interfaced with shipboard computer for ship/shore data communication etc.

8.6.2 Internal Telephone System



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

The VESSEL shall be provided with an effective intercom (Auto-telephone) system. The following rooms are to be linked through the above system.

- All machinery spaces, control rooms, offices, all public spaces, galley, workshop
- All crew cabins and special personnel cabins

The intercom telephone system shall be combined loud and low speaking and have the following features:

- 4 simultaneous calls
- Priority for essential stations
- Override for essential stations

8.6.3 Sound Powered Telephone System

The Vessel shall be provided with an effective sound powered telephone system with 12 lines in accordance with rule requirements. The following rooms shall be linked through the above system from bridge forward console:

- Engine control room, emergency generator room, engine room
- Bridge Deck
- Thruster Room
- Fire control station
- FOAM room
- Pump room/cement room etc

8.6.4 Public Address / Talk-back System

An approved type public address cum talk-back system operating on 220 V A.C shall be provided in accordance with latest SOLAS regulations. Speakers shall be provided in cabins, alleyways, mess/recreation rooms, open decks, machinery spaces, etc. The main control shall be located in the Bridge Deck. Loud speaker is to be provided on Radar mast for loud hailing purpose. Intrinsically safe speakers shall be located in the hazardous locations.

The Talk back system shall be complete with suitable number of sub stations, 6 micro phones, headsets, etc.

The system shall be connected to officers' cabins, alleyways on each deck, galley, mess room, recreation rooms, machinery spaces, thrusters room, office, 4 nos. on open working decks.

The power supply shall be from main and emergency supply with automatic change-over arrangement.

8.6.5 Telegraph

One engine order telegraph shall be fitted in Bridge Deck console for emergency communication between bridge and engine room to the approval of Class.



8.6.6 Loud Hailers

Two portable loud hailers of intrinsically safe type shall be provided.

8.7 Computer Network

Server based LAN should be installed for emailing purposes, with the Computer Server at Ship's Office in a lockable cabinet.

LAN hubs are 16-port auto sensing stackable 10/100 base TX/FX Ethernet switch (d-link/ 3 com). The Server shall be connected to the Fleet broadband FB500 for voice, fax, email/internet

The server with necessary network cards and hubs will have connection to:

- Wheel House, Offices, ECR, Captain Cabin, Chief Engineer Cabins.

8.8 CCTV System

CCTV system as per DG Shipping Latest M.S Notice 2 of 2025 12.02.2025 is to be provided.

CCTV cameras with recording facility: CCTV system should be installed to ensure effectively cover the area on Bridge, and overlooking the Deck & Vessel Bow, ECR to monitor operations. The system should be able to create tamperproof record for post event analysis. CCTV system shall provide sufficient storage of all the camera recordings for a period of 30 days or more @ 25 FPS, at 4 CIF or better quality. OEM of Cameras and all associated devices shall be ISO firms & the products must be CE certified. The camera should be high resolution IR type with PAN Zoom and Tilt Features.

Necessary IT /Communication infrastructure is to be provided for continuous online access (including data downloading).



CHAPTER 9 DYNAMIC POSITIONING SYSTEMS

9.1 General

The DP System shall be installed to meet the DP-2 notation up to SS 6 and should be capable of Continuous operation in and offshore environment including Survivability up to SS7.

Weather Parameters: Wind 40 knots, Sea Swell 4 meters, and Surface current 2 knots to be considered.

The vessel should maintain station within 3m horizontal distance of a discrete position in the environment as mentioned above.

Fully operational Redundant DP system shall keep the Vessel in position and working. The system must have the ability to plot and print capability graphs.

The DP System shall be installed to meet the IRS DPS-2 notation.

9.2 System Requirements

The system to have interfacing to

- (a) Gyro compass x 3 nos.
- (b) Wind sensor x 2 nos.
- (c) Motion Reference unit x 3 nos.
- (d) Dual Axis Speed Log x 1 nos.
- (e) DGPS x 2 nos. (included in Ships Navcom list)
- (f) Laser type reference system - x 1 no.
- (g) 2 no. UPS for DP System 30 minutes.
- (h) 2 no. Printer.

The laser type reference system to have a range of approx. 500 meters. Two (2) transponders to be provided. If the transponders use battery, the battery to be rechargeable type. If the system requires periodical calibration, the calibration kit including the calibration transponder to be provided.

Following operational modes shall be included:

- Standby mode
- Joystick Mode
- Manual / Joystick mode
- Mixed manual/Auto mode
- Auto Heading Mode
- Auto Position Mode
- Auto Speed Mode
- Auto pilot Mode

Following interfaces shall be provided.



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

- All thrusters.
- Main Switch board
- Joystick
- Power Management system
- Three (3) Gyro compasses
- Two (2) Wind sensors
- Three (3) Motion reference units
- Two (2) DGPS
- One (1) Laser reference unit
- One (1) Dual Axis Speed log as described under Navigation Equipment.

The system to include on line Consequence Analysis, Online DP Capability Analysis, Motion Prediction Analysis, OF Operation output Alarm, etc.

DP capability plot and FMEA to be carried out by third party and approved by class.

The DP system to have latest operating system



CHAPTER 10. CARGO SYSTEM

10.1 Dry Cement Tank

Six (6) tanks for the carriage of different grades of cement/barite shall be provided. Total capacity shall be approx 300Cu.m and working pressure 6 bar. Ladders shall be mounted inside tanks. Access hatches shall be located on top of tanks or on the side near to the top.

10.1.1 Pneumatic bulk handling system

One (1) Bulk Handling system shall be installed for storage and transfer of dry cement/baryte

The system is capable of discharging two grades of cement/baryte simultaneously through two separate discharge lines: - one from the two foremost tanks and one from the three aftermost tanks. Bulk handling system pipes shall be arranged for easy dismantling.

Discharge station on port and starboard side, totally 3 stations each system. Discharge pipes shall have 5" dia. bending radius 5xD (625 mm) where possible.

The plant consists of:

2 x Rotary lube screw compressors, excluding sound covering, capacities 2 x 22,7 m³/min approx. The plant shall be built on freshwater cooled coolers, each cooler shall be arranged with closing valves on inlet/outlet, moisture separator and automatic condensation trap, oil separator with alarm lights, star/delta starters, automation for on/off regulation, giving complete automation for parallel run of both compressors.

Further the plant has instruments for temperature and pressure controls, selection switch, start/stop buttons and hour meter.

- 1 No Mucking ejector for tank cleaning shall be arranged. Drive water from WB/DW system
- 2 No Freshwater cooled Refrigerated air dryers shall be arranged.

The system shall be arranged with emergency stop switch for closing of all discharge valves. This switch shall be mounted on bridge and at suitable location on main deck.

10.2 Loading/Discharging Systems For Liquid Cargo

Cargo/discharge pumps

Following cargo discharge pumps shall be arranged:

- 1 No. Fuel oil discharge pump



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

- 1 No. Fresh water discharge pump
- 2 No Liquid Mud discharge pumps
- 1 No Brine discharge pump
- 1 No Ballast/Drill water discharge pump
- 1 No Base oil discharge pump
- 2 No Methanol/Special Products discharge pump

Fuel oil, base oil and liquid mud system shall have black steel piping. Seawater, Brine and freshwater piping shall be of galvanized steel.

