OIL INDIA LIMITED
(A Government of India Enterprises)
PO : Duliajan – 786602
Assam (India)

TELEPHONE NO. (91-374) 2808719
Email: ankurjyoti_sarmah@oilindia.in; erp_mm@oilindia.in

FORWARDING LETTER

Tender No.	**: SDI4036P20 DT: 07.03.2020**
Tender Fee	**: NIL**
Bid Security	**: Applicable**
Bidding Type	**: SINGLE STAGE TWO BID SYSTEM**
Bid Closing on	**: 18.06.2020 (11.00 HRS IST)**
Bid Opening on	**: 18.06.2020 (14.00 HRS IST)**
Performance Security	**: Applicable**
Integrity Pact	**: Applicable**

The complete bid documents and details for purchasing bid documents, participation in E-tenders are available on OIL's e-procurement portal https://etender.srm.oilindia.in/irj/portal as well as OIL's website www.oil-india.com.

NOTE: All addenda, Corrigenda, time extension etc. to the tenders will be hosted on above website and e- portal only. Bidders should regularly visit above website and e-portal to keep themselves updated.

The items covered by this enquiry shall be used by Oil India Limited in the PEL/ML areas which are issued/renewed after 01/04/99 and hence concessional rate of GST @5% against Essentiality Certificate for invoice value 1 Lakh and above will be applicable as per Notification No. 3/2017- Integrated/ Central Tax (Rate) dated 28th June, 2017.

In the event of order, OIL will issue Essentiality Certificate (EC), where concessional rate of GST @5% will be applicable. Supplier shall affect dispatch only on receipt of this certificate from OIL, failing which all related liabilities shall be to Supplier's account.

OIL invites Bids for **PROCUREMENT OF MULTI PURPOSE FIRE TENDER REQUIRED FOR OIL FIRE SERVICE DEPTT, DULIAJAN (QTY = 01 NO.)** through its e-Procurement site under **SINGLE STAGE TWO BID SYSTEM**. The bidding documents and other terms and conditions are available at Booklet No. MM/LOCAL/E-01/2005 for E-Procurement of Indigenous Tenders. The prescribed Bid Forms for submission of bids are available in the Technical RFx -> External Area - > Tender Documents

The general details of tender can be viewed by opening the RFx [Tender] under RFx and Auctions. The details of items tendered can be found in the Item Data and details uploaded under Technical RFX.

This Tender has been floated for participation of Indigenous bidders only. Hence, only Indigenous bidders are eligible to participate against this tender.

Consortiums/Joint venture entities are not eligible to participate against this tender.

The tender will be governed by:

a) **For technical support on various matters viz. Online registration of vendors, Resetting of Passwords, submission of online bids etc, vendors should contact OIL's ERP MM Deptt at following: Tel Nos. = 0374-2807178/ 2807171/ 2807192/ 2804903. Email id = erp_mm@oilindia.in; esupport@oilindia.in**

b) **OIL's office timings are as below:**

	Time (in IST)
Monday – Friday	**07.00 AM to 11.00 AM; 12.30 PM to 03.30 PM**
Saturday	**07.00 AM to 11.00 AM**
Sunday and Holidays	**Closed**

Vendors should contact OIL officials at above timings only.

OIL Bank Details :

	Bank Details of Beneficiary	
a	Bank Name	STATE BANK OF INDIA
b	Branch Name	Duliajan
c	Branch Address	Duliajan, Dist-Dibrugarh
d	Banker Account No.	10494832599
e	Type of Account	Current Account
f	IFSC Code	SBIN0002053
g	MICR Code	786002302
h	SWIFT Code	SBININBB479
i	Contact No.	9435554859
j	Contact Person Name	Mr. K.L.K.Banik, AGM
k	Fax No.	0374-2802729
l	Email Id	sbi.02053@sbi.co.in

c) "General Terms & Conditions" for e-Procurement as per Booklet No. MM/LOCAL/E-01/2005 for E-Procurement of Indigenous Tenders.

d) Technical specifications and Quantity as per **Annexure – IA**.

e) The prescribed Bid Forms for submission of bids are available in the Technical RFx -> External Area - > Tender Documents.

f) Amendments to the NIT after its issue will be published on OIL's website only. Revision, clarification, addendum, corrigendum, time extension etc. to the tender will be hosted on OIL website only. No separate notification shall be issued in the press. Prospective bidders are requested to visit website regularly to keep themselves updated.

g) Any sum of money due and payable to the contractor (including Security Deposit refundable to them) under this or any other contract may be appropriated by Oil India Limited and set-off against any claim of Oil India Limited (or such other person or persons contracting through Oil India Limited) for payment of sum of money arising out of this contract or under any other contract made by the contractor with Oil India Limited (or such other person or persons contracting through Oil India Limited).

h) Bidders are advised to fill up the Technical bid check list (**Annexure EEE**) and Response sheet (**Annexure FFF**) given in MS excel format in Technical RFx -> External Area - > Tender Documents. The above filled up document to be uploaded in the Technical Attachment. For details please refer "Vendor User Manual" / "NEW INSTRUCTIONS"

Special Notes:

1.0

(I)

a) Bidders who do not have E-tender Login ID and Password should complete their online registration at least seven (7) days prior to the scheduled bid closing date and time of the tender. For online registration, Bidder may visit the OIL's E-tender site https://etender.srm.oilindia.in/irj/portal

b) Necessary Login ID & Password will be issued by OIL only after submitting the complete online registration by the Bidder. In the event of late registration/incomplete registration by Bidder, OIL INDIA LIMITED shall not be responsible for late allotment of User ID & Password and request for bid closing date extension on that plea shall not be entertained by Company.

c) MSE Units (Manufacturers/Service Providers only and not their dealers/distributors) who are already registered with District Industry Centers or Khadi & Village Industries Commission or Khadi & Village Industries Board or Coir Board or National Small Industries Corporation or Directorate of Handicrafts & Handloom or any other body specified by Ministry of MSME are exempted from payment of Bid Security (EMD) irrespective of their monetary limit, product category and capacity mentioned in their registration, subject to submission of valid MSE registration certificate issued by appropriate authority.

d) For availing benefits under Public Procurement Policy (Purchase preference), the interested MSE Bidders must ensure that they are the manufacturers of the tendered item(s) and registered with the appropriate authority for the said item(s). Bids without EMD shall be rejected, if the technical offer does not include a valid copy of relevant MSE Certificate issued by appropriate authority specifying the item as per tender. Therefore, it is in the interest of such MSE Vendors to furnish a copy of complete certificate to the concerned tender handling officer of OIL at least seven (7) days prior to the scheduled Bid Closing Date of the tender, seeking clarification/confirmation as to whether their MSE certificate is eligible for EMD exemption or not. Late communication in this regard and request for bid closing date extension on that plea shall not be entertained by Company.

(II)

In case a Startup [defined as per Ministry of Commerce and Industry (Department of Industrial Policy and Promotion, DIPP) latest notification]/ MSE is interested in supplying the tendered item but does not meet the Pre-Qualifying Criteria (PQC)/ Proven Track Record (PTR) indicated in the tender document, the Startup/MSE is requested to write a detailed proposal separately, and not against the present tender

requirement, to the tender issuing authority about its product. Such proposals shall be accompanied by relevant documents in support of MSE (where applicable) or in case of Startup, following documents shall be given:

1. Certificate of Recognition issued by the Department of Industrial Policy and Promotion, Ministry of Commerce and Industry, Government of India.

2. Certificate of incorporation.

3. Audited Profit & Loss (P&L) Statement of all the Financial Years since incorporation. In case where the Balance sheet has not been prepared, bidder shall submit a certificate in original from its CEO/CFO stating the turnover of the bidding entity separately for each Financial Years since incorporation alongwith a declaration stating the reason for not furnishing the audited P&L Statement.This certificate shall be endorsed by a Chartered Accountant/Statutory Auditor.

The Proposal shall be examined by OIL and OIL may consider inviting a detailed offer from the Startup/MSE with the intent to place a TRIAL or TEST Order, provided the Startup/MSE meets the Quality and Technical Specifications.

In case the Startup/MSE is successful in the Trial Order, the vendor shall be considered for PQC exemption/relaxation (as the case may be) for the next tender for such item till the time it remains a Startup/MSE

NOTE:
In case of MSE/PSUs/ Govt. Bodies / eligible institutions etc., they must apply to concerned tender handling officer, Materials Department, Oil India Limited, P.O. Duliajan, Assam-786602 for waiver of EMD upto one week prior to the Bid closing date (or as amended in e-portal).

2.0 The tender is invited under SINGLE STAGE-TWO BID SYSTEM. The bidders are required to submit both the "TECHNO-COMMERCIAL UNPRICED BID" and "PRICED BID" through electronic format in the OIL's e-Tender portal within the Bid Closing Date and Time stipulated in the e-Tender.

2.1 Please ensure that Technical Bid / all technical related documents related to the tender are uploaded in the RFx Information > Technical Attachment only**.** The "**TECHNO-COMMERCIAL UNPRICED BID**" shall contain all techno-commercial details **except the prices**. **Please note that no price details should be uploaded in** Technical RFx Response**.**

2.2 The "**PRICE BID**" must contain the price schedule and the bidder's commercial terms and conditions. **For price upload area , please refer** "NEW INSTRUCTIONS" Please refer Annex-BB for price schedule.

2.3 Offer not complying with above submission procedure will be rejected as per Bid Rejection Criteria mentioned in Annexure-CCC.

3.0 Please note that all tender forms and supporting documents are to be submitted through OIL's e-Procurement site only except following documents which are to be submitted manually in sealed envelope super scribed with **Tender no.** and **Due date** to **DGM-Materials, Materials Department, Oil India Limited, Duliajan - 786602, Assam** on or before the Bid Closing Date and Time mentioned in the Tender.

a) **Original Bid Security**
b) **Detailed Catalogue (if any)**
c) **Any other document required to be submitted in original as per tender requirement**

All documents submitted in physical form should be signed on all pages by the authorised signatory of the bidder and to be submitted in Duplicate.

4.0 Benefits to Micro & Small Enterprises (MSEs) as per OIL's Public Procurement Policy for Micro and Small Enterprises (MSEs) shall be given. Bidders are requested to go though ANNEXURE – I of MM/LOCAL/E-01/2005 for E-Procurement of Indigenous Tenders for more details.

5.0 Bidders are requested to examine all instructions, forms, terms and specifications in the bid. Failure to furnish all information required as per the NIT or submission of offers not substantially responsive to the bid in every respect will be at the bidders risk and may result in rejection of its offer without seeking any clarifications.

6.0 Bidders must ensure that their bid is uploaded in the system before the tender closing date and time. Also, they must ensure that above documents which are to be submitted in a sealed envelope are also submitted at the above mentioned address before the bid closing date and time failing which the offer shall be rejected.

7.0 Bid must be submitted electronically only through OIL's e-procurement portal. Bid submitted in any other form will be rejected.

8.0 **SINGLE STAGE TWO BID SYSTEM** shall be followed for this tender and only the PRICED-BIDS of the bidders whose offers are commercially and technically acceptable shall be opened for further evaluation.

9.0 **a) The Integrity Pact is applicable against this tender. Therefore, please submit the Integrity Pact document duly signed along with your quotation as per BRC. OIL shall be entering into an Integrity Pact with the bidders as per format enclosed vide Annexure DDD of the tender document. This Integrity Pact proforma has been duly signed digitally by OIL's competent signatory. The proforma has to be submitted by the bidder (along with the technical bid) duly signed (digitally) by the same signatory who signed the bid, i.e., who is duly authorized to sign the bid. Uploading the Integrity Pact with digital signature will be construed that all pages of the Integrity Pact has been signed by the bidder's authorized signatory who sign the Bid. If any bidder refuses to sign Integrity Pact or declines to submit Integrity Pact with the offer, their bid shall be rejected straightway.**

b) The name of the OIL's Independent External Monitors at present are as under:

1. **SHRI SUTANU BEHURIA, IAS (Retd.)**
   E-Mail ID: sutanu2911@gmail.com

2. **SHRI JAGMOHAN GARG**
   Ex-Vigilance Commissioner, CVC
   E-mail ID: jagmohan.garg@gmail.com

3. **SHRI RUDHRA GANGADHARAN, IAS (RETD.)**
   Ex-Secretary, Ministry of Agriculture
   E-mail ID: rudhra.gangadharan@gmail.com

10.0 The tender shall be governed by the Bid Rejection & Bid Evaluation Criteria given in enclosed **Annexure-CCC**. However, if any of the Clauses of the Bid Rejection Criteria / Bid Evaluation Criteria (as per **Annexure-CCC**) contradict the Clauses of the tender and / or "General Terms & Conditions" as per Booklet No. MM/LOCAL/E-01/2005 for E-Procurement of Indigenous Tenders elsewhere, those in the BEC / BRC shall prevail.

11.0 To ascertain the substantial responsiveness of the bid OIL reserves the right to ask the bidder for clarification in respect of clauses covered under BRC also and such clarifications fulfilling the BRC clauses in toto must be received on or before the deadline given by the company, failing which the offer will be summarily rejected.

12.0 Please do refer the User Manual provided on the portal on the procedure How to create Response for submitting offer.

13.0 If Bank Guarantee is submitted towards 'Bid Security', then bidders have to ensure that the Bank Guarantee issuing bank indicate the name and detailed address (including e-mail) of their higher office from where confirmation towards genuineness of the Bank Guarantee can be obtained.

14.0 Bidders are requested to refer to the enclosed **Annexure – BBB** for the Taxes and Duties clauses under GST regime.

15.0 Delivery/collection Instructions in cases where transportation is in OIL's scope:

(i) the suppliers shall be required to deliver the Sundry consignments of weight less than 3 (Three) Tons at the godown/office/collection point of OIL's authorized transporter in various cities.
(ii) consignments weighing more than 3(Three) Tons shall be collected from the supplier's premises/loading points by OIL's authorized transporter.
(iii) the names of OIL's current authorized transporters are:
a) M/s Western Carriers (India) Ltd.
b) M/s DARCL Logistics Limited

Bidder's are requested to note the above delivery/collection instructions while submitting their offers.

16.0 While submitting the offers bidders are requested to refer to the enclosed **Annexure – BB (Price Bid Format and Evaluation Criteria).**

17.0 The applicable GST on the Liquidated Damage if any, shall have to be borne by the seller. Accordingly, the Liquidated Damage shall be recovered from the seller along with applicable GST.

18.0 Bidders should fill-up and submit alongwith their bid an UNDERTAKING towards authenticity of information/documents furnished by them, as per enclosed ANNEXURE-K.

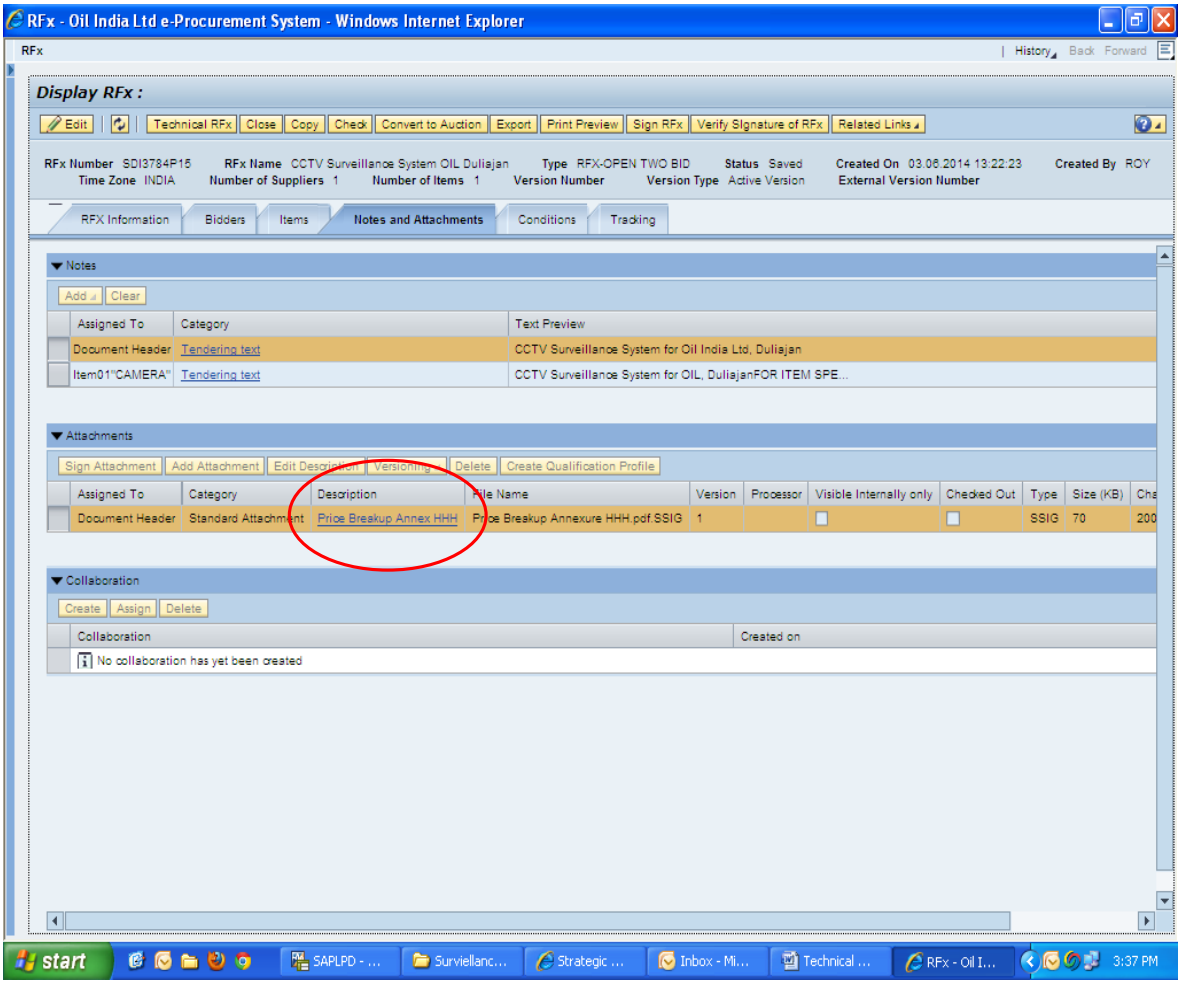
19.0 For convenience of the qualified Bidders and to improve transparency, the rates/costs quoted by bidders against OIL's e-tenders shall be available for online viewing by such Bidders whose price bids are opened by Company. A Bidder can view item-wise rates/ costs of all other such peer bidders against the tender immediately after price bid opening, if the e-tender is floated by Company with PRICE CONDITION. In case the Price-Bid is invited by Company through attachment form under "Notes & Attachment" (i.e., NO PRICE Condition), Bidders must upload their detailed Price-Bid as per the prescribed format under "Notes & At4ichment", in addition to filling up the "Total Bid Value" Tab taking into account the cost of all individual line items and

other applicable charges like freight, tax, duties, levies etc. Under NO PRICE Condition (i.e., Price Bid in attachment form), the "Total Bid Value" as calculated & quoted by the Bidder shall only be shared amongst the eligible bidders and Company will not assume any responsibility whatsoever towards calculation errors/ omissions therein, if any. Notwithstanding to sharing the "Total Bid Value" or the same is whether filled up by the Bidder or not, Company will evaluate the cost details to ascertain the inter-se-ranking of bidders strictly as per the uploaded attachment and Bid Evaluation Criteria only. Online view of prices as above shall be available to the Bidders only upto seven days from the date of Price-Bid opening of thee-tender.

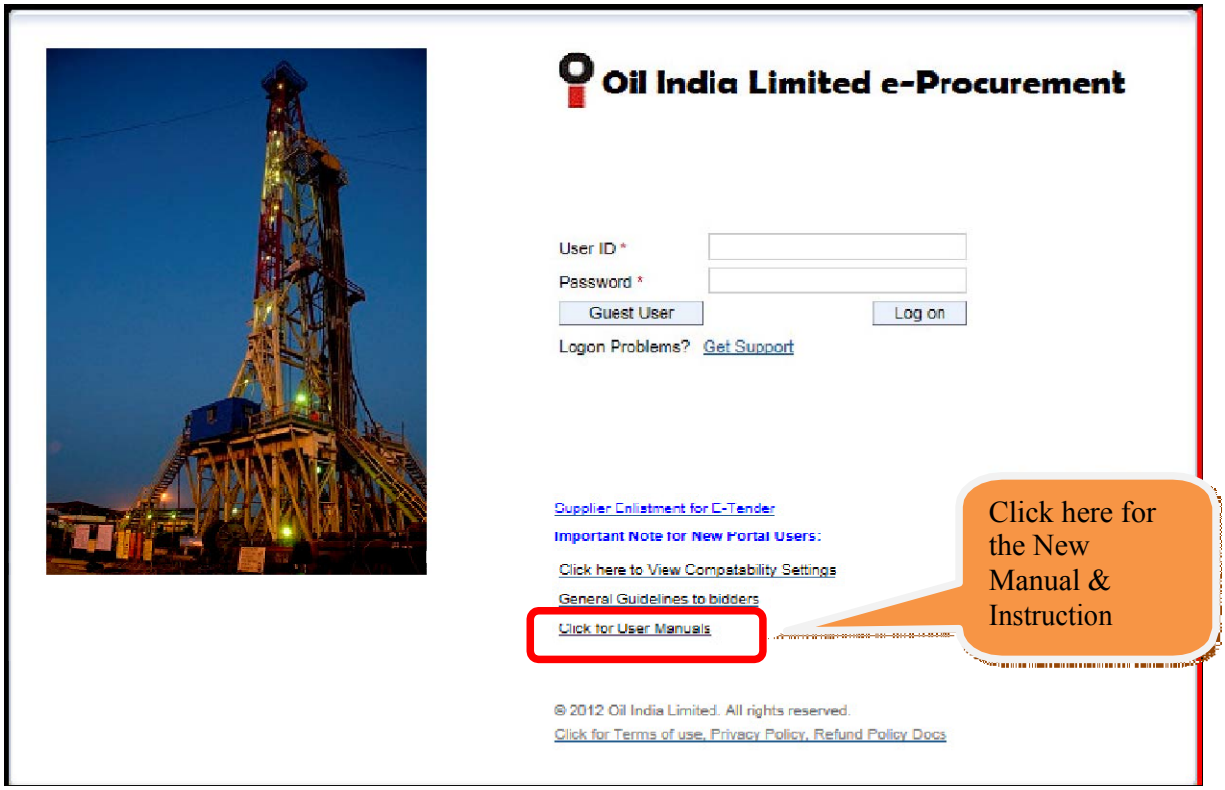
20.0 DISCLAIMER: Rates/Costs shown above are as calculated/quoted by the respective Bidder. Company does not assume any responsibility and shall not be. liable for any calculation error or omissions. However, for placement of order/award of contract, Company shall evaluate the cost details to determine the inter-se-ranking of Bidders strictly as per their Price-Bids and Bid Evaluation Criteria of the Tender. OIL INDIA LTD accepts no liability of any nature resulting from mismatch of "Total Bid Value" & price submitted under "Notes & Attachment" by any bidder and no claim whatsoever shall be entertained thereof.

21.0 Price Breakup:

Bidders should submit the price breakup of all the items as per "**Annexure HHH**" which has been uploaded under "Notes & Attachments" > "Attachments" as shown below. The price breakup "Annexure HHH" should be filled up, signed and uploaded under "Notes & Attachments" > "Attachments" only. **The filled up price breakup of all the items should not be uploaded in Technical Attachment.**



Please do refer "NEW INSTRUCTION TO BIDDER FOR SUBMISSION" for the above two points and also please refer " New Vendor Manual (effective 01.03.2019) " available in the login Page of the OIL's E-tender Portal.



NOTE:

Bidders should submit their bids (preferably in tabular form) explicitly mentioning compliance / non compliance to all the terms and conditions of the NIT.

Yours Faithfully

-Sd-
(A J SARMAH)
CHIEF MANAGER MATERIALS (IP)
FOR : CGM-MATERIALS (HoD)

Annexure - CCC

TENDER NO. SDI4036P20 DT: 07.03.2020

BID REJECTION CRITERIA (BRC) / BID EVALUATION CRITERIA (BEC)

The following BRC/BEC will govern the evaluation of the bids received against this tender. Bids that do not comply with stipulated BRC/BEC in full will be treated as non responsive and such bids shall prima-facie be rejected. Bid evaluation will be done only for those bids that pass through the "Bid Rejection Criteria" as stipulated in this document.