Methanol/special Products piping shall be of stainless steel AISI 316L. Emergency stops shall be arranged for all cargo pumps at bridge, on deck and local at pump locations.

Fuel oil discharge pump (1 No):

Type : Centrifugal type pump w/air ejector

Capacity : 150 m³/h-90 mlc approx

Motor : El. driven, 2 speed.

One flow meter with printer shall be arranged for filling and discharge purposes of F.O.

Fresh water discharge pump (1 No)

Type : Centrifugal type pump w/air ejector

Capacity : 150 m³/h - 90 mlc approx

Motor : El. driven, 2 speed

One flow meter with printer shall be arranged for filling and discharge purposes of F.W.

Liquid Mud discharge pumps (2 No)

Type : Eccentric screw pump

Capacity : 100 m³/h - 18 bar Max. Sp. Gravity: 2,8 t/m³

Motor : El. driven, 1 speed.

Ballast / Drill water discharge pump (1 No)

Type : Centrifugal type pump w/air ejector

Capacity : 150 m³/h - 90 mlc approx

Motor : El. driven - 2 speed

Brine discharge pump: (1 No)

Type : 2-spindle screw pump.

Capacity : 75 m³/h - 18 bar

Max. sp. gravity : 2,8 t/m³

Motor : El. driven, 1 speed.

Base oil discharge pump (1 No)



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

Type : Centrifugal type pump w/air ejector
Capacity : 100 m³/h - 90 mlc
Motor : El. driven, 1 speed

Methanol discharge pump (2 No)

Type : Centrifugal type pump, pumps shall be of submerged type.
Capacity : 75 m³/h - 90 mlc
Motor : Hydraulically driven

10.3 Filling/Discharge stations (manifold)

PS/SB amidships : FO, FW, DW, Dry Bulk, Liquid Mud, Brine, Base oil
SB aft : DW, Dry Bulk, Base oil, Special Products/Methanol
PS aft : FO, FW, Brine, Liquid mud, Dry Bulk (*) (* = Dry bulk shall be included if space for piping allows.)

10.4 Hose connections

All discharge-/filling pipes shall be arranged with Camlock couplings and reducers as agreed upon with the Owner.

One adaptor suitable for 4" Camlock coupling for each of the cargo systems FW/DW/FO/Cement/Byrite will be provided.

In addition the fuel oil, base oil and methanol connections shall be arranged with Avery Hardoll couplings with necessary adapters

All cargo systems shall have segregated filling/discharge system from other liquids.

10.5 Tank washing system

Permanent tank washing system with hot water shall be installed in each mud/brine tank (8 no's cylindrical tanks) and Slop tank. Suitable arrangement shall be provided for sufficient hot water required for tank washing.

The tank washing pipe system from pumps to washing machines shall be of stainless steel. Slop pipe system shall be hot dip galvanized steel.

The tank dedicated to handle the Slop for tank washing system, are shall be provided with two suctions, located at different levels above tank bottom.

10.6 Auxiliary Systems

Suitable system for machinery alarm/ monitoring shall be installed. 1 PC with keyboard, pointing device (mouse), 2 monitors and printer on bridge, and 1 PC with keyboard, pointing device, printer and 2 monitors in engine control room. All cargo tanks to have also manual sounding pipe in addition to tank level gauging system.



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

One (1) remote pneumatic draft gauge shall be installed to measure aft, midship and forward draft. Reading shall be displayed at wheelhouse.

10.7 Special system for Cargo

10.7.1 General

The fuel oil cargo, freshwater cargo, ballast/drill water, liquid mud, brine, base oil, special product, methanol systems shall be operated/monitored from cargo control system.

The remote control system will enable the operators to operate the cargo systems fully automatic in normal cargo handling operations. Drain valves, change- over valves, Blind flange-valves, service valves and butterfly valves at discharge stations, etc. can be manually operated.

The remote operated valves for cargo systems shall be of butterfly type with pneumatic/hydraulic double acting actuator with double solenoid valves where approved by Class, elsewhere spring return actuator with single solenoid valve shall be utilized.

Butterfly valves shall be used to the greatest possible extent.

Instrument air, shall be utilised as air supply for the actuators. All tanks situated above tank top shall be arranged with suction well.

One (1) no. non-return valve shall be fitted on discharge side of the pumps.

The pumps shall be arranged with strainer on suction side, except for submerged pumps. Arrangements for easy access for taking samples on load- and discharge side on all cargo tanks shall be arranged.

In general welding on galvanized pipes shall be avoided.

Emergency stop for cargo pumps shall be arranged on main deck, local and on bridge.

10.7.2 Mud system

Pipe system shall be of seamless steel quality with flanges welded on. In weather exposed area the seamless steel pipes shall be externally hot dip galvanized after completed welding and treatment, with flanges welded on.

Eight (8) mud/brine combination tanks between tank top and main deck shall be arranged for carrying mud with density up to 2,8 t/m³ and with flashpoint above 60 °C and pollution hazard only, denotation "P" (acc. IBC).



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

The mud pump in system 1 shall be arranged as back-up for the pump in system 2, and vice versa. Mud system shall be designed for 5" fill connection from drop line to each tank. Suction pipe system in general shall be 6".

For agitation of the mud, electric driven agitators with high capacity shall be arranged in the mud tanks.

Flushing possibilities of the liquid mud system utilizing compressed air shall be arranged. Each mud system shall be arranged with loading filter, with bypass possibilities.

All tanks shall be fitted with high-level alarm.

The system shall be arranged for two types of mud simultaneously through separate pump and separate pipe system.

Drop/recirculation lines with filter and bypass possibilities shall be arranged.

10.7.3 Brine system

Pipe system shall be of seamless steel quality with flanges welded on. Pipes shall be hot dip galvanized after completed welding and treatment.

The Brine tanks: see mud system.

For discharge of brine, one discharge system with one pump shall be arranged. Drop/recirculation lines with filter and bypass possibilities shall be arranged.

Flushing of the brine system utilizing fresh water shall be arranged.

10.7.4 Cargo Fuel oil systems

Pipe system shall be of seamless steel with flanges welded on. In weather exposed area the seamless steel pipes shall be externally hot dip galvanized after completed welding and treatment, with flanges welded on.

Valves shall be of nodular cast iron with internal and spindles of non-ferrous material.

The FO cargo pump shall be arranged for transfer between group of tanks, in addition to discharge to deck.

The fuel oil cargo pump shall be arranged as back-up for the base oil pump.

One flow mass flow meter corioles type with connection to AMS and printer shall be arranged for monitoring fuel oil filling and discharge operation for Fuel cargo. Discharge pipe to act as filling pipe with bypass arranged at the pump.

Each fuel oil cargo discharge stations to include a sampling flange of class approved type.



10.7.5 Fresh water cargo system

Pipe system shall be of seamless steel quality with flanges welded on. Pipes shall be hot dip galvanized after completed welding and treatment

The FW cargo system shall be arranged for transfer between tanks in foreship and aftship in addition to discharge to deck.

All potable water tanks shall be equipped with automatic temperature readings. These readings shall be interfaced with the class approved Tank Monitoring System.

The FW pump shall be arranged as back-up for the WB/DW pump.

10.7.6 Ballast/Drill water system

Pipe system shall be of seamless steel quality with flanges welded on. Pipes shall be hot dip galvanized after completed welding and treatment

WB/DW pump- shall be arranged as back-up for the FW cargo pump and vice versa.

10.7.7 Base oil system

Pipe system shall be of seamless steel with flanges welded on. In weather exposed area the seamless steel pipes shall be externally hot dip galvanized after completed welding and treatment, with flanges welded on.

2 No Fuel oil tanks also shall be arranged for Base oil.

Base oil system shall be arranged for bunkering and discharge to deck stations. The Base oil pump shall be arranged as back-up pump for the FO pump.

10.7.8 Methanol/Special Products systems

Four (04) Nos tanks shall be arranged below main deck to carry methanol (Fuel and Cargo) & Special Products with flash point below 43degC. The tanks shall be surrounded with cofferdam containing either seawater or nitrogen inert gas.

Methanol tank to be provided with Steel with suitable coating.

One (1) No bilge ejector, capacity approx. 40 m³/h, shall be submerged in the cofferdam. SW filling of cofferdam and drive water to bilge ejector from fire line system. The tanks to have access from open deck. Filling/discharge station shall be arranged on main deck SB side.



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

Two (2) pumps, each of 75 m³/h at 90 mlc shall be provided for handling methanol cargo and the piping system will be arranged for back-up each other.

Methanol/Special Product and inert gas pipes shall be of stainless steel quality AISI 316L. Vent pipes shall be of hot dip galv. steel quality.

One (1) No nitrogen inert gas bottle bank shall be installed, the system to include:

- Nitrogen bottles, capacity according to Class rules
- Reduction valve cabinets
- Double block and bleed system

One (1) No nitrogen inert gas generator plant shall be installed, this plant will service all DG engine methanol system and also for the cargo methanol system storage tanks and cofferdams around the tanks & associated piping system in accordance with class requirement. the system shall include:

- Nitrogen generator, capacity approx. capacity shall be as per OEM/Class requirement, approx. 60 Nm³/h.
- Surge tank (N₂ Air Receiver)
- Booster compressor
- Feed air compressor

The inert gas system shall be arranged for inert gas purging and padding of special product pipes and tanks.

10.7.9 Foam system

A foam/water system for protection of the cargo deck and methanol pipe system in cargo rail during methanol loading/unloading operations to be arranged according to class requirement and IBC Code.

The foam system to be manually operated.

The foam concentrate to be AFFF or similar. (Suitable for methanol) Seawater supply from the Ballast / Drill Water system to be provided.

The system is to comprise of:

- One (1) No. Foam liquid tanks
- One (1) No. Foam proportioned
- One (1) No. Foam liquid pump
- One (1) No. Foam monitor
- Foam nozzles in SB and PS cargo rail if required by class rules.

10.7.10 Sounding and tank ventilation system

The methanol cargo arrangement shall be according to Low flashpoint fuel requirements as per IBC code.



TECHNICAL SPECIFICATIONS OF 3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

Individual venting arrangement with PV valve for each tank with redundancy as per Class Rules shall be provided.

Controlled tank sounding for each tank shall be arranged

10.7.11 El. Hydr.Power Pack

The power pack to have min. 2 hydraulic pumps and to have capacity to supply power to the methanol discharge pumps running at 100% discharge rate simultaneously.

Local control cabinets shall be provided. Power pack shall be remote operated from cargo control system.

Hydraulic pipes shall be of seamless steel quality, with steel flanges type GS-Hydro or similar for pipes above ND40. Pipes ND 40 and below, compression ring fittings type Ermeto or similar shall be used. Oil cooler to FW cooled.

Hydraulic system shall be arranged with filter on pressure side, return side and leak oil side. Pipe lines shall be connected to the power pack by means of flexible hoses.

10.7.12 Mud Tank Washing System

The mud tanks shall be arranged with fixed installed water washing machines of Butterworth or similar for cleaning with seawater, hot or cold freshwater. It shall also be arranged for adding soap/chemicals to the washing water.

The system to comprise:

- 1 no washing machine in each mud tank,
- 1 no tank washing pressure/slop discharge pump, eccentric screw type, capacity approx. 10 m³/h – 7 - 12 bar as per OEM requirement
- 1 no slop tank in combination with sludge tank Valves and pumps shall be manually operated.

10.7.13 Gas Detection

Vessel shall be equipped with Two (2) Nos. approved portable hydrocarbon and H₂S detectors.

TPQC – Rev A

1. The determination of eligibility will take into account the Capability and Capacity of the participating Shipyard along with their past Experience in executing similar orders.
2. It will be based on site inspection, examination of supporting documents and misc. other aspects, as deemed suitable by the MDL's team. MDL reserves the right to visit the Shipyard prior to technically qualifying their bids. The decision of the MDL's team in evaluation of the Shipyard would be firm and final. Further, time is the essence of this project, the bids of the participating Shipyard's would be liable for rejection in case of unsatisfactory / delayed response to the MDL's queries.
3. The participating Shipyard should meet the following mandatory Pre-Qualification Criteria.
4. **Capability:** The participating Shipyard shall be evaluated for their capability under the following criteria.

(a) **Past Experience.** The participating Shipyard should have experience in Construction and delivery of self-propelled vessels built under IN / IACS on a turnkey basis. Following dimensions of Self-Propelled vessels successfully delivered by the Shipyard under IACS on a turnkey basis would be eligible for qualification.

SI	Vessel Type	Qty (Min required)	Remarks
(i)	Self-Propelled - Length > 60 m	04	IN / IACS certified (In last 15 years)

(b) **Shipbuilding Infrastructure.** The participating Shipyards should have their shipbuilding infrastructure commensurate for construction of PSV. This would comprise of, but not restricted to, gated Yard, slipway / dry-dock / ship-lift / floating dry dock, wet berths for outfitting, available depth of water, crange facility (in-house and could be augmented), workshop with machineries (press, roll, shearing, CNC cutting, pipe bending etc), and fabrication shops / space. Shipyard should mandatorily have the following as part of their infrastructure

SI	Infrastructure	Dimension (L x B) (m)	Remarks
(i)	Shipbuilding Bay	150 x 40	

(ii)	Slipway / Slide way / Dry-dock	L > 90 m	Adequate water column for Ships launching draft of 3.5 m
(iii)	Wet Basin / Outfitting Bay	L > 100 m	Adequate water column for Ships draft of 3.5 m
(iv)	In-house operational Workshops for Steel cutting, steel Fabrication, pipe shops, paint booth, and Pipe Fabrication	As required	

5. **Experience of Shipyard.** The shipyard's experience of having constructed vessels during last 15 years ending till the tender closing date should be either of the following:

(i) Three contracts/orders of completed/delivered vessels each of not less than Rs 88.53 Cr.