Other terms and conditions of the enquiry shall be as per General Terms and Conditions vide MM/LOCAL/E-01/2005 for E-Procurement of Indigenous Tenders. However, if any of the Clauses of the Bid Rejection Criteria / Bid Evaluation Criteria (BRC / BEC) contradict the Clauses of the tender or MM/LOCAL/E-01/2005 elsewhere, those in the BRC / BEC shall prevail.

Criteria	**Complied / Not Complied. (Remarks if any)**
1.0 BID REJECTION CRITERIA (BRC): The bid shall conform generally to the specifications, terms and conditions given in this document. Notwithstanding the general conformity of the bids to the stipulated specifications, the following requirements will have to be particularly met by the Bidders without which the same will be considered as non-responsive and rejected. **A) TECHNICAL:** 1. The Bidder shall be in the business of manufacturing/ fabricating / assembling of Fire Tenders in the last 5(five) years preceding to original Bid Closing date of this Tender. a. Copy of "Certificate of Incorporation" or equivalent and "NSIC or equivalent Certificate" specifying the nature of business of the firm shall be furnished along with the bid. b. The bidder should submit the order book for manufacturing/ fabricating/ assembling of fire tenders in the last five years preceding theoriginal Bid Closing date of this Tender mentioning the following details: i. Purchase Order No. and Date ii. Details of Fire Tender iii. Organization iv. Quantity v. Date of Supply 2. The bidder should have the manufacturing /fabricating / assembling facilities and adequate testing /quality assurance facilities of Fire Tender. The list of the necessary machinery / equipment for manufacturing/ fabricating / assembling & testing of Fire Tender shall be submitted along with bid.	

3. The bidder should have the experience of manufacturing/ fabricating / assembling and successful execution of supply of **at least 1(one) Similar order ofqty. 01 no.(minimum)** in the **last 5(five) years** preceding theoriginal Bid Closing date of this Tender.

Copy of Purchase Order(s) and Proof of Supply/ Commissioning Report(s)/ Performance Report(s) shall be submitted along with bid.

Similar order means:-
Supply of at least 01(One) No. Multi-Purpose Fire Tenderwith pump capacity of minimum 1800 LPM at 07 KG/CM2 and minimum 500 kg. DCP system capacity on minimum 16 tonne chassis.

OR

Supply of at least 01(One) No. Fire Tenderwith Pump capacity of minimum 1800 LPM at 07 KG/CM2 on minimum 16 tonne chassis and supply of One No. DCP Tender on minimum 16 tonne chassis.

In this regard, the bidder shall submit the following documents in support of successful execution of past supply /contract -
(a) Copy(ies) of Purchase Order(s) / Contract document(s), and
(b) Any of the following documents that confirms the successful execution of the order(s)-
- Performance/Commissioning Report from the clients,
- Delivery challan / invoice etc.
- any other documentary evidence that can substantiate the successful execution of each of the above Purchase Orders/ contracts.

Note:
a) The Purchase Order date need not be within 5 (five) years preceding original bid closing date of this tender. However, the execution of supply should be within 5 (five) years preceding original bid closing date of this tender.

b) Satisfactory supply/completion/installation report (if submitted) should be issued on client's official letterhead with signature and stamp.

B) FINANCIAL:

a) **Annual Financial Turnover** of the bidder during any of preceding 03 (three) financial / accounting years from the original bid closing date should be at least **Rs. 44.47Lakhs.**

b) Net Worth of the firm should be Positive for preceding Financial / Accounting year (FY=2019-20).

Note -For (a) & (b): Considering the time required for preparation of Financial Statements, if the last date of preceding financial / accounting year falls within the preceding six months reckoned from the original bid closing date and the Financial Statements of the preceding financial / accounting year are not available with the bidder, then the financial turnover of the previous three financial / accounting years excluding the preceding financial / accounting year will be considered. In such cases, the Net worth of the previous financial / accounting year excluding the

preceding financial / accounting year will be considered. However, the bidder has to submit an affidavit/undertaking certifying that 'the balance sheet/Financial Statements for the financial year…..…… (As the case may be) has actually not been audited so far'.

Notes:

a) For proof of Annual Turnover & Net worth any one of the following document must be submitted along with the bid:-

i) A certificate issued by a practicing Chartered Cost Accountant (with Membership Number and Firm Registration Number), certifying the Annual turnover & Net worth as per format prescribed in ANNEXURE-J.

OR

ii) Audited Balance Sheet along with Profit & Loss account.

b) In case the bidder is a Central Govt. Organization/PSU/State Govt. Organization/Semi-State Govt. Organization or any other Central/State Govt. Undertaking, where the auditor is appointed only after the approval of Comptroller and Auditor General of India and the Central Government, their certificates may be accepted even though FRN is not available. However, bidder to provide documentary evidence for the same.

C) COMMERCIAL:

i) **Validity** of the bid shall be **minimum 120 days** from the Bid Closing Date.

ii) **Bid security**:
The bid must be accompanied by Bid Security of **Rs.1.78 Lakhs** in OIL's prescribed format as Bank Guarantee in favour of OIL. The Bid Security may be submitted manually in sealed envelope superscribed with Tender no. and Bid Closing date to Head Materials, Materials Department, Oil India Limited, Duliajan- 786602, Assam on or before the Bid Closing Date and Time mentioned in the Tender. **The Bank Guarantee towards Bid Security shall be valid for 7 months from Bid closing date. (i.e. upto 31.01.2021)**

Bid Security may also be paid online on or before the Bid Closing Date and Time mentioned in the Tender.

If bid security in ORIGINAL of above mentioned Amount and Validity is not received or paid online within bid closing date and time, the bid submitted through electronic form will be rejected without any further consideration.

For exemption for submission of Bid Security, please refer Clause No. 8.16 of General Terms and Conditions vide MM/LOCAL/E-01/2005 for E-Procurement of Indigenous Tenders.

The format of Bank Guarantee towards Bid Security (Annexure – VII) has been amended to Annexure – VII (Revised) and bidders should submit Bank Guarantee towards Bid Security as per Annexure – VII (Revised) only.

iii) Bids are invited under "Single Stage Two Bid System". Bidders have to submit both the "Techno-commercialUnpriced Bids" and "Priced Bids" through electronic form in the OIL's e-Tender portal within the bid Closing date and time stipulated in the e-tender. The Techno-commercialUnpriced bid is to be submitted as per scope of works and Technical specification of the tender and the priced bid as per the online Commercial bid format. For details of submission procedure, please refer relevant para of General Terms and Conditions vide MM/LOCAL/E-01/2005 for E-Procurement of Indigenous Tenders. Any offer not complying with the above shall be rejected straightway.

iv) **Performance Security:**

The successful bidder shall submit Performance Security @ 10% of PO value within 30 days of receipt of the formal purchase order failing which OIL reserves the right to cancel the order and forfeit the Bid Security. Bidders should undertake in their bids to submit Performance Security as stated above.

The Performance Security shall be in the following form :

A Bank Guarantee in the prescribed OIL's format valid for 90 days beyond delivery period and applicable warranty/guarantee period (if any).

The validity requirement of Performance Security is assuming despatch within stipulated delivery period and confirmation to all terms and conditions of order. In case of any delay in despatch or non-confirmation to all terms and conditions of order, validity of the Performance Security is to be extended suitably as advised by OIL.

v) The prices offered will have to be firm through delivery and not subject to variation on any account. A bid submitted with an adjustable price will be treated as non-responsive and rejected.

vi) Bids received after the bid closing date and time will be rejected. Similarly, modifications to bids received after the bid closing date & time will not be considered.

vii) All the Bids must be Digitally Signed using "Class 3" digital certificate with Organisation's name *(e-commerce application)* as per Indian IT Act obtained from the licensed Certifying Authorities operating under the Root Certifying Authority of India (RCAI), Controller of Certifying Authorities (CCA) of India. The bid signed using other than "Class 3 with Organisation's Name" digital certificate, will be rejected.

viii) Technical RFx Response folder is meant for Technical bid only. Therefore, No price should be given in Technical RFx Response folder, otherwise the offer will be rejected.

ix) Price should be maintained in the "online price schedule" only. The price submitted other than the "online price schedule" shall not be considered.

x)**A bid shall be rejected straightway if it does not conform to any one of the following clauses:**

(a) Validity of bid shorter than the validity indicated in the Tender.
(b) Original Bid Security not received within the stipulated date & time mentioned in the Tender.
(c) Bid Security with (i) Validity shorter than the validity indicated in Tender and/or (ii) Bid Security amount lesser than the amount indicated in the Tender.
(d) In case the Party refuses to sign Integrity Pact.
(e) Annual Turnover of a bidder lower than the Annual turnover mentioned in the Tender.

xi) DELIVERY OF MATERIALS:Maximum allowable delivery period 30 weeks after receipt of PO.
INSTALLATION& COMMISSIONING: 04 WEEKS FROM THE SITE CLEARENCE.

NOTE: FOR CLAUSE NOS. C(ii) & C(iv) OF BID SECURITY/EMD AND PBG

The bidders/successful bidders are requested to advise the Bank Guarantee issuing bank to comply with the following and ensure to submit, the receipt of the copy of SFMS message as sent by the issuing bank branch, along with the original bank guarantee in OIL's tender issuing office:

"The Bank Guarantee issuing Bank branch must ensure the following:
The Bank Guarantee issued by the Bank must be routed through SFMS platform as per following details:

(i) MT 760 / MT 760 COV for issuance of Bank Guarantee
(ii) MT 760 / MT 767 COV for amendment of Bank Guarantee

The above message / intimation shall be sent through SFMS by the BG issuing Bank branch to HDFC Bank, Duliajan Branch, IFS Code – HDFC0002118; SWIFT Code - HDFCINBBCAL.
Branch Address: HDFC Bank Limited, Duliajan Branch, Utopia Complex, BOC Gate, Jayanagar, Duliajan, Dibrugarh, PIN – 786602."

2.0 BID EVALUATION CRITERIA (BEC)

The bids conforming to the terms and conditions stipulated in the tender and considered to be responsive after subjecting to the Bid Rejection Criteria as well as verification of original of any or all documents/ documentary evidences pertaining to BRC, will be considered for further evaluation as per the Bid Evaluation Criteria given below.The original Bid Closing Date shall be considered by OIL for evaluation of BRC criteria even in case of any extension of the original Bid Closing Date.

A) TECHNICAL:

i) The bids will be evaluated as per NIT specifications, terms & conditions.

B) COMMERCIAL: i) To evaluate the inter-se-ranking of the offers, all Taxes / Levies will be considered as per prevailing Govt. guidelines as applicable on the bid opening date. Bidders may check this with the appropriate authority before submitting their offer. ii) Priced bids of only those bidders will be opened whose offers are found technically acceptable. The technically acceptable bidders will be informed before opening of the "priced bid". iii) A job executed by a bidder for its own organization / subsidiary cannot be considered as experience for the purpose of meeting BEC. iv) To ascertain the substantial responsiveness of the bid OIL reserves the right to ask the bidder for clarification in respect of clauses covered under BRC also and such clarifications fulfilling the BRC clauses in toto must be received on or before the deadline given by the company, failing which the offer will be summarily rejected.	

NOTE:

Bidders should submit their bids (preferably in tabular form) explicitly mentioning compliance / non compliance to all the terms and conditions of the NIT.

-----xxxx-----

TECHNICAL SPECIFICATIONS WITH QUANTITY

Tender No & Date: SDI4036P20 DT: 07.03.2020

	Complied / Not Complied. (Remarks if any)

ITEM NO. 10

SUPPLY OF CHASSIS OF MULTI-PURPOSE FIRE TENDER – QTY = 01 NO

PART – "A" {CHASSIS FOR "MULTIPURPOSE FIRE TENDER"}

Brand new 4x2 drive chassis of TATA, Ashok Leyland or Equivalent make manufactured not prior to six months from the date of issuance of Letter of Intent (LOI). The bidder shall take special care in selecting and designing the Multi-Purpose Fire Tender considering the unit's application in rough terrain and typical oilfield roads. The offered model shall be latest and conforming to international quality standard norms, having specifications, fittings, accessories, etc. as under:

1. CHASSIS:

a	Drive & Cowl	4 x 2 Drive & Full Forward Control Cowl.
b	Engine	Min. 6 cylinder Water-cooled diesel engine.
c	Max. Output Power	Not less than 160 HP at rated rpm.
d	Max. Output Torque	Not less than 400NM at rated rpm.
e	Emission	Emission Norms: Euro VI or BS VI
f	Steering	Hydraulic Power Assisted Steering (Right Hand Steering).
g	Gearbox	Minimum 5 forward speed & 1 reverse speed.
h	PTO for the Main water pump	Power take –off (PTO) unit for the main water pump shall be independent type (VAS make). The PTO operation shall be through Pneumatic as well as mechanical cable linkage.
i	Side PTO (as applicable)	Side Power take –off (Chassis should be attached with PTO) for driving the Hi Pressure Pump. It should be suitable to match engine and pump characteristic. It should engaged by separate lever in main cabin. Necessary support for PTO unit, shaft etc. should be provided. The drive assembly shall be dynamically balance.

j	Wheelbase	In the range of 4600 mm. to 5200mm.
k	GVW	Not less than 16000 Kg.
l	Brake	Full air or Hydraulic power assisted Dual Circuit Service Brake and suitable Parking Brake.
m	Axles	Front - 1, Rear - 1(Drive axle).
n	Suspension	Semi elliptical leaf spring suspension.
o	Wheels & Tyres	Front- 2, Rear - 4 & Spare - 1, Tyre .Size - preferably 10.00 x 20 of adequate ply rating

2. DRIVER'S CABIN:

Details of driver's cabin should be as mentioned elsewhere in the tender.

3. DIMENSIONS:

Full Unit:

Overall Length–Approx. 8500mm.

Max. Width – 2600 mm.

Max. Height – Not more than 3000mm (Unladen).

4. ADDITIONAL/OTHER FITMENTS & ACCESSORIES:

a. All standard gauges and meters, Horn, Reversing Alarm, Lightings, Reflectors, Roof Lamps, Windscreen wipers, Sun shade, Glove box, Lockable fuel tank, Standard Tool Kit, 30T Capacity Hydraulic Jack with handle & wheel wrench, Mud flaps/guards, etc.

b. Rear View Mirror- 2 Nos.

c. Well-covered Battery Box, Tool box. Suitable storage box at suitable location.

d. Suitable Jaw & Pint type rear Towing Hook, mounting arrangement for spare wheel.

e. First Aid Box, Fire Extinguisher, Licence Holder at suitable locations and other fittings required as per MV Act.

5. DOCUMENTATION:

A. The following documents/literature are to be submitted along with the bid:

a. Technical leaflet, to support the specifications provided in the bid. (All specifications, as desired, as well as Make, MODEL NAME/ ,CODE, Type of the offered Truck Fire Tender Chassis shall clearly be defined in the bid. Submission of Technical Leaflet is not sufficient).

b. A detailed Dimensional Drawing of the fire tender, showing among others overhang, seat size, leg space & sitting arrangement etc. as applicable.

B. The following documents /literatures are to be submitted along with the supply:

a. Temporary Registration, Insurance, Road Tax, Sale Letter in Form 21 & 22/22(A), etc. in the name of M/s OIL INDIA LIMITED, Duliajan, Assam as required under MV act for onward registration of the Trucks fire tender in Assam.

b. Checklist as per enclosed format (CHECKLIST FOR THE FIRE TENDER CHASSIS) shall be furnished along with the bid. In case of any contradicting specification provided elsewhere in the bid, the specification provided in the said checklist shall be considered for the bid evaluation.

6. TECHNICAL CHECK LIST:

Part A TECHNICAL **A 1.1 FIRE TENDER CHASSIS**					
Sl. No.	**PARAMETERS / REQUIREMENTS**			**BIDDER'S OFFER** **(To indicate details or yes/no, as applicable)**	**REMARKS, IF ANY**
1	Make & Model of Fire Tender Chassis				
2	Gross Vehicle Weight (GVWR)				
3	Drive:				
4	Wheelbase:				
5	Overall Dimensions (Width, Height & Length) of complete unit:				
6	Ground Clearance:				
7	Laden Weight (Total weight of the unit)				
8	Engine	a	Make & Model		
		b	Max. Output Power		
		c	Max. Output Torque		
		d	Naturally Aspirated or Turbo Charged		

		e	Emission Norms		
		f	Control System (Electronic)		
9	Transmission (Main)	a	Make & Model		
		b	No. of gears		
10	Make & Model of Transfer Case, if any				
11	Total number of PTO in operation				
12.1	Make & Model of Side PTO				
12.2	Make & Model of PTO for main water pump				
13	Make, Model & Type of Steering System				
14	Minimum Turning Circle Radius (MTCR)				
15	Type of Front Suspension				
16	Type of Rear Suspension				
17	Axle Capacity	a	Front		
		b	Rear		
18	Type, Size of Wheel & Tyre	a	Front		
		b	Rear		
19	Type of Service Brake (S/Z-cam or not)				
20	Type of Wheel Brake Servos(screw type manual release or not)	a	Front		
		b	Rear		
21	Fuel Tank capacity				
22	Reversing Alarm with Blinker Lights				
23	Provision of Air Dryer in truck's pneumatic system.				

Part B DOCUMENTATIONS

B1.1 FIRE TENDER

Sl. No.	DESCRIPTIONS	DOCUMENT ENCLOSED (Yes or No)	REMARKS, IF ANY
1	Technical leaflets with detailed specifications, Make & Model of chassis, engine, transmission, transfer case (if any), PTOs, suspension, axle, steering, wheel & rim, brake, etc.		
2	Detailed dimensional layout drawing illustrating Driver's Cabin and all major items/ components.		
3	List of tools that shall be supplied under Standard Tool Kit for general maintenance of the Fire Tender.		
4.	Checklist for fire tender as per enclosed format.		

7. WARRANTY/GUARANTEE:

Notwithstanding the Guarantee/Warranty clause(s) mentioned elsewhere in the NIT, complete units shall be under guarantee/warranty by the supplier for a minimum period of 1(one) year from the date of successful commissioning at site.

OIL reserves the right to inspect, test and if necessary, reject the truck or any part/parts after delivery at site, only if the said rejection is attributed to be the responsibility of the supplier. It shall, in no way be limited or waived by the reason that the fire tender was being previously inspected, tested and passed by OIL.

8. DEVIATIONS FROM THE SPECIFICATIONS:

The bidder shall enclose comprehensive list of intended deviations from the technical specifications, of any clearly highlighting the reasons thereof, along with the bid. Deviations from the Technical specifications are intended, the same shall be confirmed in the offer. However, OIL reserves the right for acceptance or rejection of the deviation(s).

ITEM NO. 20

SUPPLY OF MULTI-PURPOSE FIRE TENDER – QTY = 01 NO

PART – "B" {FABRICATION OF "MULTI PURPOSE FIRE TENDER" WITH ACCESSORIES }

1.0 SCOPE :

1.1 This specification covers the requirements regarding design, procurement, fabrication, testing and supply of "Multi-Purpose Fire Tender" to be used for fire fighting. The scope of supply shall be inclusive of, but not limited to the following.

- 1.1.1 Chassis (BS-VI Chassis)
- 1.1.2 A centrifugal type Water Pump of 3200 LPM discharge capacity at 10 Kg/cm^2 (M/s Godiva, UK Make)
- 1.1.3 Auxiliary water pump (i.e. 3 or 6 Plunger Pump) of 150 LPM at 100 bar pressure.
- 1.1.4 Water Ring Primer
- 1.1.5 Exhaust Ejector Primer
- 1.1.6 Power take-off unit for driving the main pump
- 1.1.7 Water tank of capacity **4000** Litres capacity
- 1.1.8 Foam Tank of capacity **1000** Litres capacity
- 1.1.9 Dry Chemical Powder Vessel **500** Kg Capacity
  (The minimum water capacity of the Vessel should be 500 Ltrs. And design to accommodate the Dry Chemical powder with apparent density 1 ± 0.15)
- 1.1.10 Water cum Foam monitor (Discharge from **300 to 1000** GPM)
- 1.1.11 Body Fabrication/ Works
- 1.1.12 Control Panel
- 1.1.13 Accessories and spares
- 1.1.14 Piping, necessary controls etc. Complete

1.2 The chassis for the "Multi-Purpose Fire Tender" shall be procured & supplied by the Successful Bidder. The Successful Bidder shall be responsible for supplying all equipment / accessories and properly fixing them on the chassis as described in this specification. Other details and requirements which are not covered under this specification, but may be necessary to complete the **"MULTI-PURPOSE FIRE TENDER"** and/or to fulfil the operation/performance requirement shall be provided by the Successful Bidder, who will be responsible for the design and construction of the complete Unit to the full satisfaction of M/s Oil India Ltd.

2.0 GENERAL REQUIREMENTS:

2.1 The **"MULTI-PURPOSE FIRE TENDER"** including all accessories shall be designed, manufactured, tested etc. as per relevant Indian, International Standards, wherever applicable and as per sound engineering practice.

2.2 All the equipment and accessories shall be fixed on the Unit in a compact and neat manner and shall be so placed that each part is easily and readily accessible for use and maintenance. The centre of gravity shall be kept as low as possible.

2.3 The controls on control panel shall be so arranged that one man can operate all the controls.

2.4 The Successful Bidder shall provide a detailed description of the "**MULTI-PURPOSE FIRE TENDER**", a list of equipment to be furnished, and other construction and performance details to which the "MULTI-PURPOSE FIRE TENDER" shall conform.

2.5 The detailed description of the **"MULTI-PURPOSE FIRE TENDER"** shall include, but shall not be limited to, estimated weight, wheelbase, turning clearance radius, principal dimensions, transmission, and axle ratios.

2.6 Responsibility for the "**MULTI-PURPOSE FIRE TENDER**" and equipment shall remain with the Successful Bidder until they are accepted by the OIL.

2.7 On initial delivery of the "**MULTI-PURPOSE FIRE TENDER**", the Successful Bidder shall supply a qualified representative to demonstrate the "**MULTI-PURPOSE FIRE TENDER**" and provide initial instructions to representatives of the OIL regarding the operation, care, and maintenance of the "**MULTI-PURPOSE FIRE TENDER**" and equipment supplied.

2.8 **INSPECTION & TESTING :**

2.8.1 Third Party Certification of Test Results:-The results of tests to be certified by OIL's Approved third party (M/s Lloyds, M/s Bureau Veritas, M/s IRS, M/s RITES or M/s DNV) certification organization.

2.8.2 Intimation/e-mail to OIL for stage inspections should be forwarded 15 (Fifteen) days in advance to depute our engineers in time.

2.8.3 Prior to dispatch of Unit from Successful Bidder's shop, Stage inspection & testing shall be carried out by the Successful Bidder& third party inspection agency in presence of OIL's Engineer(s). The details of the stage inspection & testing are as mentioned below :-

Stage	**Scope of Inspection (But not limited to)**
First stage	Chassis & Materials Inspection: The successful bidder shall facilitate inspection of chassis by OIL's Engineers along with Third Party Inspection Agency for inspection of the Chassis & other materials to be used for fabrication of the MULTI-PURPOSE FIRE TENDER. (i) Chassis Identification & physical verification of chassis No., engine No. etc. (ii) Verification of all document related to chassis procurement. (iii) Verification of all Documents related to Quality of material of tanks & DCP Vessel. (iv) Thickness measurement of Tanks & DCP Vessel plates and distinct marking of each material by ultrasonic thickness gauge. (v) Physical Identification of material of Tanks, Super structure, under structure etc. (vi) Physical Identification of Components / sub-assemblies identification, before fabrication. (vii) Cutting & marking of material sample for laboratory test (Chemical & Physical). (viii) Verification of all manufacturers/ fabricators document including documents of imported items. (ix) Calibration checking and documents of testing instruments, gauges, tools, accessories etc. (x) Positioning of Tanks & vessels on the chassis.

Second stage	**<u>After completion of under structure:</u>** (i) Hydro testing of Tanks (ii) Dye penetration test of all weld joints of Tanks (iii) Verification of laboratory test (Chemical & Physical) material Test Certificates (MTC) (iv) Positive Material Identification (PMI) of material (v) Construction of under- structure & super structure (vi) Water & Foam tank and DCP vassal. (vii) Documents related to Quality of material of tanks and thickness of tank's plates, radiography inspection report and stamped by recognised third party inspector. (viii) Dimensions check of under structure on chassis, fabricated components as per specifications & approved drawings. (ix) Location for Placement of tank, fittings, lockers, pump, quality of fabrication. (x) Calibration checking of testing instruments, gauges, tools, accessories etc.	
Final stage	**<u>After completion of panelling, fitment after final painting</u>:** (i) Review of observations of First &Second stage inspections. (i) Stability checking of the unit after mounting all equipment and accessories. It should be free from undue rattling and vibration. (ii) Check proper functioning of all types of signal lights, alarms, Bell etc. (iii) Check quality of workmanship. (iv) Check calibration of instruments, gauges, tools, accessories etc. (v) Check operation of various levers, locks, caps, fitment of tanks, linkages, Markings and plumbing work. (vi) Performance test of all the systems, DCP, Pumps, Primer, PTOs, load & stability test of **MULTI-PURPOSE FIRE TENDER**, (vii) Testing of equipment / tools & Unit (viii) Checking of all relevant documents etc.	