OR

(ii) Two contracts/orders of completed/delivered vessels each of not less than Rs 110.67 Cr.

OR

(iii) One contract/order of completed/delivered vessels of not less than Rs 177.07 Cr.

6. **Legal Search Report.** The bidders shall submit a Legal Search Report (LSR) of their premises towards the clear and marketable title of the builder over the complete infrastructure facilities with marking of their premises including stores, shops, dry berths, slipway, dry dock, waterfront etc. where PSV shall be constructed. Non-encumbrance certificate to be also submitted from the local lawyer at builder's location along with the technical offer.

7. **Functional Shipbuilding Departments.** Participating Shipyards should possess functional Shipbuilding departments. The assessment of functionality of these departments would be undertaken by MDL's team, based on site visit / evaluation of documentary records, availability of trained manpower and misc. other factors etc.

(a) In-house detailed design capability

(b) Planning department



- (c) QA and QC Department
- (d) Material procurement.

8. **Human Resources.** Shipyard should have human resources available in-house or possess capability to mobilise them. Past experience in terms of below mentioned would be verified, against documentary records (for last 15 years).

- (a) Manpower mobilised during any 03 continuous months (during the past 15 years) should be more than 250 workers (in-house and subcontractors).
- (b) Availability of labour accommodation within Shipyard premises or owned by Shipyard for more than 200 workers.
- (c) Subcontractor base for undertaking works such as Steel, piping, cabling and painting etc would be evaluated.

9. **Capacity.** It is a considered opinion that along with the capability a participating Shipyard needs to have adequate capacity to undertake construction of vessels. The subject order for PSV, is on a lean production timeline. Any delay by participating Shipyard due to its capacity limitation, would imply delay in project delivery schedule. This may inter jeopardise MDL's future business line.

10. The capacity of the Shipyard would be evaluated based on the following parameters and not restricted to below. The decision of the evaluation committee / team would be final.

- (a) Current and future order book when compared with available infrastructure. Excess order by a Shipyard, beyond its capacity would delay the Subject project which has lean production timeline.
- (b) Spare capacity in terms of infrastructure, space and resources for next 3 years. Decision of MDL would be considered binding.
- (c) Performance of the Shipyard in their ongoing orders. Their performance and track record in time bound delivery of vessels / block construction work would be examined. Delay in delivery of the existing order would be considered negative and may be liable for rejection.



11. Shipyard shall not be under a declaration of ineligibility issued by Govt. of India / State govt. / Public Sector Undertakings etc. The Shipyards shall submit the following as a part of technical qualification.

- (a) Bidders' company profile and experience.
- (b) Overview of Technical personnel deployed by the company
- (c) List of personnel with designation, qualification and experience to determine bidders capabilities
- (d) Company's registration certificate
- (e) ISO standard certificate
- (f) Factory licence
- (g) Certificate of incorporation
- (h) Registration certificate from local bodies of conducting business
- (i) Bidder Shall not be under a declaration of ineligibility issued by the Govt. of India State Govt / Public Sector undertakings etc.
- (j) MSME certificate if applicable.
- (k) GST certificate.

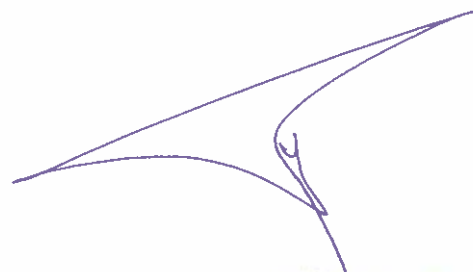
12. **New Shipyards.** New Shipyards established by take-over of the existing / old Shipyards, in such cases their total experience of both the New and the old Shipyard would be considered. However, this would be restricted upto past 15 years only. This would also be subjected to document verification and satisfactory site inspection by MDL Team.



ITEM RATE BOQ

NAME OF WORK: TURNKEY DESIGN, CONSTRUCTION AND DELIVERY OF 3000 DWT METHANOL DUAL FUEL DIESEL ELECTRIC PLATFORM SUPPLY VESSEL

NUMBER	TEXT	NUMBER	TEXT	TEXT	NUMBER	NUMBER	TEXT
Sl.No.	Item Description	Quantity	Units	Quatoted Currency in INR Other Currency	Total Amt without Tax	Total Amt with Tax	Total Amt (Without Taxes) in words
1	2	3	4	5	6	7	8
1	Turnkey Design, Construction and Delivery of 3000 DWT Methanol Dual Fuel Diesel Electric Platform Supply Vessel	1	AU	INR	0.00	0.00	INR Zero Only
Total in Figures					0.00	0.00	INR Zero Only
Quoted Rate in Words		INR Zero Only					


कमांडर योगेश महानी, (निवृत्त)
COMMANDER YOGESH MAHANI IN, (Retd.)
 उप महाप्रबंधक (एस. डी. एवं. डी)
 DY. GENERAL MANAGER (O/c SD&D)
 माझगांव डॉक शिपबिल्डर्स लिमिटेड
 MAZAGON DOCK SHIPBUILDERS LIMITED


सपना दिपु
SAPNA DIPU
 अवर महाप्रबंधक / अनुमान मंजूर (उत्पादन-बाला)
 पी आई सी (पी एस वी)
 AGM/NoS (P-Shops)/PIC (PSV)
 माझगांव डॉक शिपबिल्डर्स लिमिटेड
 MAZAGON DOCK SHIPBUILDERS LIMITED

3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

MAKER'S LIST

Annexure III

S.no	ITEM	MAKERS
1	PAINT	JOTUN PPG INTERNATIONAL PAINTS HEMPEL CHUGOKU NIPPON
2	ICCP	SARGAM CATHODIC PROTECTION, INDIA WILSON & WALTON CATHELCO INDIA ARICO, INDIA KC KOREA CATHWELL NIPPON CORROSION
3	BULK HANDLING SYSTEM	RANDSBERG INDUSTRIES AS MACGREGOR, EUROPE KONGSBERG, NORWAY VAN AALST BULK HANDLING B.V.
4	DECK CRANES	SORMEC, ITALY PALFINGER, NORWAY ORIENTAL, KOREA MACGREGOR, KOREA/JAPAN DOGNAM, KOREA MELCAL REDROCK
5	CARGO PUMPS (Fuel oil, Base oil, FW, Drill water, Ballast water), METHANOL PUMP (SUBMERGED/DEEPWELL TYPE)	ALLWEILER PG FLOW SOLUTIONS AS DESMI AZCUE PUMPS (SPAIN) FRAMO BORNEMANN (KSB COMPANY) HAMWORTHY
6	MUD/BRINE PUMPS	DESMI AZCUE PUMPS TRW MISSION PESHEDENDRUM ING PER GJERDERUM SEEPEX ALLWEILLER