2.8.4 **<u>Endurance Test:</u>** The pump will be tested for a continuous period of four hours & water will not be replenished during this test, engine will not show signs of overheating. During this test, the temperature of engine should not exceed the rated temperature and that of lubricating oil 79^{o}C.

2.8.5 **<u>Priming Test:</u>** The priming will be tested as per the latest standards & the system will be subjected to a test at a suction of vertical lift of 7 Mtrs. measured from water level to the centre of suction eye of the pump at a rate of not less than 23-24 seconds.

2.8.6 **<u>Hydraulic Testing:</u>** All the piping will be subjected to hydraulic test pressure of 18 Kg/cm2 for a period of 2 hrs. The pump casing will be subjected to a hydraulic test pressure of a minimum 21 Kg/cm2.

2.8.7 **<u>Shower Test:</u>** After completion of the fabrication, the Unit will be subjected to shower test as per the norms laid down under BIS. The Unit will not show any signs of leakages during this test.

2.8.8 **<u>Road Test:</u>** Unit will be tested for braking, acceleration & top speed by the inspecting officers.

2.8.8.1 Road test of the fully laden Unit shall be carried out to ensure the maximum speed, acceleration, turning radius, breaking ability as specified by chassis manufacture.

2.8.8.2 Road tests shall be conducted in accordance with this section to verify that the completed MULTI-PURPOSE FIRE TENDER is capable of compliance roadability.

<u>After full laden of fire Tender</u>

(i) Max. Speed attained.
(ii) Any rattling or abnormal sound.

2.8.9 Hand Brake- Fully laden on 1 in 4 gradients in neutral gear.

2.8.10 All consumable (e.g. diesel fuel, engine lube oil, water etc.) shall be arranged by Successful Bidder at his own cost. Successful Bidder shall arrange all facilities to carry out inspection & testing.

2.8.11 OIL representatives shall have access at all reasonable times to Successful Bidder's works where the Unit or its accessories are being fabricated and tested.

2.8.12 Drawings (i.e. Skelton Structure, Water & Foam Tank drawing, General layout drawing, Load distribution chart, Electric circuit diagram etc.) & Quality assurance Plan (QAP) shall be approved by the Oil India Ltd. No supply shall be accepted unless drawings & Quality assurance Plan (QAP) are finally approved by the Oil India Ltd.

2.8.13 Third party Inspection agency shall carryout the Inspection based on approved drawings & approved QAP.

2.8.14 The inspection release note of Third part Inspection agency shall clearly stipulate that
Material /equipment have been inspected as per approved drawings & approved QAP.

2.8.15 All the tests/inspection for Unit shall be witnessed by Oil India Ltd. representatives along with third party inspection agency.

2.8.16 For Water & Foam Tanks:

2.8.16.1 Review of mill test certificates and Co-relation of raw materials before start of fabrication.
2.8.16.2 DP test of all welds of water & Foam tanks.
2.8.16.3 DP test of all nozzles to shell (reinforcement pads) for water & Foam tanks.
2.8.16.4 Visual and dimensional check of water & Foam tanks before mounting on chassis.
2.8.16.5 Hydraulic test of completed water & Foam tanks. Hydraulic test shall be carried out at 0.5 KG/CM2 (G) at top of tanks. Pressure shall be held for the duration to permit complete inspection.

2.8.17 For Piping :

2.8.17.1 Review of mill test certificates and co-relation of raw materials (for pipes, fittings, valves etc) before start of fabrication.
2.8.17.2 DP test of butt welds and final run.
2.8.17.3 DP test of all flanges to pipe welds.
2.8.17.4 Radiographic examination of 10% butt welds (selected at random).
2.8.17.5 Hydraulic test of piping installation on chassis.
2.8.17.6 Visual and dimensional check.

2.8.18 For Water Pump :

2.8.18.1 Review of mill test certificates for material of casing, impeller and shaft.

2.8.18.2 Performance testing of pump to establish the performance curve at rated speed and power absorbed at rated conditions. Parameters at maximum & minimum allowable speeds shall be evaluated to establish performance curves at these speeds.

2.8.18.3 The Pump shall be run for a period of four hours non-stop delivering the rated output with a lift of 3m . During the test all parameter like cooling system, temperature of the engine, oil, PTO sump oil temperature shall match as per manufacturer's recommendation.

2.8.18.4 The pump casing and impeller shall be subjected to a hydraulic pressure 1.5 times of maximum operating pressure to detect leakage performance etc.

2.8.18.5 Priming Test: The primer shall be capable of lifting water at least 7m in less than 24 second.

2.8.19 Power Input At Rated Conditions :

2.8.19.1 Four-hour mechanical run test shall also be carried out.

2.8.19.2 Performance test shall be done on test bench with shop driver.

2.8.19.3 Four hour run test at rated conditions for verifying performance.

2.8.19.4 NPSH test.

2.8.19.5 Visual and dimensional check.

2.8.19.6 Performance test of auto water ring primer at rated conditions.

2.8.20 For Water Pump (Auxiliary Pump) :

2.8.20.1 All standard tests as specified by the Pump supplier.

NOTE: The above inspections & tests shall be carried out at pump manufacturer's / Fabricator's shop prior to dispatch. Third party inspection agency shall review the documents for the tests carried out by the manufacturer.

2.8.21 For PTO Units :

2.8.21.1 All standard tests as specified by the PTO Manufacturer.

2.8.22 For Foam Cum Water Monitor :

2.8.22.1 Availability of the specified flow and pressure of water and Foam solution at the base flange for the monitor.

2.8.22.2 Review of mill certificates for material.

2.8.22.3 Hydro-testing of monitor at 25 KG/CM2 pressure

2.8.22.4 Horizontal & vertical movements of monitor.

2.8.22.5 Spray/jet pattern of the monitor.

2.8.22.6 Foam expansion ratio of monitor.

2.8.22.7 Water & Foam throws.

2.8.22.8 Workmanship & painting.

2.8.23 For DCP Vessels:

2.8.23.1 Review of mill test certificates and co-relation of raw materials before start of fabrication.

2.8.23.2 DP test of root run and completed weld for all seams of vessels.
2.8.23.3 DP test of all nozzles to shell joints (i.e. reinforcement pads)
2.8.23.4 100% Radiographic examination of all welds of the vessels.
2.8.23.5 Hydrostatic test of vessel at 21 Kg. /Cm2 for 30 min.
2.8.23.6 Visual and dimensional check of vessels before mounting on chassis.

2.8.24 For DCP Piping

2.8.24.1 Review of mill test certificate and co-relation of raw materials (For pipes, fittings, valves etc.) before start of fabrication.
2.8.24.2 DP test of root run and final run of all butt welds DP test of all socket welds.
2.8.24.3 Radiographic examination of 10% butt welds (selected at random)
2.8.24.4 Hydraulic test of piping before installation of chassis.
2.8.24.5 Visual and dimensional check.

2.8.25 For "Multi-Purpose Fire Tender" (During Fabrication & Assembly) :

2.8.25.1 Review of mill test certificates and co-relation of raw materials used for structure & body fabrication before start of fabrication.
2.8.25.2 Inspection of framework for soundness of welding and fitment of chassis and dimensional check.
2.8.25.3 Inspection for proper installation of pumps, tanks, piping with supports and their dimensional checks.
2.8.25.4 Inspection for proper installation of DCP vessels, piping with supporting etc. and dimensional check.
2.8.25.5 Visual inspection of raw materials for framework, cladding, flooring etc.

2.8.26 For Completed Unit :

2.8.26.1 All consumables (Foam, DCP, Nitrogen gas in cylinders, fuel, engine lube oil, Water etc.) required during inspection & testing shall be arranged by Successful Bidder at his own cost. Successful Bidder shall arrange all facilities to carry out inspection & testing.
2.8.26.2 Determination of actual payload on the chassis so as to confirm payload given by Successful Bidder in the bid. For determining actual laden weight, all tanks shall be full, all removable accessories will be on Unit with a crew of six.
2.8.26.3 For determining actual payload all Tanks & vessel shall be charged to rated capacity, charged nitrogen cylinders on board, all removable accessories will be on Unit with crew of six.
2.8.26.4 Static stability of the fully laden Unit shall be checked to ensure that no overturning occurs till Unit attains tilting of 35 ± 1 degrees from horizontal.
2.8.26.5 Dimensional check of completed Unit. The overall height shall be measured both when Unit is laden with full payload and un-laden.
2.8.26.6 Test to confirm functional capability of the "**MULTI-PURPOSE FIRE TENDER**" shall be carried out:
2.8.26.6.1 Running of water pump at rated conditions while discharging water through various outlets individually and in combination.
2.8.26.6.2 The pump shall be run for minimum 4 hours continuously at rated conditions.
2.8.26.6.3 Functional testing of each water outlet (hose point / hose reel) individually and in combination.
2.8.26.6.4 Performance tests of Foam-cum water monitor.

2.8.26.6.5 Performance tests of Foam-cum-water monitor with water through hydrant inlets.

2.8.26.6.6 Functional testing of each hose outlet individually and in combination.

2.8.26.6.7 Vibrations at rotary parts

2.9 **Personnel Protection :**

2.9.1 Electrical insulation or isolation shall be provided where necessary in order to prevent electrical shock from onboard electrical systems.

2.9.2 Workmanship shall ensure an operating environment free of accessible sharp projections and edges.

2.9.3 Safety-related (caution, warning, danger) signs shall meet the requirements of job.

2.10 **Controls and Instructions :**

2.10.1 Illumination shall be provided for controls, switches, instruction plates, gauges, and instruments necessary for the operation of the "**MULTI-PURPOSE FIRE TENDER**" and the equipment provided on it.

2.10.2 All required signs, plates, and labels shall be permanent in nature and securely attached

2.10.3 No gauge or visual display shall be more than 84 in. (2.1 m) above the level where the operator stands to read the instrument.

2.11 **Unit Stability :**

2.11.1 When the "MULTI-PURPOSE FIRE TENDER" is loaded to its maximum in-service weight, the height of the Unit's center of gravity shall not exceed the chassis manufacturer's maximum limit.

2.12 **Weight Distribution :**

2.12.1 When the "**MULTI-PURPOSE FIRE TENDER**" is loaded to its maximum in-service weight, the front-to-rear weight distribution of the "**MULTI-PURPOSE FIRE TENDER**" as defined shall be within the limits set by the chassis manufacturer.

2.12.2 The axle loads shall not be more than the axle loads specified by the chassis manufacturer under full load and all other loading conditions.

2.12.3 Using the information supplied by the OIL, the "MULTI-PURPOSE FIRE TENDER" manufacturer shall calculate the load distribution for the "MULTI-PURPOSE FIRE TENDER".

2.12.4 The manufacturer shall engineer the "MULTI-PURPOSE FIRE TENDER" to comply with the gross axle weight ratings (GAWR), the overall gross Unit weight rating (GVWR), and the chassis manufacturer's load balance guidelines.

2.12.5 The total laden weight of the unit should not exceed the permissible GVW of Unit.

2.13 **MULTI-PURPOSE FIRE TENDER Performance :**

2.13.1 The MULTI-PURPOSE FIRE TENDER shall meet all the requirements while stationary on a grade of 6 percent in any direction.

2.14 **Serviceability :**

2.14.1 Where special tools are required for routine service on any component of the MULTI-PURPOSE FIRE TENDER, such tools shall be provided with the MULTI-PURPOSE FIRE TENDER.

2.15 **INFORMATION / DOCUMENTS REQUIRED FROM SUCCESSFUL BIDDER :**

2.15.1 Any documentation provided with the MULTI-PURPOSE FIRE TENDER shall be permitted to be in printed format, electronic format, audiovisual format or a combination thereof.

2.15.2 All drawings & literature shall be kept in Proper folders.

2.15.3 All literature shall be on A-4 size paper and shall be properly laminated.

2.15.4 Each drawing shall be kept in separate pockets in folder. Contents in each pocket shall be labelled properly.

2.15.4.1 **AFTER PLACEMENT OF ORDER :**

The following documents are required to be submitted in 2 sets and to be approved prior to start of fabrication**:**

2.15.4.1.1 Flow diagram showing all piping tanks, pumps, valves etc.

2.15.4.1.2 GA & cross sectional drawings, characteristic curves and other details for water pump.

2.15.4.1.3 Internal Drawings for PTO Unit and other technical details.

2.15.4.1.4 Drawings for PTO system to drive pumps from engine.

2.15.4.1.5 Detailed Drawing for Foam-cum water monitor.

2.15.4.1.6 Fabrication drawings & data for water tanks.

2.15.4.1.7 Line diagram for electrical circuits.

2.15.4.1.8 Drawings showing layout of all equipment, lockers, cabin etc.

2.15.4.1.9 QAP incorporating the stipulated inspection and testing requirements.

2.15.4.2 **AFTER COMPLETION OF ORDER (4 SETS) :**

The manufacturer's record of MULTI-PURPOSE FIRE TENDER construction details, including the following Information:

2.15.4.2.1 M/s Oil India Ltd. name and address (Oil India Ltd., Duliajan, Dibrugarh, Assam.)

2.15.4.2.2 MULTI-PURPOSE FIRE TENDER manufacturer, model, and serial number

2.15.4.2.3 Chassis make, model, and serial number.

2.15.4.2.4 Front tire size and total rated capacity in pounds (kilograms)

2.15.4.2.5 Rear tire size and total rated capacity in pounds (kilograms)

2.15.4.2.6 Chassis weight distribution in pounds (kilograms) with water & manufacturer mounted equipment (front and rear)

2.15.4.2.7 Engine make, model, serial number, rated horsepower and related speed, and governed speed

2.15.4.2.8 Fuel tank capacity

2.15.4.2.9 Battery make, model, and capacity in cold cranking amps (CCA)

2.15.4.2.10 Chassis transmission make, model, and serial number

2.15.4.2.11 Chassis transmission PTO(s) make, model, and gear ratio

2.15.4.2.12 Pump make, model, rated capacity in liters per minute and serial number

2.15.4.2.13 Water & Foam tanks certified capacity in liters.

2.15.4.2.14 Paint manufacturer and paint number(s)

2.15.4.2.15 As built drawings of MULTI-PURPOSE FIRE TENDER

2.15.4.2.16 As built drawings for tanks.

2.15.4.2.17 Flow diagram.
2.15.4.2.18 GA & cross sectional drawings, characteristic curves and other details for water pump.
2.15.4.2.19 As built Drawings for Installation of PTO Units.
2.15.4.2.20 As built Drawing for Foam-cum water monitor.
2.15.4.2.21 As built Line diagram for electrical circuits.
2.15.4.2.22 All inspection and testing records for tank, pump, PTO's, piping, valves, monitor etc.
2.15.4.2.23 Operating and instruction manual for the MULTI-PURPOSE FIRE TENDER. This should also contain adequate information for all bought out items also.
2.15.4.2.24 Fire pump manufacturer's certification of suction capability
2.15.4.2.25 Fire pump, the pump manufacturer's certification of the hydrostatic test
2.15.4.2.26 Weight documents showing actual loading of "MULTI-PURPOSE FIRE TENDER" (with the full extinguishing media but without personnel, equipment, and hose).
2.15.4.2.27 Operations and Service Documentation :
2.15.4.2.27.1 The Successful Bidder shall supply operation and service documentation covering the completed MULTI-PURPOSE FIRE TENDER as delivered and accepted.
2.15.4.2.27.2 The documentation shall address at least the inspection, service, and operations of the "MULTI-PURPOSE FIRE TENDER" and all major components thereof.
2.15.4.2.27.3 Catalogue for spares part of Chassis to be provided.

3.0 MULTI-PURPOSE FIRE TENDER EQUIPMENT:

3.1 **Equipment Storage :**

3.1.1 Enclosed weather-resistant compartmentation meeting the requirements for the storage of equipment.

3.2 **Hose Storage :**

3.2.1 A minimum hose storage to store 15 Nos. fire hoses that meets the requirements.

3.3 **Minor Equipment :**

3.3.1 Brackets or compartments shall be furnished so as to organize and mount the specified equipment.

3.3.2 Following equipment shall be supplied:

3.3.2.1 One first aid kit
3.3.2.2 One Nos. HDPE Long Spine Boards Stretcher.
3.3.2.3 Two combination spanner wrenches
3.3.2.4 Two hydrant wrench
3.3.2.5 Double female adapter, sized to fit 2½ in. (65 mm) conforming to IS-901/1993- 5 Nos. (In locker)
3.3.2.6 Double male adapter, sized to fit 2½ in. (65 mm) conforming to IS-901/1993- 5 Nos. (In locker)
3.3.2.7 Four Nos. wheel chocks with chain link, mounted in readily accessible locations, each designed to hold the MULTI-PURPOSE FIRE TENDER.
3.3.2.8 Fog lamps powered by the battery of the Unit- 2 Nos. (Fitted on front of

	MULTI-PURPOSE FIRE TENDER. Switch in cabin).	
3.3.2.9	Reversing lights-2 Nos. (At rear of chassis)	
3.3.2.10	Strong Reversing siren connected with reverse gear of the Unit-1 set (Mounted on roof)	
3.3.2.11	Search light with 100M length of cable with tripod etc. completes powered from main batteries - 1 set (mounted on roof)	
3.3.2.12	All tools required for normal / routine maintenance of the Unit, which are not included with the kit of chassis -1 Set (In tool box under rear seat in cabin).	
3.3.2.13	PESO/CCE approved removable spark arrestor (If chassis manufacturer not provided) fitted to the exhaust of the engine - 1 No.	
3.3.2.14	Stainless Steel dividing breeching each having two 63MM female instantaneous type outlets, conforming to IS-905/1980- 1 Nos. (In Locker)	
3.3.2.15	Stainless Steel collecting breeching each having two 63MM male instantaneous type outlets, conforming to IS-905/1980- 1 Nos. (In Locker)	
3.3.2.16	Hard Suction Hose : Make- Dutron Kanaflex, PVC hard suction hose made up of adequate reinforcement of 4.5 meters Length, Diameter: as per pump suction, each with round threaded G.M. male and female coupling on both sides as per IS: 902. (The couplings must be fitted by wire windings to make it leak proof) - 4 Nos. (In compartment on top deck, Compartment shall be open able from top with latching system)	
3.3.2.17	Suction Wrench to tighten suction hose as per IS:4643- 04 Nos. (In locker)	
3.3.2.18	Hose clamps as per IS:5612 (Part-1-1977) - 2 Nos. (In locker)	
3.3.2.19	Multipurpose Nozzle (10 Nos.) : (Make : TFT, Model : G-FORCE 2.5"BICM Valve W/GRIP, SEL 110/230/360/470/570 LPM @ 700 KPA Spinning Teeth)	
3.3.2.20	Fireman's axe with belt and pouches conforming to IS: 3650-1981- 02 Nos. (In locker)	
3.3.2.21	Crow bar (IS: 704-1984)- 1 No. (In locker)	
3.3.2.22	Sledge hammer - 1 No. (In locker)	
3.3.2.23	Female Adopter (140 mm X 100 mm) - 02 Nos.	
3.3.2.24	Ceiling Fire hook as per IS:927:1981-2007 or latest - 1 No.	
3.3.2.25	One 6 lb (2.7 kg) flathead or pick head axe mounted in a bracket fastened to the Tender	
3.3.2.26	ISI marked 63MM SS male instantaneous couplings (threaded) with caps - 2 Sets.	
3.3.2.27	ISI marked 63MM SS female instantaneous couplings (threaded) with caps - 2 Sets.	
3.3.2.28	Hydrant key for 4" Gate valve : 10 nos.	
3.3.2.29	Hydrant Key for 2 ½'' hydrant valve: 10 Nos.	
3.3.2.30	Suction adopter (Stainless Steel) 4 inch round threaded by 63 mm instantaneous male coupling -02 Nos.	
3.3.2.31	Portable Pressure gauge for checking of Tyre Air Pressure- 02 Nos.	
3.3.2.32	Curtain Nozzle with 63 MM Male Instantaneous, Stainless Steel with portable with Carrying Handle (Make: Newage/ Shah Bhogilal) - 02 Nos.	
3.3.2.33	Water Curtain Hose (04 Nos.) – Construction of type B water curtain hose will be Circular woven jacket made of 100% synthetic polyster and polyamide yarn. Smooth and frictionless rubber lining and ribbed	

cover made of specially compounded synthetic rubber.
Length of hose is to kept 15 m and diameter 63 mm. Nozzle provided in hose will be Brass/Bronze. SS/Gun metal instantaneous coupling to be provided in hose. Copper winding & riveting is to be done on hose.

3.3.2.34 Aluminium extension ladder Trussed type-l0.5M Length of heavy duty type (IS 4571) – 01 No. mounted on roof

3.3.2.35 Hose Ramps, made of reinforced solid rubber, suitable for laying out 2 Nos. 63 mm Fire fighting delivery hoses. The Ramp shall allow passage of vehicles upto 20,000 kg weight, and shall have interlocking arrangement with keys to attach two or more ramps, for passage of multityre vehicles - 10 pairs

3.3.2.36 QUADRACUPNOZZLE WITH PISTOL GRIP (FQS125BCP) selectable gallonage foam nozzle with stainless steel shutoff ball with flow settings of 30, 60, 95 and 125 GPM at 100 PSI, have a 63mm BIC male inlet. The nozzle shall be M/s. TFT make only – 05 Nos. (in locker)

3.3.2.37 Flip Tip Automatic flow (FTGH35F2S)Lightweight fog and straight stream Nozzle made of Hard Anodized Aluminium Alloy Body with Automatic Flow 230-570 LPM @ 5 Bar. The nozzle shall be M/s. TFT make only – 05 Nos. (in locker)

3.3.2.38 DRY CHEMICAL NOZZLE: The nozzle shall be designed to deliver dry chemical powder at a rate of five pounds per second. The front portion of the nozzle shall be designed with a straight through path, include straightening fins and withstand the abrasive nature of dry chemical powder. For corrosion resistance and durability, the nozzle shall be constructed from hardcoat anodized aluminum alloy, have a six (6) position detent flow control stainless steel slide valve, stainless steel inlet debris screen. An integral pistol grip handle shall be positioned directly below the valve handle.
The nozzle shall have a 1" female NPT swivel hex coupling and an effective discharge reach of 75 feet at full flow. The nozzle shall have a unique serial number and be covered by a five-year warranty.
The nozzle shall be M/s. TFT make only – 04 Nos. (in locker)

3.3.2.39 Open circuit Self-contained breathing apparatus SCBA Set with composite compressed air cylinder – 04 Nos.

The BA set shall contain air cylinder, back plate, facemask, lung demand regulator, pressure reducing valve, Low Pressure Warning Whistle, Pressure Gauges, hoses, carrying case, etc.

The minimum duration of use of the set shall not be less than 45 minutes.

SCBA set: Slandered EN137: 2006 Type 2 or its latest version

Cylinder: water capacity 6 Ltrs. or 6.8 Ltrs./ 300 bar; PESO Approved

MOC: The cylinder shall be aluminum lined, fully wrapped carbon/glass composite material and basically approved to EN 12245 & CE marked.

Face mask: Positive pressure full facemask assembly shall be big facial counter with double reflex seal, speech diaphragm, inner mask (nose cup), visor, five finger head

band, made of best quality material like Neoprene / Silicon having flame resistance requirement meeting to EN 136 Class-3.

Back plate with Body Harness: The ergonomically designed back plate should adjustable type to fit all body sizes; with shoulder pads & waist padding / hip belt; harness shall be made from extra heavy duty and non-flammable fibres (aramid). The airline shall be protected from fire and heat by insulating tunnels on the shoulder pads

4.0 CHASSIS AND UNIT COMPONENTS :

4.1 Welding and drilling on frame work of chassis are not allowed.

4.2 An engine hour-meter shall be provided.

4.3 An angle of approach and an angle of departure of at least 8 degrees shall be maintained at the front and the rear of the Unit when it is loaded.

4.4 **POWER TAKE OFF UNITS** :

4.4.1 Power take-off (PTO) unit for the main water pump shall be independent type. (Vas Make)

4.4.2 The PTO operation shall be through Pneumatic as well as mechanical cable linkage.

4.4.3 The power takes off unit for main water pump shall be of suitable model. The PTO shall be able to meet performance requirement of pump.