3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

MAKER'S LIST

Annexure III

S.no	ITEM	MAKERS
7	MUD AGITATORS	NOV (NATIONAL OILWELL VARCO) RINGMAN SINGAPORE PG FLOW SOLUTIONS
8	TUNNEL THRUSTERS	KONGSBERG BRUNVOLL NAKASHIMA JAPAN WARTSILA KAMOME NIIGATA THRUST MASTER ZF MARINE BERG SCHOTTEL
9	TUNNEL THRUSTER ELECTRIC MOTORS	ABB SIEMENS MARELI MOTORI KONGSBERG NISHISHIBA TAIYO
10	DP SYSTEM	KONGSBERG GE WARTSILA (NACOS MARINE) NAVIS
11.	NAUTICAL AND RADIO EQUIPMENT (ECHO SOUNDER, RADAR, DOPPLER SPEED LOG, DGPS, AISA, EPIRB, SART, ECDIS RADIO EQUIPMENT EPIRB, SART  f s	FURUNO, JRC, SAILOR RAYTHEON SAM ELECTRONICS JRC, SAILOR RAYTHEON TOKIMEC FURUNO JOTRON SAILOR MC MURDO ACR GME JRC

3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

MAKER'S LIST

Annexure III

S.no	ITEM	MAKERS
12.	AUTO PILOT/GYROCOMPASS	TOKIMEC RAYTHEON SPERRY SG BROWN ANSCHUT TOKYO KEIKI
13.	MAGNETIC COMPASS	SPERRY, TOKYO KEIKI TOKIMEC RAYTHEON CASSENS AND PLATH LILLIE AND GILLIE
14	INTERNAL COMMUNICATION SYSTEM, TELEPHONE, PA	ZENITEL HANSHIN, KOREA ELCOME INTEGRATED SYSTEMS PVT LTD, INDIA EATON SUNNCOMM ALCATEL AHUJA WAVES ELECTRONICS STERLING NAVICOM
15	CCTV SYSTEM (BIS STQC COMPLIED)	WISKA, INDIA ZENITAL HIK VISION IMCOS SPARSH CP IMENCO VICON SECURITY
16	NAVIGATION LIGHTS AND CONTROL PANEL	STAHL-TRANBERG GLAMOX SEABRIGHT DAYANG KUKDONG ELECOM CO. WISKA AQUASIGNAL NORSELIGHT

3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

MAKER'S LIST

Annexure III

S.no	ITEM	MAKERS
17	AIR HORN/MORSE LIGHT AND CONTROL PANEL	KRIST RAKME IBUKI ZOLLNER KOCKUM SONICS AIRCHIME SARACOM
18	DECK MACHINERY (WINDLASS/CAPSTAN/TUGGER WINCH)	W-RIG SINGAPORE ZI-COM SINGAPORE DELIN SINGAPORE ARIM MACHINERY S.KOREA KAWASAKI KONGSBERG, NORWAY FUKUSHIMA JAPAN MHI JAPAN
19	ANCHOR & CHAIN	WORTELBOER TOTAL MARINE BEST INDUSTRIES, KOREA INDIA CHAIN, KOLKATA
20	RESCUE BOAT WITH DAVIT	PALFINGER NORSAFE/VIKING SURVITEC HYUNDAI LIFEBOATS DSB AQUARIUS FIBRE GLASS
21	LIFE BOAT WITH DAVIT (if required by rules)	PALFINGER NORSAFE/VIKING SURVITEC HYUNDAI LIFEBOATS DSB
22	LIFE RAFT	PALFINGER NORSAFE/VIKING SURVITEC ORIENTAL OPCO KOREA DSB SHM SHIPCARE

3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

MAKER'S LIST

Annexure III

S.no	ITEM	MAKERS
23	WATERTIGHT SLIDING DOORS	POLAND SCHOENROCK HYDRAULIC GMBH IMS WINEL HYDRAULIC GMBH BY CONTROLS, KOREA,
24	WINDOW WIPERS	WYNN(HEPWORTH) DECCA SEEMATZ KARACAGEMI JUNG-GONG KOREA
25	LAUNDRY EQUIPMENT	MIELE ELECTROLUX WASCATOR LOIPART EDCOMARINE ALUMINOX METOS HAEIN, SOUTH KOREA
26	GALLEY EQUIPMENT	WESSCO ALUMINOX BEHA HEDO METOS EDCOMARINE LOIPART ALUMINOX HAEIN, SOUTH KOREA SUSHMA ELECTRICALS DENKI AROX SINGAPORE
27	ACCOMODATION	BIP MARITIME MONITERING HOCKSENG STACO SEJIN NORAC
28	HINGED WATER TIGHT STEEL DOORS	ZUARI ENGINEERING SERVICES, GOA LIBRA, NORWAY NIBHA INDUSTRIES, INDIA DELIN SINGAPORE

3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

MAKER'S LIST

Annexure III

S.no	ITEM	MAKERS
29	PORTABLE FFA ITEMS	DG APPROVED MAKES
30	PORTABLE LSA ITEMS	DG APPROVED MAKES
31	AIR CONDITIONING SYSTEM	
	HVAC (AHU)	AERON YORK (JOHNSON CONTROLS) HEINEN & HOPMAN FLAKTWOOD CARRIER NOVENCO HI-PRES KOREA NEXUS AIRCON
	AC COMPRESSOR AND CONDENSING UNIT	SABROE CARRIER YORK BOCK
32	SEWAGE TREATMENT PLANT	JETS EVAC(VACMAN) TAIKO ILSEUNG KOREA TECNICOMAR ACOCALARIMAR HAMWORTHY ACO MARINE R.W.O DETEGASA SPAIN
33	MAIN DG SETS	HHI-EMD
34	EMERGENCY DG SET	CATERPILLAR VOLVO PENTA CUMMINS KIRLOSKAR
35	MAIN PROPULSION AZIMUTH THRUSTERS	KONGSBERG BRUNVOLL WARTSILA VETH NETHERLANDS THRUST MASTER USA ZF MARINE BERG SCHOTTEL NIIGATA

3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

MAKER'S LIST

Annexure III

S.no	ITEM	MAKERS
36	MAIN PROPULSION ELECTRIC MOTORS	ABB SIEMENS MARELI MOTORI KONGSBERG NISHISHIBA TAIYO
37	FO AND LO PURIFIER	ALFA LAVAL GEA WESTFALIA MITSUBISHI
38	CENTRIFUGAL PUMPS	TAIKO KIKAI INDUSTRIES CO. LTD.JAPAN AZCUE, GARBARINO, DESMI INDIA, ALLWEILER IMO (CIRCOR) HAMWORTHY
39	SCREW PUMPS	AZCUE, GARBARINO, ALLWEILER TAIKO KIKAI INDUSTRIES CO. LTD.JAPAN IMO (CIRCOR) DESMI
40	TANK WASHING/ CLEANING	SCANJET (ALFA LAVAL) POLAR MARINE GUNCLEAN TOFTJORG ALFA LAVAL
41	UV STERILIZER	JOWA AB RWO HATENBOER WATER ALFA LAVAL
42	NITROGEN (N2) PLANT	SAUER, ATLAS COPCO, INGRERSOLL RAND, GARDNER DENVER, AIR PRODUCTS, NORWAY KASHIWA JAPAN ALFA LAVAL KANGRIM, KOREA