4.4.4 Successful Bidder shall submit a sketch showing the arrangement of PTO Unit for taking power from main engine on chassis to main water pump.

4.4.5 The drive assembly components (shaft, coupling etc) shall be dynamically balanced and the vibration at any of the rotary parts shall be minimum and in no case shall be more than 10mm/sec. Necessary modifications, to the standard drive system as available on the chassis, shall have to be done by the Successful Bidder so as to adopt the PTO Units in the system.

4.5 **FOR OTHER WORK ON CHASSIS :**

4.5.1 No part of the bodywork shall reduce ground clearance of Unit to less than 36cm. & not increase the overall width to more than 2.60M. The highest part of the Unit with the monitor mounted on it shall not exceed 3.60M from the ground level. The construction of super-structure shall not reduce the angles of approach below 30 degree.

4.5.2 3M/Hi-tech/ Zenith make anti-vibration rubber mats shall be provided while mounting the tanks etc. on the chassis.

4.5.3 Reflective stripe(s) shall be affixed to the perimeter of the unit as per MVA.

4.5.4 Arrangement shall be made on Dashboard opposite to the fire officers' seat to fix a Motorola mobile wireless set of 25W capacity. Power supply shall be provided from Unit battery. M/s Oil India Ltd. shall fit wireless set later.

4.6 **Optical Warning Devices :**

4.6.1 MULTI-PURPOSE FIRE TENDER shall have a system of optical warning devices

4.6.2 The optical warning system shall consist of an upper and a lower warning level.

4.6.3 The four zones shall be designated A, B, C, and D in a clockwise direction with zone A to the front of the MULTI-PURPOSE FIRE TENDER in accordance with Figure 4.8.3.2.

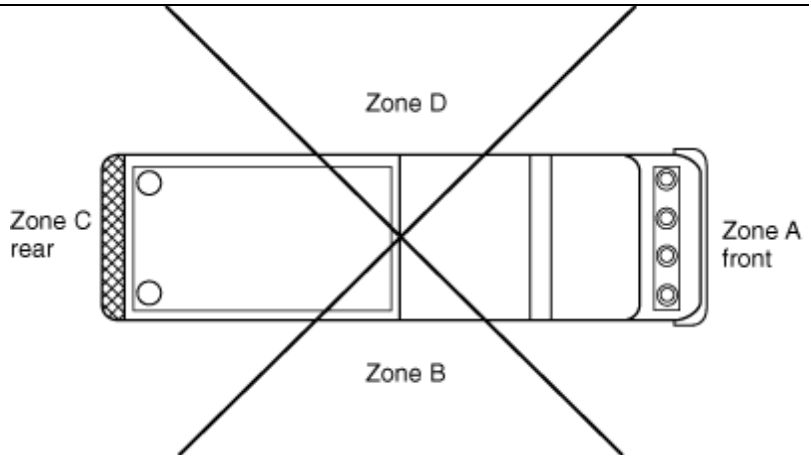


FIGURE: Warning Zones for Optical Warning Devices

4.6.4 Each optical warning device shall be installed on the MULTI-PURPOSE FIRE TENDER and connected to the MULTI-PURPOSE FIRE TENDER's electrical system in accordance with the requirements

4.6.5 A master optical warning device switch that energizes all of the optical warning devices shall be provided in driver's cabin.

4.6.6 The optical warning system on the "MULTI-PURPOSE FIRE TENDER" shall be capable of two separate signaling modes during emergency operations.

4.6.7 One mode shall signal to drivers and pedestrians that the MULTI-PURPOSE FIRE TENDER is responding to an emergency and is calling for the right-of-way.

4.6.8 One mode shall signal that the MULTI-PURPOSE FIRE TENDER is stopped and is blocking the right-of-way.

4.6.9 The system shall be permitted to have a method of modifying the two signaling modes.

4.6.10 The optical warning devices shall be constructed or arranged so as to avoid the projection of light, either directly or through mirrors, into any driving or crew compartment(s).

4.6.11 The front optical warning devices shall be placed so as to maintain the maximum possible separation from the headlights.

4.6.12 The optical sources on each level shall be of sufficient number and arranged so that failure of a single optical source does not create a measurement point, in any zone on the same level as the failed optical source, without a warning signal at a distance of 100 ft (30 m) from the geometric center of the MULTI-PURPOSE FIRE TENDER.

4.6.13 Flash Rate.

4.6.13.1 The minimum flash rate of any optical source shall be 75 flashes per minute, and the minimum number of flashes at any measurement point shall be 150 flashes per minute.

4.6.14 Color of Warning Lights.

4.6.14.1 Permissible colors or combinations of colors in each zone, within the constraints imposed by applicable laws and regulations, shall be as shown in Table.

Table Zone Colors

Color	Calling for Right-of-Way	Blocking Right-of-Way
Red	Any zone	Any zone
Blue	Any zone	Any zone
Yellow	Any zone except A	Any zone
White	Any zone except C	Not permitted

4.6.15 Audible Warning Devices :

4.6.15.1 Audible warning equipment in the form of at least one automotive traffic horn and one electronic siren shall be provided.

4.6.15.2 one electronic siren shall be provided as spare.

4.6.15.3 Additional air horn also to be fitted in the vehicle with operation from driver's cabin.

4.6.15.4 A means shall be provided to allow the activation of the siren within convenient reach of the driver.

4.7 **Work Lighting :**

4.7.1 Ground Lighting :

4.7.1.1 The work area immediately behind the Unit shall be illuminated

4.7.1.2 The "MULTI-PURPOSE FIRE TENDER" shall be equipped with lighting that is capable of providing illumination on ground areas within 30 in. (800 mm) of the edge of the MULTI-PURPOSE FIRE TENDER in areas designed for personnel to climb onto the MULTI-PURPOSE FIRE TENDER or descend from the MULTI-PURPOSE FIRE TENDER to the ground level.

4.7.1.3 All other ground area lighting shall be switchable.

4.7.1.4 Surface Lighting: The MULTI-PURPOSE FIRE TENDER shall have sufficient lighting on all work surfaces, steps, and walkways.

4.7.1.5 Interior Lighting: The MULTI-PURPOSE FIRE TENDER shall have sufficient lighting to provide in the driving and crew compartments.

4.7.1.6 Compartment Lighting Each engine compartment and pump compartment shall have a light.

4.7.1.7 Each enclosed tool and equipment compartment greater than 4 ft3 (0.1 m3) in volume and having an opening greater than 144 in.2 (0.9 m2) shall have an average minimum level of lighting.

4.7.1.8 Switches for all work lighting shall be readily accessible.

4.7.1.9 The lights shall be arranged or protected to minimize accidental breakage.

4.7.2 Backup Alarm (Reverse Horn) :

4.7.2.1 An electric or electronic backup alarm (Reverse Horn) with

light indication shall be provided that meets the Type D (87 dBA) requirements.

4.7.3 The MULTI-PURPOSE FIRE TENDER shall be equipped with all legally required stop, tail, and directional lights.

4.7.4 Directional lights shall be visible from the front, sides, and rear of the MULTI-PURPOSE FIRE TENDER.

4.7.5 Equipment shall not be mounted in a manner that obscures the stop, tail, or directional lights.

5.0 DRIVING AND CREW AREAS:

5.1 **General :**

5.1.1 Each crew riding position shall be within a fully enclosed personnel area.

5.1.2 All interior crew and driving compartment door handles shall be designed and installed to protect against accidental or inadvertent opening.

5.1.3 Means of Escape :

5.1.3.1 Any interior area to be occupied by personnel shall have a minimum of two means of escape.

5.1.3.2 Each opening shall be large enough for a person to escape through the opening.

5.1.4 Instrumentation and Controls : All the standard instrumentation and controls shall be mounted in the driving compartment and shall be identified and visible to the driver while seated.

5.1.5 Controls and switches that are expected to be operated by the driver while the MULTI-PURPOSE FIRE TENDER is in motion shall be within convenient reach for the driver.

5.1.6 There shall be two doors in the cabin, sized generously with proper arrangement for embarking and disembarking of crewmembers. The doors shall open outwards and hung forward and shall have levers for unlatching from outside and inside. The doors shall be provided with shatterproof safety glasses which can be raised / lowered by winding type mechanism.

5.1.7 First aid box made of fiber glass/ aluminum suitable for 10 persons shall be provided in the cabin. First aid box shall be suitably mounted in the cabin at easily accessible location.

5.1.8 Non slip type steps & grab rails shall be provided in the cabin to assist the crew members to get in & out. Front side of the cabin shall have glass paneling so that the crew can have an all-round view.

5.1.9 The cabin structure shall be so designed so as to avoid any vibration / rattling / deformation in the intended usage of the Unit. The entire floor of the cabin shall be provided with 3M make vinyl matting of minimum 6MM thickness with anti-skid features.

5.1.10 Battery shall be placed in totally enclosed box with spark proof gland for cable entry with battery cut-Off switch. Installed battery shall have a charging faculty from external source at its location itself.

5.2 **Seating arrangement**

5.2.1 Seating arrangement for 6 persons shall be provided in cabin.

5.2.2 For Driver & Officer In-charge each - “HO Bostrom, USA / Ziamatic/ USSC

Valor, USA make"

5.2.3 Seating arrangement for Crew (04 Nos.)

5.2.4 A good quality seat covers to be provided for seats.

6.0 BODY, COMPARTMENTS AND EQUIPMENT MOUNTING:

6.1 STRUCTURE / FRAME WORK :

6.1.1 The structure/frame work on chassis & crew cabin shall be of welded construction and made from 30 mm X 30 mm X1.6 mm hollow square section of **SS-316L** and distance between each horizontal and vertical square shall be maximum 400 mm. Cross supporting members of the panelling shall be made of SS-316L channels of 75 mm X 5 mm thickness

6.1.2 The entire roof of the Unit including the crew cabin top, entire rear, crew cabin floor, locker floor and sides shall be made frommінimum2 MM of Aluminium sheets suitably treated for slippage and these shall be bolted to the frame for ease in removal of the tank for repairs. The roof of the cabins should be rigid enough to take the weight of two persons without deforming the roof sheeting.

6.1.3 Area around the monitors operation shall be provided with 16 SWG anodized Aluminium-checker plate (in addition to the 2 mm Aluminium sheets) and shall be bolted to the frame.

6.1.4 Proper access ladder with Grab rails and non-skid steps shall be provided to give access to the roof for approaching to the manholes for tank and monitor etc.

6.1.5 Access handrails shall be provided at each entrance to a driving or crew compartment and at each position where steps or ladders for climbing are located. Access handrails shall be constructed of, or covered with, a slip-resistant, non-corrosive material. Handrails shall be between 1 in. and 1-5/8 in. (25 mm and 41 mm) in diameter and have a minimum clearance between the handrails and any surface of at least 2 in. (51 mm).

6.1.6 All handrails shall be designed and mounted to reduce the possibility of hand slippage and to avoid snagging of hose, equipment, or clothing.

6.1.7 Single Roller type Sun Shade Screen Assembly and long arm outside fitting rear view mirrors shall be fitted to cabin.

6.1.8 Proper draining arrangements shall be provided on the entire roof, crew cabin and inside the lockers.

6.2 LOCKERS :

6.2.1 Size and number of locker shall be decided such that on either side 15 nos. 22.5 m length fire hose can be easily accommodated in single layer and equipments may be accommodated in maximum two layers. Sufficient numbers of lockers shall be provided to accommodate all the equipment/accessories in an easily accessible manner.

6.2.2 All lockers shall be provided with Roller type shutter doors. The shutters shall have smooth operation. The aluminum shutters shall be dust & water proof of **M/s. MCD, France** imported make only made of extruded aluminum & duly hard anodized with closing system of "BC" (Bar lift handle) type

6.2.3 Roller shutters shall be of hollow rectangular shaped & made from aluminum inter-changeable links connected by means of plastic profiles.

6.2.4 Sealing of roller shutter shall be watertight when closed.

6.2.5 Roller shutters shall be inward rolling type and shall be provided with guide rails over entire length on both sides to make them torsion free.

6.2.6 When shutters are rolled, unobstructed access should be available to the equipment & hoses.

6.2.7 Shutters should open in all positions of the Unit even in rough terrains.

6.2.8 Roller shutters shall have locking arrangement to prevent accidental opening during movement of the Unit.

6.2.9 Spare closing system "BC" (Bar, Bar Holder, Lower Locking)– 06 Sets shall be provided.

6.2.10 All the lockers shall be illuminated by **MCD make LED lightning system**.

6.2.11 All the lockers shall be fitted with internal lighting, which shall be capable of being automatically switched, 'ON' and 'OFF' by the opening of shutters. A master switch for isolating the locker lighting circuit shall also be fitted in the driver's cabin.

6.2.12 Lockers shall have arrangement for self draining of any water entering inside

6.2.13 Sufficient number of lockers shall be provided for storage of all accessories listed. Lockers shall also be provided to accommodate 4 nos., 09 kg DCP extinguishers.

6.2.14 Lockers shall be accessible from ground level by a man of average height (1.67M). All the Lockers shall be provided with 3M make, 4MM thick, vulcanized synthetic rubber mat at bottom and up-to 12 inch on three sides.

6.2.15 The hose storage area(s) shall be reinforced at the corners.

6.2.16 The bottom shall be made of removable sections fabricated from noncorrosive materials.

6.2.17 The bottom shall be constructed to prevent the accumulation of water and allow ventilation to aid in drying of hose.

6.2.18 The interior shall be smooth and free from all projections, such as nuts, sharp angles, or brackets that might cause damage to the hose.

6.2.19 Ladders and equipment holders shall be placed so as not to obstruct the laying or removal of hose from the storage area.

6.3 **Compartmentation :**

6.3.1 Any enclosed external compartments shall be weather resistant and ventilated and have provisions for drainage of moisture.

6.3.2 All electrical junctions or wiring within compartments shall be protected from mechanical damage resulting from equipment stored in the compartment.

6.4 **Equipment compartments:**

6.4.1 Equipment holders or compartments shall be provided for all tools, equipment, and other items that are on the MULTI-PURPOSE FIRE TENDER.

6.4.2 Equipment holders shall be attached and shall be designed so that equipment remains in place under all Unit operating conditions.

6.4.3 All tools and equipment shall be readily accessible.

6.5 **Pump and Plumbing Access :**

6.5.1 WATER & FOAM PIPINGS:

6.5.1.1 Water & Foam piping shall be of SS-316L grade.

6.5.1.2 Pipes, fittings and valves in the water circuit that will come in contact with Foam solution (water/Foam mixture) shall be of SS-316L.

6.5.1.3 Stainless Steel lines joint - The bolting (studs, bolts) at break flanges shall be of SS-316L with SS washers.

6.5.1.4 A flow chart/schematic diagram shall be made and supplied with the MULTI-PURPOSE FIRE TENDER.

6.6 One or more doors or panels that open or are removable without the use of tools shall be provided to allow visual inspection or access for checking the fire pump and plumbing area(If required).

6.7 All valves, gauges, controls, and other plumbing equipment shall be accessible for service and replacement.

6.8 The clear space required by the pump manufacturer to perform in-truck overhaul and maintenance shall be provided.

6.9 **Stepping, Standing and Walking Surfaces :**

6.9.1 Steps, platforms, or permanently attached ladders shall be provided so that fire fighters have access to all working and storage areas of the MULTI-PURPOSE FIRE TENDER.

6.9.2 The maximum stepping height shall not exceed 18 in. (460 mm), with the exception of the ground to first step, which shall not exceed 24 in. (610 mm).

6.9.3 All ladders shall have at least 7 in. (175 mm) of clearance between any rung and the body or other obstruction.

6.9.4 All steps, platforms, or ladders shall sustain a minimum static load of 500 lb (227 kg) without deformation.

6.10 All materials used for exterior surfaces designated as stepping, standing, and walking areas and all interior steps shall have slip resistance.

6.11 All materials used for interior floors shall have slip resistance.

6.12 **Access Handrails :**

6.12.1 Access handrails shall be provided at each entrance to a driving or crew compartment and at each position where steps or ladders for climbing are located.

6.12.2 Access handrails shall be constructed of, or covered with, a slip-resistant, noncorrosive material i.e. Aluminium / SS.

6.12.3 Handrails shall be between 1 in. and 1 in. (25 mm and 42 mm) in diameter and have a minimum clearance between the handrails and any surface of at least 2 in. (52 mm).

6.12.4 All handrails shall be designed and mounted to reduce the possibility of hand slippage and to avoid snagging of hose, equipment, or clothing.

6.13 **PAINTING AND MARKING :**

6.13.1 Unit and monitor should be painted with 2 coats of zinc phosphate epoxy primer each of 50 microns DFT and two coats of polyurethane finished red paint each coat of 50 microns DFT.

6.13.2 All the lockers / cabins shall be provided with Stainless steel Name Plates with letters itched/ embossed on it boldly indicating the content.

6.13.3 Water lines should be painted with of zinc phosphate epoxy primer each of 50 microns DFT and two coats of polyurethane finished paint each coat of 50 microns DFT. Water lines shall be painted red in colour.

6.13.4 Paint shall be of Asian/Burger/Akzonoble/3M make only.

6.13.5 M/s Oil India Ltd. emblem in original colour together with name (in Hindi and English) shall be written in golden yellow colour on both sides of the Unit.

6.13.6 On the front of the Unit "MULTI-PURPOSE FIRE TENDER" shall be written IN ENGLISH.

6.13.7 The inside of lockers shall be painted in pale Cream colour.

6.13.8 The chassis frame shall be painted black and wheel arch shall be painted white.

6.13.9 Mud flappers of sufficient length and width shall be provided at wheels.

6.13.10 Under frame of Chassis shall be painted with chlorinated rubber paint.

6.13.11 The Unit shall be clearly having the following marks at suitable locations.

(a) Manufacturer's name & trade mark
(b) Year of manufacture
(c) Pump serial numbers and capacities
(d) Capacity of water tank in litres
(e) Engine and chassis number
(f) All instrument control & valves shall be identified with properly itched metallic Name plates.
(g) All valves and hoses inlet and outlet shall also be identified by suitable metallic Nameplates.

6.13.12 All exposed ferrous metal surfaces that are not plated or stainless steel shall be cleaned and prepared and shall be painted or coated.

6.13.13 The paint or coating, including any primer, shall be applied in accordance with the paint or coating manufacturer's recommendation.

6.13.14 A reflective stripe(s) shall be affixed to the perimeter of the MULTI-PURPOSE FIRE TENDER.

6.13.15 The stripe or combination of stripes shall be a minimum of 4 in. (100 mm) in total width and shall conform the requirements.

6.13.16 At least 50 percent of the cab and body length on each side, at least 50 percent of the width of the rear, and at least 25 percent of the width of the front of the MULTI-PURPOSE FIRE TENDER shall have the reflective material affixed to it.

7.0 PUMPS:

7.1 Auxiliary Pump (i. e. Plunger Pump) :

7.1.1 A Plunger pump shall be provided with a capacity of 150LPM @ 100 bar (M/s. Udor Pumps, Italy / Interpump, Italy)

7.1.2 Delivery assembly consist of spray gun, high pressure hose reel.

7.1.3 The pump will be a three or six plunger positive displacement type working to the capacity at not more than 1000 RPM.

7.1.4 The Hi Pressure Pump shall be drive by side PTO of the vehicle

7.1.5 A by-pass for letting the water back to the tank will be provided to release excess pressure generated due to shutting of the hand lines or while discharging 150 LPM @40 bar or 75 LPM @100 bar individually.

7.1.6 The pump will be guaranteed for five years or minimum life of 5000 Hrs. whichever is later of operation.

7.1.7 The pump will have double seal on each plunger with low pressure intermediate chamber to keep the water seals cool & lubricated.

7.1.8 This system will also permit to re-circulate any leakage from the high pressure back to pump inlet.

7.1.9 The pump will have synthesized pistons of ceramic.

7.1.10 The connecting rods would be of an alloy which has low attrition co-efficient, high wear resistance & high anti seize up properties.

7.1.11 Hydraulic structure would be designed to simplify scheduled maintenance procedures (gasket & valve replacement).

7.1.12 The pump suction line will have inline mesh filters of OEM.

7.1.13 The pump will have Safety relief valve of OEM.

7.1.14 The pump discharge line will have Pulsation dampener for smooth flow

7.1.15 The pump will deliver water to hose reel.

7.1.16 Provision/ connection to be provided with foam suction also.

7.1.17 **UHP HOSE REELS**:

7.1.17.1 There will be two hose reels of 60 Mtrs. lengths each.

7.1.17.2 The high pressure pump will operate through a separate hose reel which will be provided at a suitable place on the Unit.

7.1.17.3 The hose used for the hose reel would be rated for 130 bar working pressure (180 bar test pressure) & will be of min. 16mm ID.

7.1.17.4 It will have geared winding system.

7.1.17.5 At the discharge end of the hose reels, high-pressure fog gun will be provided which will be capable of discharging 75 LPM @ 100 bar pressure in jet or Fog patterns.

7.1.17.6 The jet range will not be less than 20 Mtrs. & the water droplets in the spray form will be of approx. 250 microns at an angle of 45º.

7.1.18 **HIGH PRESSURE FOG GUNS**:

7.1.18.1 At the discharge end of both hose reels, two nos. of high-pressure fog guns, capable of discharging 75 LPM @100 bar & 150 LPM @50 bar in jet or fog patterns will be provided.

7.1.18.2 The jet range will not be less than 21 Mtrs. for the gun with output of 150 LPM and should not be less than 16 Mtrs. for the gun with 75 LPM output.

7.1.18.3 The water droplets in the spray form will be of approximately 250 microns at an angle of 45 degree.

7.1.18.4 The above gun shall be internationally approved and copy of the same shall be furnished along with the offer.

7.1.18.5 Two nos. of above said gun and Two Nos. Hose Pipe (60 Mtrs. Each) shall be supplied as spare.

7.1.18.6 Pump to Hose reel connection (s)/ pipe along with fittings shall be provided in addition to the connections fitted as spare.

7.1.18.7 Couplings shall be of quick release type.

7.1.18.8 Spare quick release coupling "O" ring – 100 Nos. shall be provided

7.2 **Main Water Pump and Associated Equipment**:

7.2.1 The pump shall be single stage & centrifugal type of Godiva Make.

7.2.2 The MOC of the pump shall be Brass

7.2.3 The pump should be capable of delivering minimum 3200 LPM at 10 Kg/Cm2 (g). Successful Bidder shall match other parameters of operation w.r.t. Engine of the chassis.

7.2.4 Pump shall be CE approved, meet international standards & Comply EN 1028.

7.2.5 The water pump with automatic water ring & exhaust ejector type priming device shall be installed.

7.2.6 The pump shall be capable of taking suction from:

a. Water Tank mounted on chassis. (In normal condition).

b. Underground reservoir through flexible suction line with suction lift up to 7.5 M with aid to automatic water ring type primer.

7.2.7 The pump shall be rear mounted and shall be accessible and readily removable for repair and maintenance. It shall be driven by the chassis diesel engine through a power take-off unit and propeller shaft.

7.2.8 The primer shall be capable of lifting water at least through 7.5M depth (Suction lift) at a rate of not less than 30 cm per second in the suction line. The auto primer should work satisfactory even if it is left dry for long period.

7.2.9 The pump discharge shall be able to be routed to :

a. 4 Nos. outlets (on rear side of Unit along with control panel) each fitted with ISI

marked 63MM, SS instantaneous female coupling fitted with stainless steel end caps by suitable chain link/ suitable flexible steel rope cable.

b. The outlets should be angled around 30 deg. towards downward direction.
c. Water-cum-Foam Monitor fitted on top of Unit.

7.2.10 The pump shall have a suitable box type suction strainer made of Stainless steel. The strainer should easily be removable for maintenance.

7.2.11 Pump impeller shaft should be fitted with anti-friction bearing.

7.2.12 Design and Performance Requirements :

7.2.12.1 **Intake Strainer :**

a. Intake shall have a removable or accessible strainer inside the connection.
b. The strainer(s) shall restrict spherical debris that is too large to pass through the pump.
c. Intakes having male threads shall be equipped with caps; intakes having female threads shall be equipped with plugs but remain secured to the MULTI-PURPOSE FIRE TENDER by means of suitable connection.

7.2.12.2 **Pump Drains :**

a. A readily accessible drain valve(s) that is marked with a label as to its function shall be provided to allow for draining of the pump and all water-carrying lines and accessories.
b. The drain valve(s) shall be operational without the operator having to get under the MULTI-PURPOSE FIRE TENDER.

7.2.12.3 **Pump Operator's Panel :**

a. Each pump control, gauge, and other instrument necessary to operate the pump shall be located on a panel known as the pump operator's panel and shall be marked with a label as to its function.
b. All gauges, discharge outlets, pump intakes, and controls shall be illuminated.

7.2.12.4 **Instrumentation :**

a. **Pump Operator's Panel:** The following controls and instruments shall be provided and installed as a group at the pump operator's panel:
   I. A master pump intake pressure–indicating device
   II. A master pump discharge pressure–indicating device
   III. A pumping engine tachometer
   IV. A pumping engine coolant temperature indicator
   V. The pumping engine throttle
   VI. The primer control
   VII. The water level indicator
b. Any instrumentation exposed to the elements shall be weatherproof.
c. Each pressure-indicating device or flow meter, and its respective display, shall be mounted and attached so it is protected from accidental damage and excessive vibration.

7.2.12.5 **Required Testing :**

(a) Pump Certification
(b) Pumping Test
(c) Pressure Control System Test
(d) Priming Device Tests
(e) Vacuum Test
(f) Water Tank–to–Pump Flow Test.
(g) The manufacturer shall conduct a piping hydrostatic test prior to delivery

of the MULTI-PURPOSE FIRE TENDER.

7.2.13 SPARES :

7.2.13.1 The following mandatory spares shall be supplied "Main Water Pump" by the Successful Bidder:

I. Pump Shaft with keys- 1 No
& Impeller nut- 1 No

II. Impeller (low pressure) - 1 No.

III. Set of DE & NDE bearings- 3 Sets
Each set comprising of :
   a. Bearing-Ang., Contact - (2 per pump)
   b. Bearing- Roller - (1 per pump)

IV. Mechanical seal spares - Rotating & stationary faces with packing:
Mechanical seal - 2 Sets.

   c. Springs pins, gaskets etc.- 2 Sets.

V. Couplings between PTO Unit & Pump- 2 Nos.

8.0 FOAM PROPORTIONING SYSTEM:

8.1 Around the Foam Proportioning system with Foam Induction device duly calibrated for 1%, 3 % & 6 % will be provided near the pump. Also Auxiliary foam induction arrangement to be provided.

9.0 DCP SYSTEM:

9.1 Placement & location of vessel along with other tanks will be such that load over the chassis is equally distributed & centre of gravity will be as low as possible.

9.2 The DCP vessel will be designed & fabricated as per ASME Code VIII Division I, code of unfired pressure vessel.

9.3 The material for vessel will be as per ASME codes.

9.4 The vessel will be cylindrical in shape.

9.5 The max. Corrosion allowance for shell & dish end will be within 2.5mm.

9.6 Vessel will be filled with Dry Powder as IS 4308.

9.7 The vessel will be designed for
a) Working Pressure-14 Kg/cm2

b) Hydro test pressure - 24 Kg/cm2 .

9.8 Vessel will be provided with filling aperture of 18" dia. With flanged cover at top and drain hole of 10" dia. at bottom with flanged cover.

9.9 Vessel will be fitted with Safety valve pressure gauge, pressure reducing device.

9.10 Isolation valve, charging valve fitted at suitable location.

9.11 Vessel will be provided with a blow valve or similar device on top to discharge N2 gas in the atmosphere without discharging powder.

9.12 Safety valve will be installed on the top of vessel at suitable location & the setting of safety valve will be at 16 Kg/cm.

9.13 To ensure proper fluidity of the powder appropriate nos. of diffuser nozzle will be provided at the bottom of vessel & suitable arrangement will be made to ensure that diffuser nozzle are not blocked under any circumstances.

9.14 The diffuser nozzles should be fitted with synthesized filters DCP system will have N2 as an expelling agent.

9.15 Vessel will have suitable Nos. of N2 cylinders (Min. 68 Ltrs. water capacity) to ensure that 90% powder is discharged.

9.16 04 Nos. N2 Cylinders (in addition to spare battery bank mounted on fire tender) shall be supplied along with Unit as spare.

9.17 Suitable arrangement would be provided for flushing powder from the reels etc.

9.18 All valves, nozzle, pressure gauge, etc. will be of best quality and material of construction would be of non-corrosion, non-reactive material compatible with DCP.

9.19 02 Nos. hose reel with minimum 25 mm x 30 m long high pressure hose (30 bar working pressure) fitted with Variable Flow Hydro Chem Nozzle (1.5" (F)NST water inlet, 1" (F)NST dry chem inlet) & Parker make hose shall be provided at both side of Unit for DCP discharge at easily accessible location so as to facilitate quick pulling with throw of 10 M at 45º & capable of discharging minimum 2.5 Kg/sec. Hydro-Chem/ DCP Variable Flow Nozzle shall be M/s. Williams fire, USA/ Elkhart Brass, USA/ Task Force Tips (TFT), USA/ Akron Brass.

9.20 Free charge of Dry Chemical Powder – 500 Kg. is in Successful Bidder's scope. Dry Chemical Powder to be provided separately in sealed drum as per detailed specification of "Annexure – B".

10.0 <u>WATER CUM FOAM MONITOR:</u>

10.1 Foam-cum water monitor with manual override shall be mounted on rooftop of the "MULTI-PURPOSE FIRE TENDER" having following specification:

(a) Make & Model: M/s. Elkhart/ TFT/ Akron/ Rosenbauer
(b) Capacity: Automatic flow from300 to 1000 GPM single Nozzle with Jet, Spray & Fog Pattern
(c) Type: Non-aspirating
(d) Discharge Capacity: 300 to 1000 GPM at 7.0 KG/CM2 (at the base flange of the monitor)
(e) Barrel Size: Suitable size as per requirement
(f) Material of Construction: Monitor body hard anodized Aluminium or as per OEM

10.2 **PERFORMANCE:**

(a) Water Throw at 7.0 KG/CM2 (Monitor inlet pressure): Minimum 50 meter-Horizontal.
(b) Foam Throw at 7.0 KG/CM2 (Monitor inlet pressure): Minimum 40 meter-Horizontal.

10.3 Operational control for the monitor shall be provided at the rooftop for horizontal movement, vertical movement & jet/spray pattern of the monitor.

10.4 One oil filled pressure gauge shall be provided near the monitor inlets flange.

10.5 Separate connection shall be made to operate Foam/Water Monitor directly from pressurized hydrant mains by means of suitably sized inlet line 4 nos., 63MM, ISI marked instantaneous male connectors with strainer fitted on the rear side of the MULTI-PURPOSE FIRE TENDER, shall be connected to the Monitor line with a SS isolation valves.

11.0 <u>WATER TANK:</u>

11.1 Net capacity of water tank shall be of **4000 liters**. In addition a 2% expansion space shall be made in the water tank over & above the water capacity. A calibrated dip tape shall be provided on the tank to measure the tank level

11.2 The water tank shall be fabricated out of minimum 5MM thick SS-316L plates for the

bottom & 4 MM thick SS-316L plates for the sides & top. The tank shall be of welded construction and shall be suitably stiffened with SS-316L angles/flats so as to avoid buckling and distortion.

11.3 **The both side of water tank shall be Die Pressed Stiffened type.**

11.4 The tank shall have baffles, of minimum 3MM thickness, SS-316L plates, so as to avoid water surging due to movement of Unit. Baffle plates will be connected to the tank with SS nut/bolts. The threads of bolts shall be TAC welded beyond the nut to prevent the nuts falling in the tank due to vibrations.

11.5 Tank shall be provided with anti-vortex device at the nozzle for pump suction.

11.6 An inspection manhole of 500MM size shall be provided on top with a hinged and bolt able cover with suitable gasket. The manhole shall be fitted with SS nameplate having etched marking 'WATER' (letter size 100MM).

11.7 Suitable lifting lugs shall be provided on the tank shell to enable it to be lifted off the Unit for repairs/replacement as necessary.

11.8 The tank shall be fitted with a sludge trap. The bottom of the tank shall have a slight slope towards the sludge trap.

11.9 The tank shall also have a cleaning hole of 250MM dia. Manhole shall be fitted with 50MM drain pipe with AUDCO make SS ball valve and 63MM (SS) ISI marked instantaneous male coupling incorporated in it.

11.10 The tank shall be fitted with overflow pipes of suitable diameter and the discharge end shall be taken below the chassis without reducing the effective ground clearance. The overflow pipe shall be routed to outside water tank.

11.11 The tank shall be filled by means of suitably sized inlet line from pressurized hydrant mains. 4 nos. 63MM ISI marked, SS instantaneous male connectors (2 on each side of the MULTI-PURPOSE FIRE TENDER) shall be connected to the filling line. The inlet lines will be provided from AUDCO Make SS ball valve. Water filling arrangement to the tank shall be provided from upper side of the tank only and the filling line shall be routed to outside water tank.

11.12 The tank shall have an adequately sized breather valve. The inlet line in the tank shall have an adequately strong deflector plate, which will avoid the incoming jet of water from hitting the tank sides/bottom.

11.13 All nozzles for the tank shall have suitable reinforcement pads. Nozzles shall also have adequate stiffeners to take the loads from piping.

11.14 Tank supporting structure on the chassis shall be of SS-316L.

11.15 Reinforcement pads at tank supporting structure shall be of same thickness and material as that of the water tank.

11.16 Suitable strainer (SS) shall be provided at the tank bottom on pump suction line.

11.17 Provision shall be made on either side of the body for visual inspection/maintenance of the water tank.

11.18 <u>The tank will be connected with the pump & nose reel & valve/s will be provided in such a way that any of the following operation are possible</u>:

Tank to pump
Pump to heat exchanger (cooling system)
Auxiliaries connections
Tank to UHP pump
Pump to hose reel
Tank to water level indicator
Pump to Tank
Hydrant to tank direct
Tank to pump to monitor (Foam / Water)

11.19 Tank Construction & Mounting :

11.19.1.1 All water tanks shall be constructed of noncorrosive material or other materials that are protected against corrosion and deterioration.

11.19.1.2 The water tanks shall have a means to permit cleaning of the tank.

11.19.1.3 Water tank should be independent of the body and compartments, it shall be equipped with a method for lifting the tank(s) off of the chassis.

11.19.1.4 Tank shall be cradled, cushioned, spring-mounted, or otherwise protected from undue stress resulting from travel on uneven terrain.

11.19.1.5 Water tank shall be provided with baffles to form a containment or dynamic method of water movement control.

11.19.1.6 Containment method of baffling should be used, a minimum of two transverse or longitudinal vertical baffles shall be provided.

11.19.1.7 There shall be a maximum distance of 48 in. (1220 mm) between any combination of tank vertical walls and baffles.

11.19.1.8 Each baffle shall cover at least 75 percent of the area of the plane that contains the baffle.

11.19.1.9 The water tank will be mounted on the Unit on a sub frame using Rubber Metacones. This sub frame will be made from Anti-Corrosive Treated MS 4" section and will be bolted with the chassis using the high tensile bolts. 'U' Bolts shall not be used for mounting of tanks on Unit. The rubber metacones shall facilitate to absorb the jerks and bending torsions in expansion as well as compression mode without high deflection. The manufacturer shall provide complete design data of metacones and sub frame including the load calculations and metacone quantity sufficiency. Tank will be mounted on the chassis in a manner keeping in view the proper load distribution on the axles. The baffles will be arranged in a manner to facilitate easy cleaning of the tanks. The tank will be mounted on two / three cross bearers to counteract stresses caused by chassis flexing. The Centre of Gravity shall be maintained as low as possible.

11.19.1.10 Cleanout Sumps :

- One cleanout sumps shall be provided.
- A 3 in. (75 mm) or larger removable pipe plug shall be furnished in each sump.

11.20 **Water Level Indicator** :

11.20.1.1 An indicator shall be provided that shows the level or amount of water in the tank(s).

11.20.1.2 A suitably protected water level indicator of the graduated glass tube, clear acrylic shall be provided close to the control panel. Isolation valve shall be provided just after the tap off point near the water tank for the level indicator.

11.20.1.3 Electronic LED Water Level Indicators indicating the tank levels as EMPTY, ¼, ½ , ¾ and FULL shall be provided on the pump control panel. These levels shall be indicated by number of glowing LED lights (no LED Lights means empty tank and All LED Lights means full tank). The indicators shall sense the fluid level in the tank with help of a pressure sensing probe. The indicators shall be located on the rear pump control panel in such a manner that the Operator / Firemen can easily view the tank levels while being away from the Unit. **Additional Level Indicator – Two Nos. shall be provided as spare**.

11.21 **Tank-to-Pump Intake Line :**

11.21.1.1 The water tank shall be connected to the intake side of the pump with a valve controlled at the pump operator's position.

11.21.1.2 Filling and Venting :

a. Fill Opening: - A convenient covered fill opening designed to prevent spillage shall be provided.
b. Vent/Overflow Outlet: - A vent/overflow outlet that is sized to allow water to be drawn from the tank.
c. External Fill: - An external fill connection leading directly to the tank shall be provided.
d. The external fill connection shall be provided with a removable or accessible strainer, a shutoff valve capable of being throttled, a minimum 30-degree sweep elbow positioned downward, and a closure cap or plug.

11.22 **Water Tank Capacity Certification :**

a. The manufacturer shall certify the capacity of the water tank prior to delivery of the MULTI-PURPOSE FIRE TENDER.
b. The certified capacity shall be recorded on the manufacturer's record of construction and the certification shall be provided to the OIL when the MULTI-PURPOSE FIRE TENDER is delivered.

11.23 **PIPING:**

11.23.1.1 All piping shall be designed to have minimum pressure drop and achieve the required pressure and flow at various locations.

11.23.1.2 All piping shall be seamless and designed for 10% over the maximum pressures encountered in the pipe.

11.23.1.3 The piping shall be flanged for ease of maintenance. However, joints to be kept minimum.

11.23.1.4 Valves of less than 1.5 inch size shall be forged construction and valve more than 2" size or more size shall be of cast construction.

11.23.1.5 All lines shall be suitably supported so as to provide rigidity and avoid vibrations.

11.23.1.6 Al lines less than 1.5" NB size can be socket welded to matching 3000 LBS rating fittings. All lines above 2" NB size shall be butts welded with full penetration welds.

11.24 **ACCESSORIES :**

11.24.1 CONTROL PANEL :

Adequately illuminated pump operating panel shall be provided at the rear side of the Unit and these shall include the following areas:

Adequately illuminated pump operating panel will include the following:

a. Independent pressure gauges calibrated to 25 KG/CM2 for pump discharge.
b. Pump Pressure gauge
c. Compound gauge
d. Temperature gauge
e. Pump RPM meter for shaft speed
f. Hydrant connection for water tank filling pipes (LHS & RHS Side near)
g. Delivery outlets of the pump along with chain linked blank cap
h. Suction inlet of the pump with chain linked blank cap

i. Control for using the auxiliary foam pick up tube
j. Quick opening valve for lining up water tank to pump
k. Control for flushing out foam equipment &piping
l. Valve for UHP hose reels
m. Light point of pump panel
n. Pump Drain valve
o. Cooling water circuit control
p. Priming valve for water pump
q. Control valve for monitor
r. Hydrant to hose reel connection
s. Around the pump proportioner connection
t. PTO engagement indicator
u. Driver's calling bell
v. Auxiliary throttle control for the engine
w. Threaded suction inlet of water pump with blind cap
x. Level gauge for water tank & Foam Tank
y. System schematic etched on Stainless Steel plate
z. Operating instruction plate and flushing out instruction plate (both on boldly etched Stainless steel plates)

11.24.2 Following spare tools shall be provided:-

a. Socket wrench 1 Set (6 MM to 31 MM)
b. Socket wrench (2 Inch Dia.) – 02 Nos.
c. Open Spanner (2 Inch Dia.) – 02 Nos.
d. Screw Drivers – 01 Set

11.24.3 In addition to the items mentioned above, Successful Bidder shall provide any other items that he may find essential. Any of these items which are also required in the driver's cabin shall be provided at suitable locations in the driver's cabin. Each lever, switch, valve, gauges, outlet/inlet etc. shall have identification made on metal plate and duly riveted. The microphone of the PA system shall be fixed inside the driver cabin on a flexible stand at a suitable location.

12.0 <u>FOAM CONCENTRATE TANK</u> :

12.1.1 The foam compound tank of **1000 liters** net capacity shall be fabricated out of 5MM thick SS-316L plates for the bottom & 4 MM thick SS-316L for the sides & top. In addition 2% of expansion space shall be made in the tank, over and above foam compound capacity.

12.1.2 The both side of water tank shall be Die Pressed Stiffened type.

12.1.3 The foam tank shall be of welded construction and shall be suitably stiffened with SS 316L angles/flats so as to avoid buckling and distortion.

12.1.4 Weld joints shall be minimized

12.1.5 Suitable lifting lugs shall be provided on the tank shell to enable it to be lifted off the Unit for repairs/replacement as necessary.

12.1.6 The tank shall be fitted with a sludge trap of 150 mm. The bottom of the tank shall have a slight slope towards the sludge trap.

12.1.7 The tank shall also have a cleaning hole and drain pipe with AUDCO make S.S. ball valve and 63MM (SS) instantaneous male coupling incorporated in it.

12.1.8 The tank shall have a filling hole of 150MM diameter at top and with a removable conical strainer of SS-316L. The filling manhole shall have a screwed cap. The filler cap shall have an etched SS name plates with marking 'FOAM'.

A calibrated dip tape shall be provided on the tank to measure the tank level.

12.1.9 Breather valve shall be provided for automatic venting of the foam compound tank when the foam compound is drawn from it or when the tank is being filled.

12.1.10 The inlet line in the tank shall have an adequately strong deflector plate, which will avoid the incoming jet of foam from hitting the tank side/roof.

12.1.11 All nozzles for the tank shall have suitable reinforcement pads. Nozzles shall also have adequate stiffeners to take the loads from piping. Tank shall be provided with anti vortex device at nozzle for pump suction.

12.1.12 Tank supporting structure on the chassis shall be of SS 316L.

12.1.13 Reinforcement pads at tank supporting structure shall be of same thickness and material as that of the foam tank

12.1.14 Provision shall be made on either side of the body for visual inspection/maintenance of the foam tank.

12.1.15 A calibrated dip tape shall be provided on the tank to measure the tank level.

12.1.16 The foam concentrate tank shall be provided with a fill tower.

12.1.17 The fill tower opening shall be protected by a completely sealed airtight cover.

12.1.18 The cover shall be attached to the fill tower by mechanical means.

12.1.19 The fill opening shall incorporate a removable screen with a mesh not to exceed ¼ in. (6 mm).

12.1.20 The fill tower shall be equipped with a pressure/vacuum vent that enables the tank to compensate for changes in pressure or vacuum when filling or withdrawing foam concentrate from the tank.

12.1.21 The pressure/vacuum vent shall not allow atmospheric air to enter the foam tank except during operation or to compensate for thermal fluctuations.

12.1.22 The vent shall be protected to prevent foam concentrate from escaping or directly contacting the vent at any time.

12.1.23 The vent shall be of sufficient size to prevent tank damage during filling or foam withdrawal.

12.1.24 The foam concentrate tank shall not be equipped with an overflow pipe or any direct opening to the atmosphere.

12.1.25 The foam concentrate tank(s) shall be designed and constructed to facilitate complete interior flushing and cleaning as required.

12.1.26 Level Indicator for foam tank shall be provided as mentioned for Water Tank.

12.1.27 Tank Drain :

12.1.27.1 A minimum 1 in. (25 mm) inside diameter full flow drain valve and piping shall be provided at the lowest point of any foam concentrate tank.

12.1.27.2 The drain shall be piped to drain directly to the surface beneath the Tender without contacting other body or chassis components.

12.1.28 The foam concentrate tank shall be constructed and installed to be independent of the tender body.

12.1.29 The foam concentrate discharge system design shall prevent the siphoning of foam concentrate.

12.1.30 A label that reads “Foam Tank Fill” shall be placed at or near any foam concentrate tank fill opening.

12.1.31 The foam concentrate tank outlet connection shall be designed and located to prevent aeration of the foam concentrate and shall allow withdrawal of 80 percent of the foam concentrate tank storage capacity under all operating conditions with the Tender on level ground.

12.1.32 The foam concentrate tank inlet connection, if provided, shall prevent aeration of the foam concentrate under all operating conditions.

12.1.33 The foam tank will be mounted on the Unit on a sub frame using Rubber Metacones. This sub frame will be made from Anti-Corrosive Treated MS 4" section and will be bolted with the chassis using the high tensile bolts. 'U' Bolts shall not be used for mounting of tanks on Unit. The rubber metacones shall facilitate to absorb the jerks and bending torsions in expansion as well as compression mode without high deflection. The manufacturer shall provide complete design data of metacones and sub frame including the load calculations and metacone quantity sufficiency. Tank will be mounted on the chassis in a manner keeping in view the proper load distribution on the axles. The baffles will be arranged in a manner to facilitate easy cleaning of the tanks. The tank will be mounted on two / three cross bearers to counteract stresses caused by chassis flexing. The Centre of Gravity shall be maintained as low as possible.

12.1.34 A manual rotary transfer pump shall be provided for transferring foam compound from drums to the foam compound tank without causing any frothing in the tank. Arrangement shall be provided to connect this pump through a tube to the tank filling line.

13.0 PERFORMANCE GUARANTEE :

13.1.1 The manufacturer shall guarantee the design, material, workmanship and the performance of the unit for a period of 18 months from the date of the supply of completed Unit. The Successful Bidder, at M/s Oil India Limited's premises, shall rectify any mechanical defect, faulty workmanship or operational defects found during this period within reasonable time without any extra cost.

14.0 TRAINING :

14.1.1 After supply of the Unit, the Successful Bidder shall provide one week's training on operation & maintenance of fire Unit including chassis at M/s Oil India Ltd. site and charges for the same shall be included in the price.

Abbreviation:

Unit - Complete Multi-Purpose Fire Tender

MVA - Motor Vehicle Act

RPM - Revolutions per Minute

LED - Light-Emitting Diode

PSV- Pressure Safety Valve

Annexure – A

For GVW

S. No.	Item	Numbers
1.	Water tank of capacity 4000 Litres capacity (Wt. Approx. 5000 Kg)	01
2.	Foam Tank of capacity 1000 Litres capacity (Wt. Approx. 1500 Kg)	01

3.	Dry Chemical Powder Vessel (Wt. Approx. 1200 Kg)	01
4.	Chassis (Wt. Approx. 4300 Kg)	01
5.	Pumps, PTO & Propeller Shaft (Wt. Approx. 1000 Kg)	01
6.	Fabrication & Piping (Wt. Approx. 1200 Kg)	01
7.	Weight of crew members (weight 420 Kg)	06
8.	Delivery hoses (type – B) with GM coupling (22.5 M length)	15
9.	Suction Hose	4
10.	SCBA Sets	2
11.	Foam Branches (FB – 10X)	4
12.	Triple purpose branch	4
13.	Standard branch	4
14.	Male to Male coupling	2
15.	Female to female coupling	2
16.	Fire suits	2
17.	Roof top ladder (10.5 M, Aluminium)	1
18.	Portable monitor	1
19.	Akron Branch	4
20.	Ceiling Hook	1
21.	Dividing Breechings	2
22.	Collecting breaching	2
23.	Collecting head	1
24.	MFG	2
25.	Safety Helmets	10
26.	Gum boots	10
27.	Manila rope (1” diameter, 50M length)	1
28.	Suction wrenches	2
29.	Strainer	1

Annexure -B

Dry Chemical Powder Potassium Urea Based

1. **General**: The Powder shall be Potassium Allophonate / Carbonate based dry chemical powder, a reaction product of Potassium Bicarbonate – Urea suitable for large scale high intensity flammable oil & gas fire. The product should be UL Approved.

2. **Physical & Chemical Parameters**:

a. Appearance : Off-White free flowing powder
b. Particle Size : 50 – 70 microns
c. Apparent density : 0.5 - 0.7 gm/cc
d. Water Repellency : 1.5% Max
e. Moisture content : less than 0.25%(m/m)
f. Temperature stability : ± 60°C

3. **Performance Test**: Shall able to extinguish a 20B / 144B Hydrocarbon tray fire by filling 3.5 kg (max) Powder in 5 kg extinguisher.

4. **Physiological Effect**:

a. The DCP shall not have harmful ingredients
b. It should be environmental friendly & nontoxic to humans and animals.
c. Should submit certificates of 1) Non-Toxicity 2) Non-Skin Irritation Test

5. **Compatibility**: The DCP shall be compatible with all type of firefighting foams.

6. **Approvals**:

The Dry Chemical Powder (DCP) should be Listed/Approved by UL as per UL-299C on fire extinguishing Dry Chemical for special application.

The dry powder should follow the latest Oil Industries Safety Directorate norms (OISD-116), as mentioned in Section 12, Page No. 24.

7. **Packing**:

The DCP shall be packed in 25kg good quality HDPE drums which should be hermetically sealed.