3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

MAKER'S LIST

Annexure III

S.no	ITEM	MAKERS
43	COMPRESSED AIR AND INSTRUMENT AIR COMPRESSORS, DRYERS	SPERRE HATLAPA DENO TMC DONGHWA PNEUTECH TANABE
44	ALARM MONITORING SYSTEM, CARGO CONTROL SYSTEM, INTEGRATED AUTOMATION AND CONTROL SYSTEM FOR METHANOL	KONGSBERG NABTESCO ABB SIEMENS HOGLUNDS WARTSILA TGE MARINE GERMANY
45	OILY WATER SEPARATOR	DVZ RWO HAMWORTHY SASAKURA ALFA LAVAL TAIKO ILSEUNG
46	FIRE DETECTION & ALARM SYSTEM	CONSILIUM AUTRONICA SURVITEC, MINIMAX UNITOR KIDDE KONGSBERG JOHNSON CONTROLS
47	EXTERNAL FIFI SYSTEM	JASON ENGINEERING, NORWAY FFS FIRE FIGHTING SYSTEM
48	CO2 / LOCAL WATER MIST	AUTRONICA KIDDE WILHELMSSEN SURVITEC TEMA SYSTEMI S.P.A ITALY MINIMAX NK FIRE PROTECTION JOHNSON CONTROLS

3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

MAKER'S LIST

Annexure III

S.no	ITEM	MAKERS
49	FIRE HYDRANTS ANDS HOSES AND NOZZLES	DG APPROVED MAKES
50	TANK VENT VALVES	WINEL WINTEB VENTIQ JOHNGJERE MODIMAZ
51	P/V VALVES	SCANJET , SWEDEN TANKTECH, KOREA PRES-VAC, DENMARK VENTIQ, NORWAY NIIKURA KOGYO JAPAN JOHNGJERDE
52	ELECTRICAL CABLES	HELKAMA TMC KUKDONG UNTEL SEC KOREA APAR INDUSTRIES KEI WIRES AND CABLES POLYCAB CABLES NICCO CABLES
53	LIGHTING (Shall be class approved)	GLAMOX WISKA, STAHL TRANBERG DAEYANG RAY ENTERPRISES (RAYEN) INDIA MCGEOCI I MARINE ELECTRICAL PVT. LTD. (a subsidiary of Marine Electricals) ZEAL-TECH / ZEAL TECHNO ENGINEERING BEETEE (BHARAT TRADERS INDIA / BEETEE BRAND)
54	SEARCH LIGHT& CONTROL PANEL	DAEYANG WISKA,INDIA TRANBERG GLAMOX FAMOR AS POLAND AQUA SIGNAL CARLISLE & FINCH FRANCIS, UK

3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

MAKER'S LIST

Annexure III

S.no	ITEM	MAKERS
55	MAIN / EMERGENCY SWITCHBOARD/PANEL SYSTEM INTEGRATOR	TERASAKI , MARINE ELECTRICALS , GE, SIEMENS WAVES L&T
56	Switch Gear for Main Switchboard, Emergency switchboard, Local group starter panel/starter panel	TERASAKI SIEMENS GE KT ELECTRIC (KOREA) ABB SCHNEIDER
57	POWER MANAGEMENT SYSTEM (PMS)	TERASAKI SIEMENS GE KT ELECTRIC (KOREA) ABB SCHNEIDER L&T
58	LOADING COMPUTER	AUTOLOAD NAPA KONGSBERG CYBER MARINE EMERSON
59	MANUAL VALVES	FAK DIKKAN MESON BESI ERIK L&T TYCO KSB, INDIA
60	REMOTE OPERATED VALVES	ELTORQUE, SINGAPORE BESI NORDIC FLOW, PANASIA, NAKAKITA, EMERSON, SCANA (KOREA)

3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

MAKER'S LIST

Annexure III

S.no	ITEM	MAKERS
61	HYDROPHORE/ PRESSURE TANKS (The pumps for hydrophore shall be as per makers list)	DENKI, INDIA ZUARI ENGG, INDIA SHOFT INDUSTRIES, INDIA
62	RO PLANT	HATERBOER RWO NORWATER ROCHEM SLCE ALFA LAVAL TECHNICOMAR
63	ELECTRONIC FUEL MONITORING SYSTEM	ABB ENDRESS + HAUSSER WARTSILA AQUA METRO EMERSON
64	CALORIFIER	JOWA AB KANGRIM KOREA PYRO NORWAY DENKI, INDIA
65	CARGO FLOW METER	AM INSTRUMENTRING (TOKHEIM SATEM) DANFOSS (MAGFLO) EMERSON ENDRESS AND HAUSER AQUA METRO OIL & MARINE YOKOGAWA
66	TANK LEVEL GAUGING/ REMOTE SOUNDING SYSTEM (INCLUDING Methanol)	EMERSON AUTRONICA KONGSBERG HONEYWELL NAKAKITA SAAB PANASIA
67	GAS DETECTION AND LEAKAGE DETECTION SYSTEM	EMERSON HONEYWELL DRAGER CROWCON MSA SAFETY

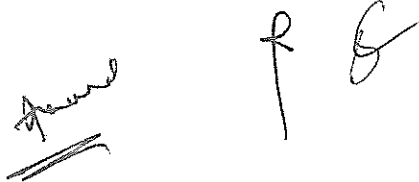
3000 DWT METHANOL DUAL FUEL PLATFORM SUPPLY VESSEL