8. **Shelf Life**: DCP shall have minimum shelf life of 05 years without any degrading of chemical & physical properties.

9. **Documents**:

a. Must submit valid UL: 229C Certificate along with offer and supply.
b. Thermal Gravimetric Analysis (TGA) with decomposition between 215°C and 260°C should be submitted of a reputed Lab along with the supply, IR analysis report as conducted by UL to be also to be submitted along with the supply.
c. The bidder should submit ISO 9001:2008, ISO 14001: 2004 & OHSAS 18001:2007 certificate copies along with supply.
d. Warrantee / guarantee Certificate for the DCP along with supply.

e. MSDS of the material along with supply.
f. Original manufacturer test report along with supply.
g. Disposal Procedure for the material along with supply.
h. If the powder is imported the latest Bill of Lading is to be produced along with supply.
i. OIL reserves the right to send the sample from the supplied powder for further testing to any authorized national laboratory in India.

10. **MARKING**:

Each container/drum containing Dry Chemical Powder shall be labelled with the following information:

(a) Manufacturer's name or trade mark.
(b) Quantity of the Powder, in Kg (Net and Gross weight)
(c) Type of the Powder and Foam Compatible.
(d) Date of manufacture/Batch No.
(e) UL Marking.

TECHNICAL CHECK LIST:

(FIRE TENDER Fabrication Part)			
Sl. No.	**Parameters / Requirements**	**Bidder's Offer**	**Remarks, (If Any)**
1.	Make & model of Chassis		
2.	Make & model of Power take-off unit for driving Plunger Pump		
3.	Make & model of Main Pump		
4.	Make & model of Water Ring Primer		
5.	Make & model of Exhaust Ejector Primer		
6.	Make & model of foam proportioner		
7.	Make & model of Isolation Valve (150NB)		
8.	Make & model of Isolation Valve (50 NB)		
9.	Make & model of water cum foam Monitor		
10.	Make & model of Plunger Pump of 400 LPM at 100 bar pressure		
11.	Make & model of High-pressure fog guns		
12.	Make & model of Hydro chem DCP Nozzle		
13.	Make & model shutter		

14.	Make & model of automatic nozzle			
15.	Make & model of optical warning devices LED lights			
16.	Make & model of level gauges			
17.	Make & model of driver & Officer's seat			
18.	Make & model of crew seats			
19.	Make & model of SCBA Set			
20.	Make & model of Aluminium Ladder			
21.	Make & model of electronic siren			
22.	Make & model of N2cylinders			
23.	Make & model of N2 reducer			
24.	Make & model of N2 safety release valve			
25.	Make & model of Isolation valves use in DCP System			
26.	Make & model of Dry Chemical Powder			

ITEM NO. 30

INSTALLATION & COMMISSIONING and TRAINING – QTY = 01 AU

The supplier has to **Install** & **commission** the MULTI-PURPOSE FIRE TENDER supplied against item nos. 10 and 20 at Fire Service Deptt, OIL, Duliajan.

The supplier also has to impart one week's **training** to OIL's personnel on operation & maintenance of the Fire Unit including Chassis at M/s Oil India Ltd.'s Duliajan site.

Special Notes:

1. **As per Gazette Notifications issued by the Government of India, the applicable emission standard for vehicles in India shall be BS-VI or Euro-VI with effect from 1st April, 2020. Accordingly, the supplier shall have to supply the Multi-Purpose Fire Tender complying the Gazette Notifications issued by the Government of India as applicable in the state of Assam (India) at the time of delivery of the Multi-Purpose Fire Tender which shall be mandatory for registration of the Multi-Purpose Fire Tender with Government authority .**

2. **All items shall be procured from the same bidder for the purpose of ensuring compatibility and single point responsibility. Evaluation of the offers shall be done accordingly. Hence, bidders must quote for all the items failing which their bids shall be rejected.**

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NOTE:

Bidders should submit their bids (preferably in tabular form) explicitly mentioning compliance / non compliance to all the terms and conditions of the NIT.

PART – "A"CHASSIS FOR "MULTIPURPOSE FIRE TENDER"

Brand new 4x2 drive chassis of TATA, Ashok Leyland or Equivalent make manufactured not prior to six months from the date of issuance of Letter of Intent (LOI). The bidder shall take special care in selecting and designing the Multi-Purpose Fire Tender considering the unit's application in rough terrain and typical oilfield roads. The offered model shall be latest and conforming to international quality standard norms, having specifications, fittings, accessories, etc. as under:

1.CHASSIS:

a	Drive &Cowl	4 x 2 Drive & Full Forward Control Cowl.
b	Engine	Min. 6 cylinder Water-cooled diesel engine.
c	Max. Output Power	Not less than 160 HP at rated rpm.
d	Max. Output Torque	Not less than 400NM at rated rpm.
e	Emission	Emission Norms: Euro VI or BS VI
f	Steering	Hydraulic Power Assisted Steering (Right Hand Steering).
g	Gearbox	Minimum 5 forward speed & 1 reverse speed.
h	PTO for the Main water pump	Power take –off (PTO) unit for the main water pump shall be independent type (VAS make). The PTO operation shall be through Pneumatic as well as mechanical cable linkage.
i	Side PTO (as applicable)	Side Power take –off (Chassis should be attached with PTO) for driving the Hi Pressure Pump. It should be suitable to match engine and pump characteristic. It should engaged by separate lever in main cabin. Necessary support for PTO unit, shaft etc. should be provided. The drive assembly shall be dynamically balance.
j	Wheelbase	In the range of 4600 mm. to 5200mm.
k	GVW	Not less than 16000 Kg.
l	Brake	Full air or Hydraulic power assisted Dual Circuit Service Brake and suitable Parking Brake.
m	Axles	Front - 1, Rear - 1(Drive axle).
n	Suspension	Semi elliptical leaf spring suspension.
o	Wheels & Tyres	Front- 2, Rear - 4 & Spare - 1, Tyre .Size - preferably 10.00 x 20 of adequate ply rating

2. DRIVER'S CABIN:

Details of driver's cabin should be as mentioned elsewhere in the tender.

3.DIMENSIONS:

Full Unit:

Overall Length– Approx. 8500mm.
Max. Width – 2600 mm.
Max. Height – Not more than 3000mm (Unladen).

4. ADDITIONAL/OTHER FITMENTS & ACCESSORIES:

a. All standard gauges and meters, Horn, Reversing Alarm, Lightings, Reflectors, Roof Lamps, Windscreen wipers, Sun shade, Glove box, Lockable fuel tank, Standard Tool Kit, 30T Capacity Hydraulic Jack with handle & wheel wrench, Mud flaps/guards, etc.
b. Rear View Mirror- 2 Nos.
c. Well-covered Battery Box, Tool box. Suitable storage box at suitable location.
d. Suitable Jaw & Pint type rear Towing Hook, mounting arrangement for spare wheel.

e. First Aid Box, Fire Extinguisher, Licence Holder at suitable locations and other fittings required as per MV Act.

5. DOCUMENTATION:

A. The following documents/literatures are to be submitted along with the bid:

a. Technical leaflet, to support the specifications provided in the bid. (All specifications, as desired, as well as Make, MODEL NAME/ ,CODE, Type of the offered Truck Fire Tender Chassis shall clearly be defined in the bid. Submission of Technical Leaflet is not sufficient).

b. A detailed Dimensional Drawing of the fire tender, showing among others overhang, seat size, leg space & sitting arrangement etc. as applicable.

B. The following documents /literatures are to be submitted along with the supply:

a. Temporary Registration, Insurance, Road Tax, Sale Letter in Form 21 & 22/22(A), etc. in the name of M/s OIL INDIA LIMITED, Duliajan, Assam as required under MV act for onward registration of the Trucks fire tender in Assam.

b. Checklist as per enclosed format (CHECKLIST FOR THE FIRE TENDER CHASSIS) shall be furnished along with the bid. In case of any contradicting specification provided elsewhere in the bid, the specification provided in the said checklist shall be considered for the bid evaluation.

6. TECHNICAL CHECK LIST:

Part ATECHNICAL **A 1.1 (FIRE TENDER CHASIS)**					
Sl. No.	**PARAMETERS / REQUIREMENTS**			**BIDDER'S OFFER (To indicate details or yes/no, as applicable)**	**REMARKS, IF ANY**
1	Make & Model of Fire Tender Chassis				
2	Gross Vehicle Weight (GVWR)				
3	Drive:				
4	Wheelbase:				
5	Overall Dimensions (Width, Height & Length) of complete unit:				
6	Ground Clearance:				
7	Laden Weight (Total weight of the unit)				
8	Engine	a	Make & Model		
		b	Max. Output Power		
		c	Max. Output Torque		
		d	Naturally Aspirated or Turbo Charged		
		e	Emission Norms		
		f	Control System (Electronic)		
9	Transmission (Main)	a	Make & Model		
		b	No. of gears		
10	Make & Model of Transfer Case, if any				
11	Total number of PTO in operation				
12.1	Make & Model of Side PTO				
12.2	Make & Model of PTO for main water pump				
13	Make, Model & Type of Steering System				
14	Minimum Turning Circle Radius (MTCR)				
15	Type of Front Suspension				

16	Type of Rear Suspension				
17	Axle Capacity	a	Front		
		b	Rear		
18	Type, Size of Wheel & Tyre	a	Front		
		b	Rear		
19	Type of Service Brake (S/Z-cam or not)				
20	Type of Wheel Brake Servos(screw type manual release or not)	a	Front		
		b	Rear		
21	Fuel Tank capacity				
22	Reversing Alarm with Blinker Lights				
23	Provision of Air Dryer in truck's pneumatic system.				

Part BDOCUMENTATIONS
B1.1 FIRE TENDER

Sl. No.	DESCRIPTIONS	DOCUMENT ENCLOSED (Yes or No)	REMARKS, IF ANY
1	Technical leaflets with detailed specifications, Make & Model of chassis, engine, transmission, transfer case (if any), PTOs, suspension, axle, steering, wheel & rim, brake, etc.		
2	Detailed dimensional layout drawing illustrating Driver's Cabin and all major items/ components.		
3	List of tools that shall be supplied underStandardTool Kit for general maintenance of the Fire Tender.		
4.	Checklist for fire tender as per enclosed format.		

7. WARRANTY/GUARANTEE:

Notwithstanding the Guarantee/Warranty clause(s) mentioned elsewhere in the NIT, complete units shall be under guarantee/warranty by the supplier for a minimum period of 1(one) year from the date of successful commissioning at site.

OIL reserves the right to inspect, test and if necessary, reject the truck or any part/parts after delivery at site, only if the said rejection is attributed to be the responsibility of the supplier. It shall, in no way be limited or waived by the reason that the fire tender was being previously inspected, tested and passed by OIL.

8. DEVIATIONS FROM THE SPECIFICATIONS:

The bidder shall enclose comprehensive list of intended deviations from the technical specifications, of any clearly highlighting the reasons thereof, along with the bid. Deviations from the Technical specifications are intended, the same shall be confirmed in the offer. However, OIL reserves the right for acceptance or rejection of the deviation(s).

PART – BFabrication OF "Multi Purpose Fire Tender" With Accessories

1.0 SCOPE :

1.1 This specification covers the requirements regarding design, procurement, fabrication, testing and supply of "Multi-Purpose Fire Tender" to be used for fire fighting. The scope of supply shall be inclusive of, but not limited to the following.

1.1.1 Chassis (BS-VI Chassis)
1.1.2 A centrifugal type Water Pump of 3200 LPM discharge capacity at 10 Kg/cm^2 (M/s Godiva, UK Make)
1.1.3 Auxiliary water pump (i.e. 3 or 6 Plunger Pump) of 150 LPM at 100 bar pressure.
1.1.4 Water Ring Primer
1.1.5 Exhaust Ejector Primer
1.1.6 Power take-off unit for driving the main pump
1.1.7 Water tank of capacity **4000** Litres capacity
1.1.8 Foam Tank of capacity **1000** Litres capacity
1.1.9 Dry Chemical Powder Vessel **500** Kg Capacity
(The minimum water capacity of the Vessel should be 500 Ltrs. And design to accommodate the Dry Chemical powder with apparent density 1 ± 0.15)
1.1.10 Water cum Foam monitor (Discharge from **300 to 1000** GPM)
1.1.11 Body Fabrication/ Works
1.1.12 Control Panel
1.1.13 Accessories and spares
1.1.14 Piping, necessary controls etc. Complete

1.2 The chassis for the "Multi-Purpose Fire Tender" shall be procured & supplied by the Successful Bidder. The Successful Bidder shall be responsible for supplying all equipment / accessories and properly fixing them on the chassis as described in this specification. Other details and requirements which are not covered under this specification, but may be necessary to complete the **"MULTI-PURPOSE FIRE TENDER"** and/or to fulfil the operation/performance requirement shall be provided by the Successful Bidder, who will be responsible for the design and construction of the complete Unit to the full satisfaction of M/s Oil India Ltd.

2.0 GENERAL REQUIREMENTS:

2.1 The **"MULTI-PURPOSE FIRE TENDER"** including all accessories shall be designed, manufactured, tested etc. as per relevant Indian, International Standards, wherever applicable and as per sound engineering practice.

2.2 All the equipment and accessories shall be fixed on the Unit in a compact and neat manner and shall be so placed that each part is easily and readily accessible for use and maintenance. The centre of gravity shall be kept as low as possible.

2.3 The controls on control panel shall be so arranged that one man can operate all the controls.

2.4 The Successful Bidder shall provide a detailed description of the "**MULTI-PURPOSE FIRE TENDER**", a list of equipment to be furnished, and other construction and performance details to which the "MULTI-PURPOSE FIRE TENDER" shall conform.

2.5 The detailed description of the **"MULTI-PURPOSE FIRE TENDER"** shall include, but shall not be limited to, estimated weight, wheelbase, turning clearance radius, principal dimensions, transmission, and axle ratios.

2.6 Responsibility for the "**MULTI-PURPOSE FIRE TENDER**" and equipment shall remain with the Successful Bidder until they are accepted by the OIL.

2.7 On initial delivery of the "**MULTI-PURPOSE FIRE TENDER**", the Successful Bidder shall supply a qualified representative to demonstrate the "**MULTI-PURPOSE FIRE TENDER**" and provide initial instructions to representatives of the OIL regarding the operation, care, and maintenance of the "**MULTI-PURPOSE FIRE TENDER**" and equipment supplied.

2.8 **INSPECTION & TESTING :**

2.8.1 Third Party Certification of Test Results:-The results of tests to be certified by OIL's Approved third party (M/s Lloyds, M/s Bureau Veritas, M/s IRS, M/s RITES or M/s DNV) certification organization.

2.8.2 Intimation/e-mail to OIL for stage inspections should be forwarded 15 (Fifteen) days in advance to depute our engineers in time.

2.8.3 Prior to dispatch of Unit from Successful Bidder's shop, Stage inspection & testing shall be carried out by the Successful Bidder& third party inspection agency in presence of OIL's Engineer(s). The details of the stage inspection & testing are as mentioned below :-

Stage	**Scope of Inspection (But not limited to)**
First stage	Chassis & Materials Inspection: The successful bidder shall facilitate inspection of chassis by OIL's Engineers along with Third Party Inspection Agency for inspection of the Chassis & other materials to be used for fabrication of the MULTI-PURPOSE FIRE TENDER. (i) Chassis Identification & physical verification of chassis No., engine No. etc. (ii) Verification of all document related to chassis procurement. (iii) Verification of all Documents related to Quality of material of tanks & DCP Vessel. (iv) Thickness measurement of Tanks & DCP Vessel plates and distinct marking of each material by ultrasonic thickness gauge. (v) Physical Identification of material of Tanks, Super structure, under structure etc. (vi) Physical Identification of Components / sub-assemblies identification, before fabrication. (vii) Cutting & marking of material sample for laboratory test (Chemical & Physical). (viii) Verification of all manufacturers/ fabricators document including documents of imported items. (ix) Calibration checking and documents of testing instruments, gauges, tools, accessories etc. (x) Positioning of Tanks & vessels on the chassis.
Second stage	**<u>After completion of under structure:</u>** (i) Hydro testing of Tanks (ii) Dye penetration test of all weld joints of Tanks (iii) Verification of laboratory test (Chemical & Physical) material Test Certificates (MTC) (iv) Positive Material Identification (PMI) of material (v) Construction of under- structure & super structure (vi) Water & Foam tank and DCP vassal. (vii) Documents related to Quality of material of tanks and thickness of tank's plates, radiography inspection report and stamped by recognised third party inspector. (viii) Dimensions check of under structure on chassis, fabricated components as per specifications & approved drawings.

	(ix) Location for Placement of tank, fittings, lockers, pump, quality of fabrication. (x) Calibration checking of testing instruments, gauges, tools, accessories etc.
Final stage	**<u>After completion of panelling, fitment after final painting</u>:** (i) Review of observations of First &Second stage inspections. (i) Stability checking of the unit after mounting all equipment and accessories. It should be free from undue rattling and vibration. (ii) Check proper functioning of all types of signal lights, alarms, Bell etc. (iii) Check quality of workmanship. (iv) Check calibration of instruments, gauges, tools, accessories etc. (v) Check operation of various levers, locks, caps, fitment of tanks, linkages, Markings and plumbing work. (vi) Performance test of all the systems, DCP, Pumps, Primer, PTOs, load & stability test of **MULTI-PURPOSE FIRE TENDER**, (vii) Testing of equipment / tools & Unit (viii) Checking of all relevant documents etc.

2.8.4 **<u>Endurance Test:</u>** The pump will be tested for a continuous period of four hours & water will not be replenished during this test, engine will not show signs of overheating. During this test, the temperature of engine should not exceed the rated temperature and that of lubricating oil 79^{o}C.

2.8.5 **<u>Priming Test:</u>** The priming will be tested as per the latest standards & the system will be subjected to a test at a suction of vertical lift of 7 Mtrs. measured from water level to the centre of suction eye of the pump at a rate of not less than 23-24 seconds.

2.8.6 **<u>Hydraulic Testing</u>**: All the piping will be subjected to hydraulic test pressure of 18 Kg/cm2 for a period of 2 hrs. The pump casing will be subjected to a hydraulic test pressure of a minimum 21 Kg/cm2.

2.8.7 **<u>Shower Test:</u>** After completion of the fabrication, the Unit will be subjected to shower test as per the norms laid down under BIS. The Unit will not show any signs of leakages during this test.

2.8.8 **<u>Road Test:</u>**Unit will be tested for braking, acceleration & top speed by the inspecting officers.

2.8.8.1 Road test of the fully laden Unit shall be carried out to ensure the maximum speed, acceleration, turning radius, breaking ability as specified by chassis manufacture.

2.8.8.2 Road tests shall be conducted in accordance with this section to verify that the completed MULTI-PURPOSE FIRE TENDER is capable of compliance roadability.

After full laden of fire Tender

(i) Max. Speed attained.

(ii) Any rattling or abnormal sound.

2.8.9 Hand Brake- Fully laden on 1 in 4 gradients in neutral gear.

2.8.10 All consumable (e.g. diesel fuel, engine lube oil, water etc.) shall be arranged by Successful Bidder at his own cost. Successful Bidder shall arrange all facilities to carry out inspection & testing.

2.8.11 OIL representatives shall have access at all reasonable times to Successful Bidder's works where the Unit or its accessories are being fabricated and tested.

2.8.12 Drawings (i.e. Skelton Structure, Water & Foam Tank drawing, General layout drawing, Load distribution chart, Electric circuit diagram etc.) & Quality assurance Plan (QAP) shall be approved by the Oil India Ltd. No supply shall be accepted unless drawings & Quality assurance Plan (QAP) are finally approved by the Oil India Ltd.

2.8.13 Third party Inspection agency shall carryout the Inspection based on approved drawings & approved QAP.

2.8.14 The inspection release note of Third part Inspection agency shall clearly stipulate that Material /equipment have been inspected as per approved drawings & approved QAP.

2.8.15 All the tests/inspection for Unit shall be witnessed by Oil India Ltd. representatives along with third party inspection agency.

2.8.16 For Water & Foam Tanks:

2.8.16.1 Review of mill test certificates and Co-relation of raw materials before start of fabrication.

2.8.16.2 DP test of all welds of water & Foam tanks.

2.8.16.3 DP test of all nozzles to shell (reinforcement pads) for water & Foam tanks.

2.8.16.4 Visual and dimensional check of water & Foam tanks before mounting on chassis.

2.8.16.5 Hydraulic test of completed water & Foam tanks. Hydraulic test shall be carried out at 0.5 KG/CM2 (G) at top of tanks. Pressure shall be held for the duration to permit complete inspection.

2.8.17 For Piping :

2.8.17.1 Review of mill test certificates and co-relation of raw materials (for pipes, fittings, valves etc) before start of fabrication.

2.8.17.2 DP test of butt welds and final run.

2.8.17.3 DP test of all flanges to pipe welds.

2.8.17.4 Radiographic examination of 10% butt welds (selected at random).

2.8.17.5 Hydraulic test of piping installation on chassis.

2.8.17.6 Visual and dimensional check.

2.8.18 For Water Pump :

2.8.18.1 Review of mill test certificates for material of casing, impeller and shaft.

2.8.18.2 Performance testing of pump to establish the performance curve at rated speed and power absorbed at rated conditions. Parameters at maximum & minimum allowable speeds shall be evaluated to establish performance curves at these speeds.

2.8.18.3 The Pump shall be run for a period of four hours non-stop delivering the rated output with a lift of 3m . During the test all parameter like cooling system, temperature of the engine, oil, PTO sump oil temperature shall match as per manufacturer's recommendation.

2.8.18.4 The pump casing and impeller shall be subjected to a hydraulic pressure 1.5 times of maximum operating pressure to detect leakage performance etc.

2.8.18.5 Priming Test: The primer shall be capable of lifting water at least 7m in less than 24 second.

2.8.19 Power Input At Rated Conditions :

2.8.19.1 Four-hour mechanical run test shall also be carried out.

2.8.19.2 Performance test shall be done on test bench with shop driver.

2.8.19.3 Four hour run test at rated conditions for verifying performance.

2.8.19.4 NPSH test.

2.8.19.5 Visual and dimensional check.

2.8.19.6 Performance test of auto water ring primer at rated conditions.

2.8.20 For Water Pump (Auxiliary Pump) :

2.8.20.1 All standard tests as specified by the Pump supplier.

NOTE: The above inspections & tests shall be carried out at pump manufacturer's / Fabricator's shop prior to dispatch. Third party inspection agency shall review the documents for the tests carried out by the manufacturer.

2.8.21 For PTO Units :

2.8.21.1 All standard tests as specified by the PTO Manufacturer.

2.8.22 For Foam Cum Water Monitor :

2.8.22.1 Availability of the specified flow and pressure of water and Foam solution at the base flange for the monitor.
2.8.22.2 Review of mill certificates for material.
2.8.22.3 Hydro-testing of monitor at 25 KG/CM2 pressure
2.8.22.4 Horizontal & vertical movements of monitor.
2.8.22.5 Spray/jet pattern of the monitor.
2.8.22.6 Foam expansion ratio of monitor.
2.8.22.7 Water & Foam throws.
2.8.22.8 Workmanship & painting.

2.8.23 For DCP Vessels:

2.8.23.1 Review of mill test certificates and co-relation of raw materials before start of fabrication.
2.8.23.2 DP test of root run and completed weld for all seams of vessels.
2.8.23.3 DP test of all nozzles to shell joints (i.e. reinforcement pads)
2.8.23.4 100% Radiographic examination of all welds of the vessels.
2.8.23.5 Hydrostatic test of vessel at 21 Kg. /Cm2 for 30 min.
2.8.23.6 Visual and dimensional check of vessels before mounting on chassis.

2.8.24 For DCP Piping

2.8.24.1 Review of mill test certificate and co-relation of raw materials (For pipes, fittings, valves etc.) before start of fabrication.
2.8.24.2 DP test of root run and final run of all butt welds DP test of all socket welds.
2.8.24.3 Radiographic examination of 10% butt welds (selected at random)
2.8.24.4 Hydraulic test of piping before installation of chassis.
2.8.24.5 Visual and dimensional check.

2.8.25 For "Multi-Purpose Fire Tender" (During Fabrication & Assembly) :

2.8.25.1 Review of mill test certificates and co-relation of raw materials used for structure & body fabrication before start of fabrication.
2.8.25.2 Inspection of framework for soundness of welding and fitment of chassis and dimensional check.
2.8.25.3 Inspection for proper installation of pumps, tanks, piping with supports and their dimensional checks.
2.8.25.4 Inspection for proper installation of DCP vessels, piping with supporting etc. and dimensional check.
2.8.25.5 Visual inspection of raw materials for framework, cladding, flooring etc.