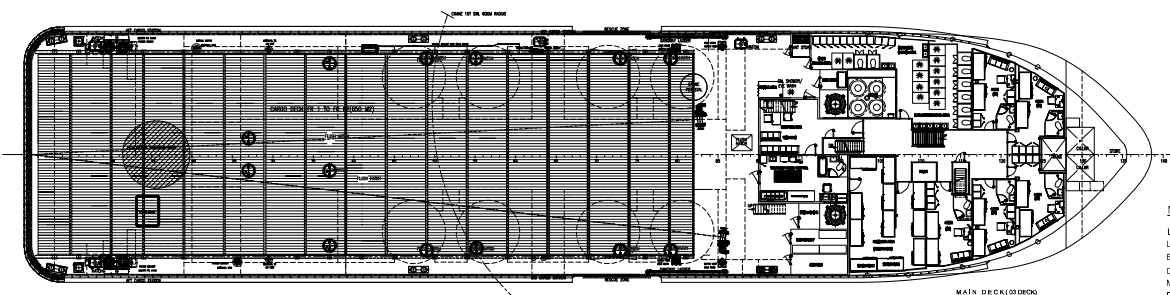
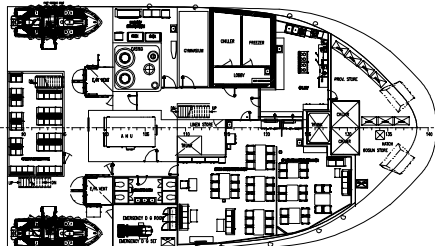
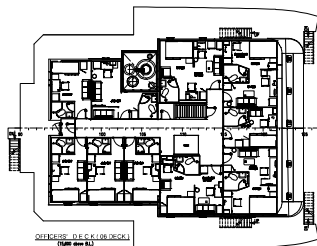
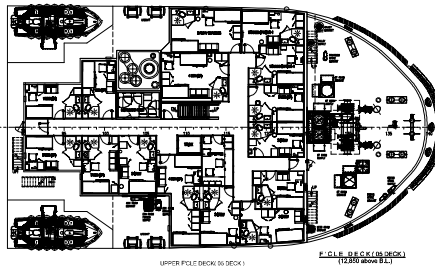
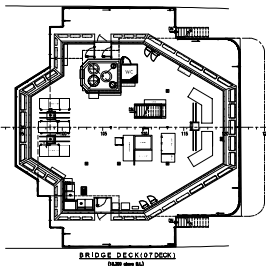
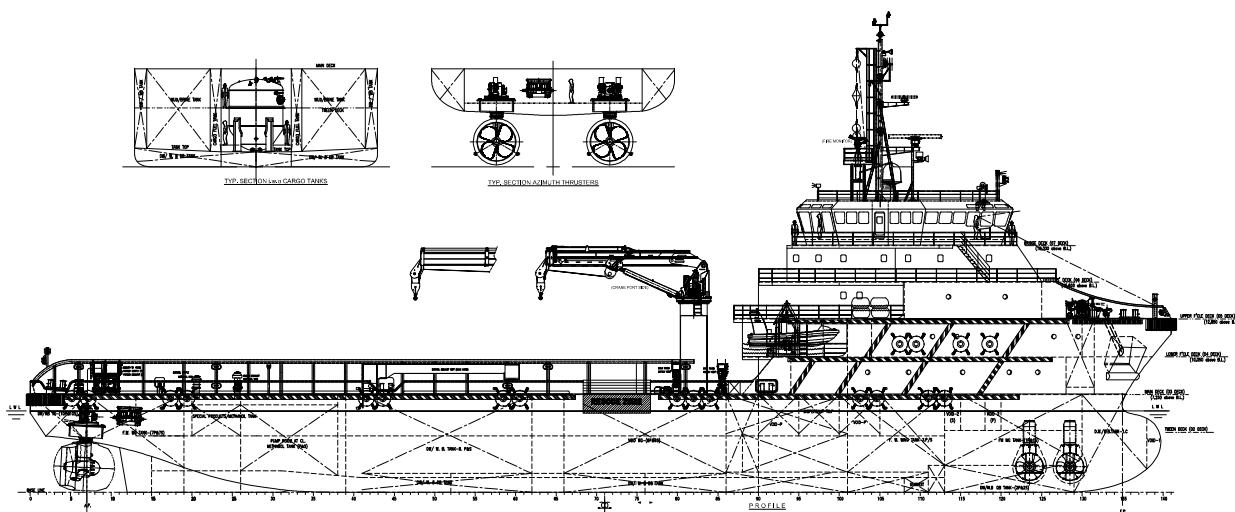
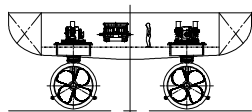
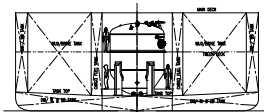
MAKER'S LIST

Annexure III

Note:

1. The Fuel supply system and process control system for Methanol system shall be as recommended by Main engine OEM.
2. The prerogative to choose any of the maker rests with the yard. Owner, only in very essential cases can request for a change, by paying extra price difference.
3. All major equipment must be reputed OEM manufactured only and No Licensee manufactured equipment shall be considered.
4. In order to facilitate arrangements for supply of "spares", the Builder shall to the best extent possible, facilitate appropriate letters from the suppliers / vendors of propulsion equipment, generators, of their commitments for continuous uninterrupted supply of essential "spares" during the service period of the Vessel
5. Indian Supplier/Integrator are permitted to source the equipment from the OEM listed in the Maker's list at Annexure-III

Handwritten signature and initials in the bottom left corner of the page.



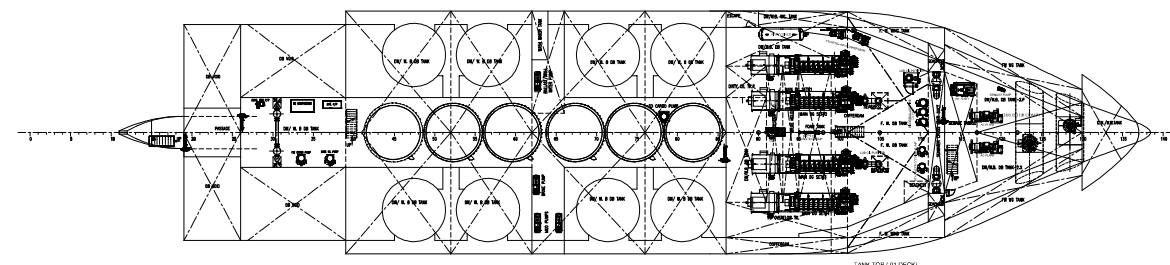
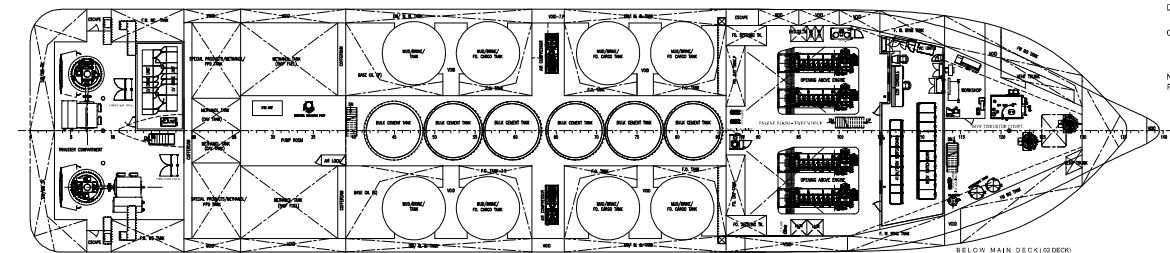
MAIN PARTICULARS:-

LENGTH O.A. : 84.60 m
LENGTH (B.P.) : 76.80 m
BREADTH MLD. : 18.00 m
DEPTH MLD. : 7.25 m
MAX. SCANTLING DRAFT : 6.25 m
DESIGN DRAFT : 5.95 m
FRAME SPACING : 600 mm
COMPLEMENT : 60 (24 Ship Crew + 36 Special Personnel)
SPEED AT DESIGN DRAFT : 12.00 KNOTS AT 90% POWER
DEADWEIGHT : 3000T AT 5.95M DRAFT

CLASSIFICATION: INDIAN REGISTER OF SHIPPING

Shreeji, S.S., MULTIPURPOSE OFFSHORE SUPPORT VESSEL, SUPPLY, OIL, STEEL, SPECIAL PURPOSE SHIP, LPP (H), CAPES-C, R, etc.

NOTE:- THIS IS A PRELIMINARY GA WHICH SHALL BE FURTHER DEVELOPED BASED ON TECHNICAL SPECIFICATIONS



Rev	Description	Date	Drawn	Checked	Appr'd
01	For Review	15/02/2024	S.R.	S.R.	S.R.
02	For Review	15/02/2024	S.R.	S.R.	S.R.
03	For Review	15/02/2024	S.R.	S.R.	S.R.
04	For Review	15/02/2024	S.R.	S.R.	S.R.
05	For Review	15/02/2024	S.R.	S.R.	S.R.
06	For Review	15/02/2024	S.R.	S.R.	S.R.
07	For Review	15/02/2024	S.R.	S.R.	S.R.
08	For Review	15/02/2024	S.R.	S.R.	S.R.
09	For Review	15/02/2024	S.R.	S.R.	S.R.
10	For Review	15/02/2024	S.R.	S.R.	S.R.
11	For Review	15/02/2024	S.R.	S.R.	S.R.
12	For Review	15/02/2024	S.R.	S.R.	S.R.
13	For Review	15/02/2024	S.R.	S.R.	S.R.
14	For Review	15/02/2024	S.R.	S.R.	S.R.
15	For Review	15/02/2024	S.R.	S.R.	S.R.
16	For Review	15/02/2024	S.R.	S.R.	S.R.
17	For Review	15/02/2024	S.R.	S.R.	S.R.
18	For Review	15/02/2024	S.R.	S.R.	S.R.
19	For Review	15/02/2024	S.R.	S.R.	S.R.
20	For Review	15/02/2024	S.R.	S.R.	S.R.
21	For Review	15/02/2024	S.R.	S.R.	S.R.
22	For Review	15/02/2024	S.R.	S.R.	S.R.
23	For Review	15/02/2024	S.R.	S.R.	S.R.
24	For Review	15/02/2024	S.R.	S.R.	S.R.
25	For Review	15/02/2024	S.R.	S.R.	S.R.
26	For Review	15/02/2024	S.R.	S.R.	S.R.
27	For Review	15/02/2024	S.R.	S.R.	S.R.
28	For Review	15/02/2024	S.R.	S.R.	S.R.
29	For Review	15/02/2024	S.R.	S.R.	S.R.
30	For Review	15/02/2024	S.R.	S.R.	S.R.
31	For Review	15/02/2024	S.R.	S.R.	S.R.
32	For Review	15/02/2024	S.R.	S.R.	S.R.
33	For Review	15/02/2024	S.R.	S.R.	S.R.
34	For Review	15/02/2024	S.R.	S.R.	S.R.
35	For Review	15/02/2024	S.R.	S.R.	S.R.
36	For Review	15/02/2024	S.R.	S.R.	S.R.
37	For Review	15/02/2024	S.R.	S.R.	S.R.
38	For Review	15/02/2024	S.R.	S.R.	S.R.
39	For Review	15/02/2024	S.R.	S.R.	S.R.
40	For Review	15/02/2024	S.R.	S.R.	S.R.
41	For Review	15/02/2024	S.R.	S.R.	S.R.
42	For Review	15/02/2024	S.R.	S.R.	S.R.
43	For Review	15/02/2024	S.R.	S.R.	S.R.
44	For Review	15/02/2024	S.R.	S.R.	S.R.
45	For Review	15/02/2024	S.R.	S.R.	S.R.
46	For Review	15/02/2024	S.R.	S.R.	S.R.
47	For Review	15/02/2024	S.R.	S.R.	S.R.
48	For Review	15/02/2024	S.R.	S.R.	S.R.
49	For Review	15/02/2024	S.R.	S.R.	S.R.
50	For Review	15/02/2024	S.R.	S.R.	S.R.
51	For Review	15/02/2024	S.R.	S.R.	S.R.
52	For Review	15/02/2024	S.R.	S.R.	S.R.
53	For Review	15/02/2024	S.R.	S.R.	S.R.
54	For Review	15/02/2024	S.R.	S.R.	S.R.
55	For Review	15/02/2024	S.R.	S.R.	S.R.
56	For Review	15/02/2024	S.R.	S.R.	S.R.
57	For Review	15/02/2024	S.R.	S.R.	S.R.
58	For Review	15/02/2024	S.R.	S.R.	S.R.
59	For Review	15/02/2024	S.R.	S.R.	S.R.
60	For Review	15/02/2024	S.R.	S.R.	S.R.
61	For Review	15/02/2024	S.R.	S.R.	S.R.
62	For Review	15/02/2024	S.R.	S.R.	S.R.
63	For Review	15/02/2024	S.R.	S.R.	S.R.
64	For Review	15/02/2024	S.R.	S.R.	S.R.
65	For Review	15/02/2024	S.R.	S.R.	S.R.
66	For Review	15/02/2024	S.R.	S.R.	S.R.
67	For Review	15/02/2024	S.R.	S.R.	S.R.
68	For Review	15/02/2024	S.R.	S.R.	S.R.
69	For Review	15/02/2024	S.R.	S.R.	S.R.
70	For Review	15/02/2024	S.R.	S.R.	S.R.
71	For Review	15/02/2024	S.R.	S.R.	S.R.
72	For Review	15/02/2024	S.R.	S.R.	S.R.
73	For Review	15/02/2024	S.R.	S.R.	S.R.
74	For Review	15/02/2024	S.R.	S.R.	S.R.
75	For Review	15/02/2024	S.R.	S.R.	S.R.
76	For Review	15/02/2024	S.R.	S.R.	S.R.
77	For Review	15/02/2024	S.R.	S.R.	S.R.
78	For Review	15/02/2024	S.R.	S.R.	S.R.
79	For Review	15/02/2024	S.R.	S.R.	S.R.
80	For Review	15/02/2024	S.R.	S.R.	S.R.
81	For Review	15/02/2024	S.R.	S.R.	S.R.
82	For Review	15/02/2024	S.R.	S.R.	S.R.
83	For Review	15/02/2024	S.R.	S.R.	S.R.
84	For Review	15/02/2024	S.R.	S.R.	S.R.
85	For Review	15/02/2024	S.R.	S.R.	S.R.
86	For Review	15/02/2024	S.R.	S.R.	S.R.
87	For Review	15/02/2024	S.R.	S.R.	S.R.
88	For Review	15/02/2024	S.R.	S.R.	S.R.
89	For Review	15/02/2024	S.R.	S.R.	S.R.
90	For Review	15/02/2024	S.R.	S.R.	S.R.
91	For Review	15/02/2024	S.R.	S.R.	S.R.
92	For Review	15/02/2024	S.R.	S.R.	S.R.
93	For Review	15/02/2024	S.R.	S.R.	S.R.
94	For Review	15/02/2024	S.R.	S.R.	S.R.
95	For Review	15/02/2024	S.R.	S.R.	S.R.
96	For Review	15/02/2024	S.R.	S.R.	S.R.
97	For Review	15/02/2024	S.R.	S.R.	S.R.
98	For Review	15/02/2024	S.R.	S.R.	S.R.
99	For Review	15/02/2024	S.R.	S.R.	S.R.
100	For Review	15/02/2024	S.R.	S.R.	S.R.