2.8.26 For Completed Unit :

2.8.26.1 All consumables (Foam, DCP, Nitrogen gas in cylinders, fuel, engine lube oil, Water etc.) required during inspection & testing shall be arranged by Successful Bidder at his own cost. Successful Bidder shall arrange all facilities to carry out inspection & testing.
2.8.26.2 Determination of actual payload on the chassis so as to confirm payload given by Successful Bidder in the bid. For determining actual laden weight, all tanks shall be full, all removable accessories will be on Unit with a crew of six.
2.8.26.3 For determining actual payload all Tanks & vessel shall be charged to rated capacity, charged nitrogen cylinders on board, all removable accessories will be on Unit with crew of six.
2.8.26.4 Static stability of the fully laden Unit shall be checked to ensure that no overturning occurs till Unit attains tilting of 35 ± 1 degrees from horizontal.

2.8.26.5 Dimensional check of completed Unit. The overall height shall be measured both when Unit is laden with full payload and un-laden.

2.8.26.6 Test to confirm functional capability of the "**MULTI-PURPOSE FIRE TENDER**" shall be carried out:

2.8.26.6.1 Running of water pump at rated conditions while discharging water through various outlets individually and in combination.

2.8.26.6.2 The pump shall be run for minimum 4 hours continuously at rated conditions.

2.8.26.6.3 Functional testing of each water outlet (hose point / hose reel) individually and in combination.

2.8.26.6.4 Performance tests of Foam-cum water monitor.

2.8.26.6.5 Performance tests of Foam-cum-water monitor with water through hydrant inlets.

2.8.26.6.6 Functional testing of each hose outlet individually and in combination.

2.8.26.6.7 Vibrations at rotary parts

2.9 **Personnel Protection :**

2.9.1 Electrical insulation or isolation shall be provided where necessary in order to prevent electrical shock from onboard electrical systems.

2.9.2 Workmanship shall ensure an operating environment free of accessible sharp projections and edges.

2.9.3 Safety-related (caution, warning, danger) signs shall meet the requirements of job.

2.10 **Controls and Instructions :**

2.10.1 Illumination shall be provided for controls, switches, instruction plates, gauges, and instruments necessary for the operation of the "**MULTI-PURPOSE FIRE TENDER**" and the equipment provided on it.

2.10.2 All required signs, plates, and labels shall be permanent in nature and securely attached

2.10.3 No gauge or visual display shall be more than 84 in. (2.1 m) above the level where the operator stands to read the instrument.

2.11 **Unit Stability :**

2.11.1 When the "MULTI-PURPOSE FIRE TENDER" is loaded to its maximum in-service weight, the height of the Unit's center of gravity shall not exceed the chassis manufacturer's maximum limit.

2.12 **Weight Distribution :**

2.12.1 When the "**MULTI-PURPOSE FIRE TENDER**" is loaded to its maximum in-service weight, the front-to-rear weight distribution of the "**MULTI-PURPOSE FIRE TENDER**" as defined shall be within the limits set by the chassis manufacturer.

2.12.2 The axle loads shall not be more than the axle loads specified by the chassis manufacturer under full load and all other loading conditions.

2.12.3 Using the information supplied by the OIL, the "MULTI-PURPOSE FIRE TENDER" manufacturer shall calculate the load distribution for the "MULTI-PURPOSE FIRE TENDER".

2.12.4 The manufacturer shall engineer the "MULTI-PURPOSE FIRE TENDER" to comply with the gross axle weight ratings (GAWR), the overall gross Unit weight rating (GVWR), and the chassis manufacturer's load balance guidelines.

2.12.5 The total laden weight of the unit should not exceed the permissible GVW of Unit.

2.13 **MULTI-PURPOSE FIRE TENDER Performance :**

2.13.1 The MULTI-PURPOSE FIRE TENDER shall meet all the requirements while stationary on a grade of 6 percent in any direction.

2.14 **Serviceability :**

2.14.1 Where special tools are required for routine service on any component of the MULTI-PURPOSE FIRE TENDER, such tools shall be provided with the MULTI-PURPOSE FIRE TENDER.

2.15 INFORMATION / DOCUMENTS REQUIRED FROM SUCCESSFUL BIDDER :

2.15.1 Any documentation provided with the MULTI-PURPOSE FIRE TENDER shall be permitted to be in printed format, electronic format, audiovisual format or a combination thereof.

2.15.2 All drawings & literature shall be kept in Proper folders.

2.15.3 All literature shall be on A-4 size paper and shall be properly laminated.

2.15.4 Each drawing shall be kept in separate pockets in folder. Contents in each pocket shall be labelled properly.

2.15.4.1 **AFTER PLACEMENT OF ORDER :**

The following documents are required to be submitted in 2 sets and to be approved prior to start of fabrication**:**

2.15.4.1.1 Flow diagram showing all piping tanks, pumps, valves etc.

2.15.4.1.2 GA & cross sectional drawings, characteristic curves and other details for water pump.

2.15.4.1.3 Internal Drawings for PTO Unit and other technical details.

2.15.4.1.4 Drawings for PTO system to drive pumps from engine.

2.15.4.1.5 Detailed Drawing for Foam-cum water monitor.

2.15.4.1.6 Fabrication drawings & data for water tanks.

2.15.4.1.7 Line diagram for electrical circuits.

2.15.4.1.8 Drawings showing layout of all equipment, lockers, cabin etc.

2.15.4.1.9 QAP incorporating the stipulated inspection and testing requirements.

2.15.4.2 **AFTER COMPLETION OF ORDER (4 SETS) :**

The manufacturer's record of MULTI-PURPOSE FIRE TENDER construction details, including the following Information:

2.15.4.2.1 M/s Oil India Ltd. name and address (Oil India Ltd., Duliajan, Dibrugarh , Assam.)

2.15.4.2.2 MULTI-PURPOSE FIRE TENDER manufacturer, model, and serial number

2.15.4.2.3 Chassis make, model, and serial number.

2.15.4.2.4 Front tire size and total rated capacity in pounds (kilograms)

2.15.4.2.5 Rear tire size and total rated capacity in pounds (kilograms)

2.15.4.2.6 Chassis weight distribution in pounds (kilograms) with water & manufacturer mounted equipment (front and rear)

2.15.4.2.7 Engine make, model, serial number, rated horsepower and related speed, and governed speed

2.15.4.2.8 Fuel tank capacity

2.15.4.2.9 Battery make, model, and capacity in cold cranking amps (CCA)

2.15.4.2.10 Chassis transmission make, model, and serial number

2.15.4.2.11 Chassis transmission PTO(s) make, model, and gear ratio

2.15.4.2.12 Pump make, model, rated capacity in liters per minute and serial number

2.15.4.2.13 Water & Foam tanks certified capacity in liters.

2.15.4.2.14 Paint manufacturer and paint number(s)

2.15.4.2.15 As built drawings of MULTI-PURPOSE FIRE TENDER

2.15.4.2.16 As built drawings for tanks.

2.15.4.2.17 Flow diagram.

2.15.4.2.18 GA & cross sectional drawings, characteristic curves and other details for water pump.

2.15.4.2.19 As built Drawings for Installation of PTO Units.

2.15.4.2.20 As built Drawing for Foam-cum water monitor.
2.15.4.2.21 As built Line diagram for electrical circuits.
2.15.4.2.22 All inspection and testing records for tank, pump, PTO's, piping, valves, monitor etc.
2.15.4.2.23 Operating and instruction manual for the MULTI-PURPOSE FIRE TENDER. This should also contain adequate information for all bought out items also.
2.15.4.2.24 Fire pump manufacturer's certification of suction capability
2.15.4.2.25 Fire pump, the pump manufacturer's certification of the hydrostatic test
2.15.4.2.26 Weight documents showing actual loading of "MULTI-PURPOSE FIRE TENDER" (with the full extinguishing media but without personnel, equipment, and hose).
2.15.4.2.27 Operations and Service Documentation :
2.15.4.2.27.1 The Successful Bidder shall supply operation and service documentation covering the completed MULTI-PURPOSE FIRE TENDER as delivered and accepted.
2.15.4.2.27.2 The documentation shall address at least the inspection, service, and operations of the "MULTI-PURPOSE FIRE TENDER" and all major components thereof.
2.15.4.2.27.3 Catalogue for spares part of Chassis to be provided.

3.0 MULTI-PURPOSE FIRE TENDER EQUIPMENT:

3.1 **Equipment Storage :**
3.1.1 Enclosed weather-resistant compartmentation meeting the requirements for the storage of equipment.

3.2 **Hose Storage :**
3.2.1 A minimum hose storage to store 15 Nos. fire hoses that meets the requirements.

3.3 **Minor Equipment :**
3.3.1 Brackets or compartments shall be furnished so as to organize and mount the specified equipment.

3.3.2 Following equipment shall be supplied:
3.3.2.1 One first aid kit
3.3.2.2 One Nos. HDPE Long Spine Boards Stretcher.
3.3.2.3 Two combination spanner wrenches
3.3.2.4 Two hydrant wrench
3.3.2.5 Double female adapter, sized to fit 2½ in. (65 mm) conforming to IS-901/1993- 5 Nos. (In locker)
3.3.2.6 Double male adapter, sized to fit 2½ in. (65 mm) conforming to IS-901/1993- 5 Nos. (In locker)
3.3.2.7 Four Nos. wheel chocks with chain link, mounted in readily accessible locations, each designed to hold the MULTI-PURPOSE FIRE TENDER.
3.3.2.8 Fog lamps powered by the battery of the Unit- 2 Nos. (Fitted on front of MULTI-PURPOSE FIRE TENDER. Switch in cabin).
3.3.2.9 Reversing lights-2 Nos. (At rear of chassis)
3.3.2.10 Strong Reversing siren connected with reverse gear of the Unit-1 set (Mounted on roof)
3.3.2.11 Search light with 100M length of cable with tripod etc. completes powered from main batteries - 1 set (mounted on roof)
3.3.2.12 All tools required for normal / routine maintenance of the Unit, which are not included with the kit of chassis -1 Set (In tool box under rear seat in cabin).

3.3.2.13 PESO/CCE approved removable spark arrestor (If chassis manufacturer not provided) fitted to the exhaust of the engine - 1 No.

3.3.2.14 Stainless Steel dividing breeching each having two 63MM female instantaneous type outlets, conforming to IS-905/1980- 1 Nos. (In Locker)

3.3.2.15 Stainless Steel collecting breeching each having two 63MM male instantaneous type outlets, conforming to IS-905/1980- 1 Nos. (In Locker)

3.3.2.16 Hard Suction Hose : Make-Dutron Kanaflex, PVC hard suction hose made up of adequate reinforcement of 4.5 meters Length, Diameter: as per pump suction, each with round threaded G.M. male and female coupling on both sides as per IS: 902. (The couplings must be fitted by wire windings to make it leak proof) - 4 Nos. (In compartment on top deck, Compartment shall be open able from top with latching system)

3.3.2.17 Suction Wrench to tighten suction hose as per IS:4643- 04 Nos. (In locker)

3.3.2.18 Hose clamps as per IS:5612 (Part-1-1977) - 2 Nos. (In locker)

3.3.2.19 Multipurpose Nozzle (10 Nos.) : (Make : TFT, Model : G-FORCE 2.5"BICM Valve W/GRIP, SEL 110/230/360/470/570 LPM @ 700 KPA Spinning Teeth)

3.3.2.20 Fireman's axe with belt and pouches conforming to IS: 3650-1981- 02 Nos. (In locker)

3.3.2.21 Crow bar (IS: 704-1984)- 1 No. (In locker)

3.3.2.22 Sledge hammer - 1 No. (In locker)

3.3.2.23 Female Adopter (140 mm X 100 mm) - 02 Nos.

3.3.2.24 Ceiling Fire hook as per IS:927:1981-2007 or latest - 1 No.

3.3.2.25 One 6 lb (2.7 kg) flathead or pick head axe mounted in a bracket fastened to the Tender

3.3.2.26 ISI marked 63MM SS male instantaneous couplings (threaded) with caps - 2 Sets.

3.3.2.27 ISI marked 63MM SS female instantaneous couplings (threaded) with caps - 2 Sets.

3.3.2.28 Hydrant key for 4" Gate valve : 10 nos.

3.3.2.29 Hydrant Key for 2 ½'' hydrant valve: 10 Nos.

3.3.2.30 Suction adopter (Stainless Steel) 4 inch round threaded by 63 mm instantaneous male coupling -02 Nos.

3.3.2.31 Portable Pressure gauge for checking of Tyre Air Pressure- 02 Nos.

3.3.2.32 Curtain Nozzle with 63 MM Male Instantaneous, Stainless Steel with portable with Carrying Handle (Make: Newage/ Shah Bhogilal) - 02 Nos.

3.3.2.33 Water Curtain Hose (04 Nos.) – Construction of type B water curtain hose will be Circular woven jacket made of 100% synthetic polyster and polyamide yarn. Smooth and frictionless rubber lining and ribbed cover made of specially compounded synthetic rubber.

Length of hose is to kept 15 m and diameter 63 mm. Nozzle provided in hose will be Brass/Bronze. SS/Gun metal instantaneous coupling to be provided in hose. Copper winding & riveting is to be done on hose.

3.3.2.34 Aluminium extension ladder Trussed type-l0.5M Length of heavy duty type (IS 4571) – 01 No. mounted on roof

3.3.2.35 Hose Ramps, made of reinforced solid rubber, suitable for laying out 2 Nos. 63 mm Fire fighting delivery hoses. The Ramp shall allow passage of vehicles upto 20,000 kg weight, and shall have interlocking arrangement with keys to attach two or more ramps, for passage of multityre vehicles - 10 pairs

3.3.2.36 QUADRACUPNOZZLE WITH PISTOL GRIP (FQS125BCP) selectable gallonage foam nozzle with stainless steel shutoff ball with flow settings of 30, 60, 95 and 125 GPM at 100 PSI, have a 63mm BIC male inlet. The nozzle shall be M/s. TFT make only – 05 Nos. (in locker)

3.3.2.37 Flip Tip Automatic flow (FTGH35F2S)Lightweight fog and straight stream Nozzle made of Hard Anodized Aluminium Alloy Body with Automatic Flow

230-570 LPM @ 5 Bar. The nozzle shall be M/s. TFT make only – 05 Nos. (in locker)

3.3.2.38 DRY CHEMICAL NOZZLE:The nozzle shall be designed to deliver dry chemical powder at a rate of five pounds per second. The front portion of the nozzle shall be designed with a straight through path, include straightening fins and withstand the abrasive nature of dry chemical powder. For corrosion resistance and durability, the nozzle shall be constructed from hardcoat anodized aluminum alloy, have a six (6) position detent flow control stainless steel slide valve, stainless steel inlet debris screen. An integral pistol grip handle shall be positioned directly below the valve handle.
The nozzle shall have a 1" female NPT swivel hex coupling and an effective discharge reach of 75 feet at full flow. The nozzle shall have a unique serial number and be covered by a five-year warranty.
The nozzle shall be M/s. TFT make only – 04 Nos. (in locker)

3.3.2.39 Open circuit Self-contained breathing apparatus SCBA Set with composite compressed air cylinder – 04 Nos.

The BA set shall contain air cylinder, back plate, facemask, lung demand regulator, pressure reducing valve, Low Pressure Warning Whistle, Pressure Gauges, hoses, carrying case, etc.

The minimum duration of use of the set shall not be less than 45 minutes.

SCBA set: Slandered EN137: 2006 Type 2 or its latest version

Cylinder: water capacity 6 Ltrs.or 6.8 Ltrs./ 300 bar; PESO Approved

MOC: The cylinder shall be aluminum lined, fully wrapped carbon/glass composite material and basically approved to EN 12245 & CE marked.

Face mask: Positive pressure full facemask assembly shall be big facial counter with double reflex seal, speech diaphragm, inner mask (nose cup), visor, five finger head band, made of best quality material like Neoprene / Silicon having flame resistance requirement meeting to EN 136 Class-3.

Back plate with Body Harness: The ergonomically designed back plate should adjustable type to fit all body sizes; with shoulder pads & waist padding / hip belt; harness shall be made from extra heavy duty and non-flammable fibres (aramid). The airline shall be protected from fire and heat by insulating tunnels on the shoulder pads

4.0 CHASSIS AND UNIT COMPONENTS :

4.1 Welding and drilling on frame work of chassis are not allowed.
4.2 An engine hour-meter shall be provided.
4.3 An angle of approach and an angle of departure of at least 8 degrees shall be maintained at the front and the rear of the Unit when it is loaded.

4.4 **POWER TAKE OFF UNITS** :

4.4.1 Power take-off (PTO) unit for the main water pump shall be independent type. (Vas Make)

4.4.2 The PTO operation shall be through Pneumatic as well as mechanical cable linkage.

4.4.3 The power takes off unit for main water pump shall be of suitable model. The PTO shall be able to meet performance requirement of pump.

4.4.4 Successful Bidder shall submit a sketch showing the arrangement of PTO Unit for taking power from main engine on chassis to main water pump.

4.4.5 The drive assembly components (shaft, coupling etc) shall be dynamically balanced and the vibration at any of the rotary parts shall be minimum and in no case shall be more than 10mm/sec. Necessary modifications, to the standard drive system as available on the chassis, shall have to be done by the Successful Bidder so as to adopt the PTO Units in the system.

4.5 **FOR OTHER WORK ON CHASSIS :**

4.5.1 No part of the bodywork shall reduce ground clearance of Unit to less than 36cm. & not increase the overall width to more than 2.60M. The highest part of the Unit with the monitor mounted on it shall not exceed 3.60M from the ground level. The construction of super-structure shall not reduce the angles of approach below 30 degree.

4.5.2 3M/Hi-tech/ Zenith make anti-vibration rubber mats shall be provided while mounting the tanks etc. on the chassis.

4.5.3 Reflective stripe(s) shall be affixed to the perimeter of the unit as per MVA.

4.5.4 Arrangement shall be made on Dashboard opposite to the fire officers' seat to fix a Motorola mobile wireless set of 25W capacity. Power supply shall be provided from Unit battery. M/s Oil India Ltd. shall fit wireless set later.

4.6 **Optical Warning Devices :**

4.6.1 MULTI-PURPOSE FIRE TENDER shall have a system of optical warning devices

4.6.2 The optical warning system shall consist of an upper and a lower warning level.

4.6.3 The four zones shall be designated A, B, C, and D in a clockwise direction with zone A to the front of the MULTI-PURPOSE FIRE TENDER in accordance with Figure 4.8.3.2.

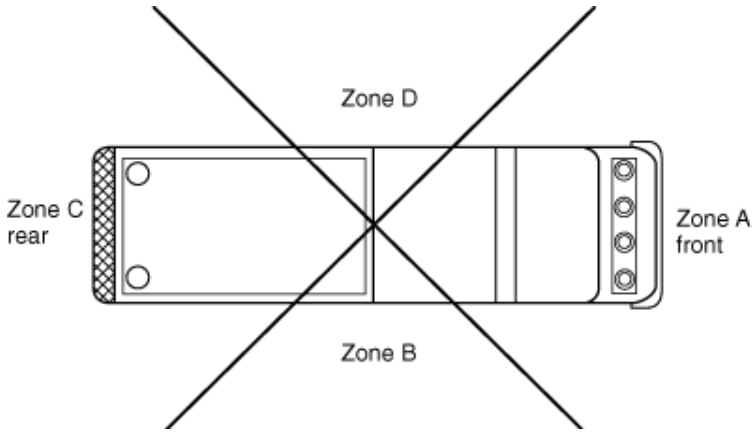

FIGURE: Warning Zones for Optical Warning Devices

4.6.4 Each optical warning device shall be installed on the MULTI-PURPOSE FIRE TENDER and connected to the MULTI-PURPOSE FIRE TENDER's electrical system in accordance with the requirements

4.6.5 A master optical warning device switch that energizes all of the optical warning devices shall be provided in driver's cabin.

4.6.6 The optical warning system on the "MULTI-PURPOSE FIRE TENDER" shall be capable of two separate signaling modes during emergency operations.

4.6.7 One mode shall signal to drivers and pedestrians that the MULTI-PURPOSE FIRE TENDER is responding to an emergency and is calling for the right-of-way.

4.6.8 One mode shall signal that the MULTI-PURPOSE FIRE TENDER is stopped and is blocking the right-of-way.

4.6.9 The system shall be permitted to have a method of modifying the two signaling modes.

4.6.10 The optical warning devices shall be constructed or arranged so as to avoid the projection of light, either directly or through mirrors, into any driving or crew compartment(s).

4.6.11 The front optical warning devices shall be placed so as to maintain the maximum possible separation from the headlights.

4.6.12 The optical sources on each level shall be of sufficient number and arranged so that failure of a single optical source does not create a measurement point, in any zone on the same level as the failed optical source, without a warning signal at a distance of 100 ft (30 m) from the geometric center of the MULTI-PURPOSE FIRE TENDER.

4.6.13 Flash Rate.

4.6.13.1 The minimum flash rate of any optical source shall be 75 flashes per minute, and the minimum number of flashes at any measurement point shall be 150 flashes per minute.

4.6.14 Color of Warning Lights.

4.6.14.1 Permissible colors or combinations of colors in each zone, within the constraints imposed by applicable laws and regulations, shall be as shown in Table.

Table Zone Colors		
Color	Calling for Right-of-Way	Blocking Right-of-Way
Red	Any zone	Any zone
Blue	Any zone	Any zone
Yellow	Any zone exceptA	Any zone
White	Any zone except C	Not permitted

4.6.15 Audible Warning Devices :

4.6.15.1 Audible warning equipment in the form of at least one automotive traffic horn and one electronic siren shall be provided.

4.6.15.2 one electronic siren shall be provided as spare.

4.6.15.3 Additional air horn also to be fitted in the vehicle with operation from driver's cabin.

4.6.15.4 A means shall be provided to allow the activation of the siren within convenient reach of the driver.

4.7 **Work Lighting :**

4.7.1 Ground Lighting :

4.7.1.1 The work area immediately behind the Unit shall be illuminated

4.7.1.2 The "MULTI-PURPOSE FIRE TENDER" shall be equipped with lighting that is capable of providing illumination on ground areas within 30 in. (800 mm) of the edge of the MULTI-PURPOSE FIRE TENDER in areas designed for personnel to climb onto the MULTI-PURPOSE FIRE TENDER or descend from the MULTI-PURPOSE FIRE TENDER to the ground level.

4.7.1.3 All other ground area lighting shall be switchable.

4.7.1.4 Surface Lighting: The MULTI-PURPOSE FIRE TENDER shall have sufficient lighting on all work surfaces, steps, and walkways.

4.7.1.5 Interior Lighting: The MULTI-PURPOSE FIRE TENDER shall have sufficient lighting to provide in the driving and crew compartments.

4.7.1.6 Compartment Lighting Each engine compartment and pump compartment shall have a light.

4.7.1.7 Each enclosed tool and equipment compartment greater than 4 ft3 (0.1 m3) in volume and having an opening greater than 144 in.2 (0.9 m2) shall have an average minimum level of lighting.

4.7.1.8 Switches for all work lighting shall be readily accessible.

4.7.1.9 The lights shall be arranged or protected to minimize accidental breakage.

4.7.2 Backup Alarm (Reverse Horn) :

4.7.2.1 An electric or electronic backup alarm (Reverse Horn) with light indication shall be provided that meets the Type D (87 dBA) requirements.

4.7.3 The MULTI-PURPOSE FIRE TENDER shall be equipped with all legally required stop, tail, and directional lights.

4.7.4 Directional lights shall be visible from the front, sides, and rear of the MULTI-PURPOSE FIRE TENDER.

4.7.5 Equipment shall not be mounted in a manner that obscures the stop, tail, or directional lights.

5.0 DRIVING AND CREW AREAS:

5.1 **General :**

5.1.1 Each crew riding position shall be within a fully enclosed personnel area.

5.1.2 All interior crew and driving compartment door handles shall be designed and installed to protect against accidental or inadvertent opening.

5.1.3 Means of Escape :

5.1.3.1 Any interior area to be occupied by personnel shall have a minimum of two means of escape.

5.1.3.2 Each opening shall be large enough for a person to escape through the opening.

5.1.4 Instrumentation and Controls : All the standard instrumentation and controls shall be mounted in the driving compartment and shall be identified and visible to the driver while seated.

5.1.5 Controls and switches that are expected to be operated by the driver while the MULTI-PURPOSE FIRE TENDER is in motion shall be within convenient reach for the driver.

5.1.6 There shall be two doors in the cabin, sized generously with proper arrangement for embarking and disembarking of crewmembers. The doors shall open outwards and hung forward and shall have levers for unlatching from outside and inside. The doors shall be provided with shatterproof safety glasses which can be raised / lowered by winding type mechanism.

5.1.7 First aid box made of fiber glass/ aluminum suitable for 10 persons shall be provided in the cabin. First aid box shall be suitably mounted in the cabin at easily accessible location.

5.1.8 Non slip type steps & grab rails shall be provided in the cabin to assist the crew members to get in & out. Front side of the cabin shall have glass paneling so that the crew can have an all-round view.

5.1.9 The cabin structure shall be so designed so as to avoid any vibration / rattling / deformation in the intended usage of the Unit. The entire floor of the cabin shall be provided with 3M make vinyl matting of minimum 6MM thickness with anti-skid features.

5.1.10 Battery shall be placed in totally enclosed box with spark proof gland for cable entry with battery cut-Off switch. Installed battery shall have a charging faculty from external source at its location itself.

5.2 **Seating arrangement**

5.2.1 Seating arrangement for 6 persons shall be provided in cabin.

5.2.2 For Driver & Officer In-charge each - "HO Bostrom, USA / Ziamatic/ USSC Valor, USA make"

5.2.3 Seating arrangement for Crew (04 Nos.)

5.2.4 A good quality seat covers to be provided for seats.

6.0 BODY, COMPARTMENTS AND EQUIPMENT MOUNTING:

6.1 STRUCTURE / FRAME WORK :

6.1.1 The structure/frame work on chassis & crew cabin shall be of welded construction and made from 30 mm X 30 mm X1.6 mm hollow square section of **SS-316L** and distance between each horizontal and vertical square shall be maximum 400 mm. Cross supporting members of the panelling shall be made of SS-316L channels of 75 mm X 5 mm thickness

6.1.2 The entire roof of the Unit including the crew cabin top, entire rear, crew cabin floor, locker floor and sides shall be made frommінimum2 MM of Aluminium sheets suitably treated for slippage and these shall be bolted to the frame for ease in removal of the tank for repairs. The roof of the cabins should be rigid enough to take the weight of two persons without deforming the roof sheeting.

6.1.3 Area around the monitors operation shall be provided with 16 SWG anodized Aluminium-checker plate (in addition to the 2 mm Aluminium sheets) and shall be bolted to the frame.

6.1.4 Proper access ladder with Grab rails and non-skid steps shall be provided to give access to the roof for approaching to the manholes for tank and monitor etc.

6.1.5 Access handrails shall be provided at each entrance to a driving or crew compartment and at each position where steps or ladders for climbing are located. Access handrails shall be constructed of, or covered with, a slip-resistant, non-corrosive material. Handrails shall be between 1 in. and 1-5/8 in. (25 mm and 41 mm) in diameter and have a minimum clearance between the handrails and any surface of at least 2 in. (51 mm).

6.1.6 All handrails shall be designed and mounted to reduce the possibility of hand slippage and to avoid snagging of hose, equipment, or clothing.

6.1.7 Single Roller type Sun Shade Screen Assembly and long arm outside fitting rear view mirrors shall be fitted to cabin.

6.1.8 Proper draining arrangements shall be provided on the entire roof, crew cabin and inside the lockers.

6.2 LOCKERS :

6.2.1 Size and number of locker shall be decided such that on either side 15 nos. 22.5 m length fire hose can be easily accommodated in single layer and equipments may be accommodated in maximum two layers. Sufficient numbers of lockers shall be provided to accommodate all the equipment/accessories in an easily accessible manner.

6.2.2 All lockers shall be provided with Roller type shutter doors. The shutters shall have smooth operation. The aluminium shutters shall be dust & water proof of **M/s. MCD, France** imported make only made of extrudedaluminium& duly hard anodized with closing system of "BC" (Bar lift handle) type

6.2.3 Roller shutters shall be of hollow rectangular shaped & made from aluminium inter-changeable links connected by means of plastic profiles.

6.2.4 Sealing of roller shutter shall be watertight when closed.

6.2.5 Roller shutters shall be inward rolling type and shall be provided with guide rails over entire length on both sides to make them torsion free.

6.2.6 When shutters are rolled, unobstructed access should be available to the equipment & hoses.

6.2.7 Shutters should open in all positions of the Unit even in rough terrains.

6.2.8 Roller shutters shall have locking arrangement to prevent accidental opening during movement of the Unit.

6.2.9 Spare closing system "BC" (Bar, Bar Holder, Lower Locking)– 10 Sets shall be provided.

6.2.10 All the lockers shall be illuminated by **MCD make LED lightning system**.

6.2.11 All the lockers shall be fitted with internal lighting, which shall be capable of being automatically switched, 'ON' and 'OFF' by the opening of shutters. A master switch for isolating the locker lighting circuit shall also be fitted in the driver's cabin.

6.2.12 Lockers shall have arrangement for self draining of any water entering inside

6.2.13 Sufficient number of lockers shall be provided for storage of all accessories listed. Lockers shall also be provided to accommodate 4 nos., 09 kg DCP extinguishers.

6.2.14 Lockers shall be accessible from ground level by a man of average height (1.67M). All the Lockers shall be provided with 3M make, 4MM thick, vulcanized synthetic rubber mat at bottom and up-to 12 inch on three sides.

6.2.15 The hose storage area(s) shall be reinforced at the corners.

6.2.16 The bottom shall be made of removable sections fabricated from noncorrosive materials.

6.2.17 The bottom shall be constructed to prevent the accumulation of water and allow ventilation to aid in drying of hose.

6.2.18 The interior shall be smooth and free from all projections, such as nuts, sharp angles, or brackets that might cause damage to the hose.

6.2.19 Ladders and equipment holders shall be placed so as not to obstruct the laying or removal of hose from the storage area.

6.3 **Compartmentation :**

6.3.1 Any enclosed external compartments shall be weather resistant and ventilated and have provisions for drainage of moisture.

6.3.2 All electrical junctions or wiring within compartments shall be protected from mechanical damage resulting from equipment stored in the compartment.

6.4 **Equipment compartments:**

6.4.1 Equipment holders or compartments shall be provided for all tools, equipment, and other items that are on the MULTI-PURPOSE FIRE TENDER.

6.4.2 Equipment holders shall be attached and shall be designed so that equipment remains in place under all Unit operating conditions.

6.4.3 All tools and equipment shall be readily accessible.

6.5 **Pump and Plumbing Access :**

6.5.1 WATER & FOAM PIPINGS:

6.5.1.1 Water & Foam piping shall be of SS-316L grade.

6.5.1.2 Pipes, fittings and valves in the water circuit that will come in contact with Foam solution (water/Foam mixture) shall be of SS-316L.

6.5.1.3 Stainless Steel lines joint - The bolting (studs, bolts) at break flanges shall be of SS-316L with SS washers.

6.5.1.4 A flow chart/schematic diagram shall be made and supplied with the MULTI-PURPOSE FIRE TENDER.

6.6 One or more doors or panels that open or are removable without the use of tools shall be provided to allow visual inspection or access for checking the fire pump and plumbing area(If required).

6.7 All valves, gauges, controls, and other plumbing equipment shall be accessible for service and replacement.

6.8 The clear space required by the pump manufacturer to perform in-truck overhaul and maintenance shall be provided.

6.9 **Stepping, Standing and Walking Surfaces :**

6.9.1 Steps, platforms, or permanently attached ladders shall be provided so that fire fighters have access to all working and storage areas of the MULTI-PURPOSE FIRE TENDER.

6.9.2 The maximum stepping height shall not exceed 18 in. (460 mm), with the exception of the ground to first step, which shall not exceed 24 in. (610 mm).

6.9.3 All ladders shall have at least 7 in. (175 mm) of clearance between any rung and the body or other obstruction.

6.9.4 All steps, platforms, or ladders shall sustain a minimum static load of 500 lb (227 kg) without deformation.

6.10 All materials used for exterior surfaces designated as stepping, standing, and walking areas and all interior steps shall have slip resistance.

6.11 All materials used for interior floors shall have slip resistance.

6.12 **Access Handrails :**

6.12.1 Access handrails shall be provided at each entrance to a driving or crew compartment and at each position where steps or ladders for climbing are located.

6.12.2 Access handrails shall be constructed of, or covered with, a slip-resistant, noncorrosive material i.e. Aluminium / SS.

6.12.3 Handrails shall be between 1 in. and 1 in. (25 mm and 42 mm) in diameter and have a minimum clearance between the handrails and any surface of at least 2 in. (52 mm).

6.12.4 All handrails shall be designed and mounted to reduce the possibility of hand slippage and to avoid snagging of hose, equipment, or clothing.

6.13 **PAINTING AND MARKING :**

6.13.1 Unit and monitor should be painted with 2 coats of zinc phosphate epoxy primer each of 50 microns DFT and two coats of polyurethane finished red paint each coat of 50 microns DFT.

6.13.2 All the lockers / cabins shall be provided with Stainless steel Name Plates with letters itched/ embossed on it boldly indicating the content.

6.13.3 Water lines should be painted with of zinc phosphate epoxy primer each of 50 microns DFT and two coats of polyurethane finished paint each coat of 50 microns DFT. Water lines shall be painted red in colour.

6.13.4 Paint shall be of Asian/Burger/Akzonoble/3M make only.

6.13.5 M/s Oil India Ltd. emblem in original colour together with name (in Hindi and English) shall be written in golden yellow colour on both sides of the Unit.

6.13.6 On the front of the Unit "MULTI-PURPOSE FIRE TENDER" shall be written IN ENGLISH.

6.13.7 The inside of lockers shall be painted in pale Cream colour.

6.13.8 The chassis frame shall be painted black and wheel arch shall be painted white.

6.13.9 Mud flappers of sufficient length and width shall be provided at wheels.

6.13.10 Under frame of Chassis shall be painted with chlorinated rubber paint.

6.13.11 The Unit shall be clearly having the following marks at suitable locations.

(a) Manufacturer's name & trade mark
(b) Year of manufacture
(c) Pump serial numbers and capacities
(d) Capacity of water tank in litres
(e) Engine and chassis number
(f) All instrument control & valves shall be identified with properly itched metallic Name plates.
(g) All valves and hoses inlet and outlet shall also be identified by suitable metallic Nameplates.

6.13.12 All exposed ferrous metal surfaces that are not plated or stainless steel shall be cleaned and prepared and shall be painted or coated.

6.13.13 The paint or coating, including any primer, shall be applied in accordance with the paint or coating manufacturer's recommendation.

6.13.14 A reflective stripe(s) shall be affixed to the perimeter of the MULTI-PURPOSE FIRE TENDER.

6.13.15 The stripe or combination of stripes shall be a minimum of 4 in. (100 mm) in total width and shall conform the requirements.

6.13.16 At least 50 percent of the cab and body length on each side, at least 50 percent of the width of the rear, and at least 25 percent of the width of the front of the MULTI-PURPOSE FIRE TENDER shall have the reflective material affixed to it.

7.0 PUMPS:

7.1 Auxiliary Pump (i. e. Plunger Pump) :

7.1.1 A Plunger pump shall be provided with a capacity of 150LPM @ 100 bar(M/s. Udor Pumps, Italy / Interpump, Italy)

7.1.2 Delivery assembly consist of spray gun, high pressure hose reel.

7.1.3 The pump will be a three or six plunger positive displacement type working to the capacity at not more than 1000 RPM.

7.1.4 The Hi Pressure Pump shall be drive by side PTO of the vehicle

7.1.5 A by-pass for letting the water back to the tank will be provided to release excess pressure generated due to shutting of the hand lines or while discharging 150 LPM @40 bar or 75 LPM @100 bar individually.

7.1.6 The pump will be guaranteed for five years or minimum life of 5000 Hrs. whichever is later of operation.

7.1.7 The pump will have double seal on each plunger with low pressure intermediate chamber to keep the water seals cool & lubricated.

7.1.8 This system will also permit to re-circulate any leakage from the high pressure back to pump inlet.

7.1.9 The pump will have synthesized pistons of ceramic.

7.1.10 The connecting rods would be of an alloy which has low attrition co-efficient, high wear resistance & high anti seize up properties.

7.1.11 Hydraulic structure would be designed to simplify scheduled maintenance procedures (gasket & valve replacement).

7.1.12 The pump suction line will have inline mesh filters of OEM.

7.1.13 The pump will have Safety relief valve of OEM.

7.1.14 The pump discharge line will have Pulsation dampener for smooth flow

7.1.15 The pump will deliver water to hose reel.

7.1.16 Provision/ connection to be provided with foam suction also.

7.1.17 **UHP HOSE REELS**:

7.1.17.1 There will be two hose reels of 60 Mtrs. lengths each.

7.1.17.2 The high pressure pump will operate through a separate hose reel which will be provided at a suitable place on the Unit.

7.1.17.3 The hose used for the hose reel would be rated for 130 bar working pressure (180 bar test pressure) & will be of min. 16mm ID.

7.1.17.4 It will have geared winding system.

7.1.17.5 At the discharge end of the hose reels, high-pressure fog gun will be provided which will be capable of discharging 75 LPM @ 100 bar pressure in jet or Fog patterns.

7.1.17.6 The jet range will not be less than 20 Mtrs. & the water droplets in the spray form will be of approx. 250 microns at an angle of 45º.

7.1.18 **HIGH PRESSURE FOG GUNS**:

7.1.18.1 At the discharge end of both hose reels, two nos. of high-pressure fog guns, capable of discharging 75 LPM @100 bar & 150 LPM @50 bar in jet or fog patterns will be provided.

7.1.18.2 The jet range will not be less than 21 Mtrs. for the gun with output of 150 LPM and should not be less than 16 Mtrs. for the gun with 75 LPM output.

7.1.18.3 The water droplets in the spray form will be of approximately 250 microns at an angle of 45 degree.

7.1.18.4 The above gun shall be internationally approved and copy of the same shall be furnished along with the offer.

7.1.18.5 **Two nos. of above said gun and Two Nos. Hose Pipe (60 Mtrs. Each) shall be supplied as spare.**

7.1.18.6 **Pump to Hose reel connection (s)/ pipe along with fittings shall be provided in addition to the connections fitted as spare.**

7.1.18.7 Couplings shall be of quick release type.

7.1.18.8 Spare quick release coupling "O" ring – 100 Nos. shall be provided.

7.2 Main Water Pump and Associated Equipment:

7.2.1 The pump shall be single stage & centrifugal type of Godiva Make.

7.2.2 The MOC of the pump shall be Brass

7.2.3 The pump should be capable of delivering minimum 3200 LPM at 10 Kg/Cm2 (g). Successful Bidder shall match other parameters of operation w.r.t. Engine of the chassis.

7.2.4 Pump shall be CE approved, meet international standards & Comply EN 1028.

7.2.5 The water pump with automatic water ring & exhaust ejector type priming device shall be installed.

7.2.6 The pump shall be capable of taking suction from:

a. Water Tank mounted on chassis. (In normal condition).
b. Underground reservoir through flexible suction line with suction lift up to 7.5 M with aid to automatic water ring type primer.

7.2.7 The pump shall be rear mounted and shall be accessible and readily removable for repair and maintenance. It shall be driven by the chassis diesel engine through a power take-off unit and propeller shaft.

7.2.8 The primer shall be capable of lifting water at least through 7.5M depth (Suction lift) at a rate of not less than 30 cm per second in the suction line. The auto primer should work satisfactory even if it is left dry for long period.

7.2.9 The pump discharge shall be able to be routed to :

a. 4 Nos. outlets (on rear side of Unit along with control panel) each fitted with ISI marked 63MM, SS instantaneous female coupling fitted with stainless steel end caps by suitable chain link/ suitable flexible steel rope cable.
b. The outlets should be angled around 30 deg. towards downward direction.
c. Water-cum-Foam Monitor fitted on top of Unit.

7.2.10 The pump shall have a suitable box type suction strainer made of Stainless steel. The strainer should easily be removable for maintenance.

7.2.11 Pump impeller shaft should be fitted with anti-friction bearing.

7.2.12 Design and Performance Requirements :

7.2.12.1 **Intake Strainer :**

a. Intake shall have a removable or accessible strainer inside the connection.
b. The strainer(s) shall restrict spherical debris that is too large to pass through the pump.
c. Intakes having male threads shall be equipped with caps; intakes having female threads shall be equipped with plugs but remain secured to the MULTI-PURPOSE FIRE TENDER by means of suitable connection.

7.2.12.2 **Pump Drains :**

a. A readily accessible drain valve(s) that is marked with a label as to its function shall be provided to allow for draining of the pump and all water-carrying lines and accessories.
b. The drain valve(s) shall be operational without the operator having to get under the MULTI-PURPOSE FIRE TENDER.

7.2.12.3 **Pump Operator's Panel :**

a. Each pump control, gauge, and other instrument necessary to operate the pump shall be located on a panel known as the pump operator's panel and shall be marked with a label as to its function.
b. All gauges, discharge outlets, pump intakes, and controls shall be illuminated.

7.2.12.4 **Instrumentation :**

a. **Pump Operator's Panel:**The following controls and instruments shall be provided and installed as a group at the pump operator's panel:
   I. A master pump intake pressure–indicating device
   II. A master pump discharge pressure–indicating device
   III. A pumping engine tachometer
   IV. A pumping engine coolant temperature indicator
   V. The pumping engine throttle
   VI. The primer control
   VII. The water level indicator
b. Any instrumentation exposed to the elements shall be weatherproof.
c. Each pressure-indicating device or flow meter, and its respective display, shall be mounted and attached so it is protected from accidental damage and excessive vibration.

7.2.12.5 **Required Testing :**

(a) Pump Certification
(b) Pumping Test
(c) Pressure Control System Test
(d) Priming Device Tests
(e) Vacuum Test
(f) Water Tank–to–Pump Flow Test.
(g) The manufacturer shall conduct a piping hydrostatic test prior to delivery of the MULTI-PURPOSE FIRE TENDER.

7.2.13 SPARES :

7.2.13.1 The following mandatory spares shall be supplied "Main Water Pump"by the Successful Bidder:

I. Pump Shaft with keys- 1 No
&Impeller nut- 1 No
II. Impeller (low pressure) - 1 No.
III. Set of DE & NDE bearings- 3 Sets
Each set comprising of:
   a. Bearing-Ang., Contact - (2 per pump)
   b. Bearing- Roller - (1 per pump)
IV. Mechanical seal spares - Rotating & stationary faces with packing:
Mechanical seal - 2 Sets.
   c. Springs pins, gaskets etc.- 2 Sets.
V. Couplings between PTO Unit & Pump- 2 Nos.

8.0 FOAM PROPORTIONING SYSTEM:

8.1 Around the Foam Proportioning system with Foam Induction device duly calibrated for 1%, 3 % & 6 % will be provided near the pump. Also Auxiliary foam induction arrangement to be provided.

9.0 DCP SYSTEM:

9.1 Placement & location of vessel along with other tanks will be such that load over the chassis is equally distributed & centre of gravity will be as low as possible.
9.2 The DCP vessel will be designed & fabricated as per ASME Code VIII Division I, code of unfired pressure vessel.
9.3 The material for vessel will be as per ASME codes.
9.4 The vessel will be cylindrical in shape.
9.5 The max. Corrosion allowance for shell & dish end will be within 2.5mm.
9.6 Vessel will be filled with Dry Powder as IS 4308.
9.7 The vessel will be designed for
a) Working Pressure-14 Kg/cm2

b) Hydro test pressure - 24 Kg/cm2 .

9.8 Vessel will be provided with filling aperture of 18" dia. With flanged cover at top and drain hole of 10" dia. at bottom with flanged cover.

9.9 Vessel will be fitted with Safety valve pressure gauge, pressure reducing device.

9.10 Isolation valve, charging valve fitted at suitable location.

9.11 Vessel will be provided with a blow valve or similar device on top to discharge N2 gas in the atmosphere without discharging powder.

9.12 Safety valve will be installed on the top of vessel at suitable location & the setting of safety valve will be at 16 Kg/cm.

9.13 To ensure proper fluidity of the powder appropriate nos. of diffuser nozzle will be provided at the bottom of vessel & suitable arrangement will be made to ensure that diffuser nozzle are not blocked under any circumstances.

9.14 The diffuser nozzles should be fitted with synthesized filters DCP system will have N2 as an expelling agent.

9.15 Vessel will have suitable Nos. of N2 cylinders (Min. 68 Ltrs. water capacity) to ensure that 90% powder is discharged.

9.16 04 Nos. N2 Cylinders (in addition to spare battery bank mounted on fire tender) shall be supplied along with Unit as spare.

9.17 Suitable arrangement would be provided for flushing powder from the reels etc.

9.18 All valves, nozzle, pressure gauge, etc. will be of best quality and material of construction would be of non-corrosion, non-reactive material compatible with DCP.

9.19 02 Nos. hose reel with minimum 25 mm x 30 m long high pressure hose (30 bar working pressure) fitted with Variable Flow Hydro Chem Nozzle (1.5" (F)NST water inlet, 1" (F)NST dry chem inlet) & Parker make hose shall be provided at both side of Unit for DCP discharge at easily accessible location so as to facilitate quick pulling with throw of 10 M at 45º & capable of discharging minimum 2.5 Kg/sec. Hydro-Chem/ DCP Variable Flow Nozzle shall be M/s. Williams fire, USA/ Elkhart Brass, USA/ Task Force Tips (TFT), USA/ Akron Brass.

9.20 Free charge of Dry Chemical Powder – 500 Kg. is in Successful Bidder's scope. Dry Chemical Powder to be provided separately in sealed drum as per detailed specification of "Annexure – B".

10.0 WATER CUM FOAM MONITOR:

10.1 Foam-cum water monitor with manual override shall be mounted on rooftop of the "MULTI-PURPOSE FIRE TENDER" having following specification:

(a) Make & Model: M/s. Elkhart/ TFT/ Akron/ Rosenbauer
(b) Capacity: Automatic flow from300 to 1000 GPM single Nozzle with Jet, Spray & Fog Pattern
(c) Type: Non-aspirating
(d) Discharge Capacity: 300 to 1000 GPM at 7.0 KG/CM2 (at the base flange of the monitor)
(e) Barrel Size: Suitable size as per requirement
(f) Material of Construction: Monitor body hard anodized Aluminium or as per OEM

10.2 **PERFORMANCE:**

(a) Water Throw at 7.0 KG/CM2 (Monitor inlet pressure): Minimum 50 meter-Horizontal.
(b) Foam Throw at 7.0 KG/CM2 (Monitor inlet pressure): Minimum 40 meter-Horizontal.

10.3 Operational control for the monitor shall be provided at the rooftop for horizontal movement, vertical movement & jet/spray pattern of the monitor.

10.4 One oil filled pressure gauge shall be provided near the monitor inlets flange.

10.5 Separate connection shall be made to operate Foam/Water Monitor directly from pressurized hydrant mains by means of suitably sized inlet line 4 nos., 63MM, ISI marked instantaneous male connectors with strainer fitted on the rear side of the MULTI-

PURPOSE FIRE TENDER, shall be connected to the Monitor line with a SS isolation valves.

11.0 WATER TANK:

11.1 Net capacity of water tank shall be of **4000 litres**. In addition a 2% expansion space shall be made in the water tank over & above the water capacity. A calibrated dip tape shall be provided on the tank to measure the tank level

11.2 The water tank shall be fabricated out of minimum 5MM thick SS-316L plates for the bottom & 4 MM thick SS-316L plates for the sides & top. The tank shall be of welded construction and shall be suitably stiffened with SS-316L angles/flats so as to avoid buckling and distortion.

11.3 **The both side of water tank shall be Die Pressed Stiffened type.**

11.4 The tank shall have baffles, of minimum 3MM thickness, SS-316L plates, so as to avoid water surging due to movement of Unit. Baffle plates will be connected to the tank with SS nut/bolts. The threads of bolts shall be TAC welded beyond the nut to prevent the nuts falling in the tank due to vibrations.

11.5 Tank shall be provided with anti-vortex device at the nozzle for pump suction.

11.6 An inspection manhole of 500MM size shall be provided on top with a hinged and bolt able cover with suitable gasket. The manhole shall be fitted with SS nameplate having etched marking 'WATER' (letter size 100MM).

11.7 Suitable lifting lugs shall be provided on the tank shell to enable it to be lifted off the Unit for repairs/replacement as necessary.

11.8 The tank shall be fitted with a sludge trap. The bottom of the tank shall have a slight slope towards the sludge trap.

11.9 The tank shall also have a cleaning hole of 250MM dia. Manhole shall be fitted with 50MM drain pipe with AUDCO make SS ball valve and 63MM (SS) ISI marked instantaneous male coupling incorporated in it.

11.10 The tank shall be fitted with overflow pipes of suitable diameter and the discharge end shall be taken below the chassis without reducing the effective ground clearance. The overflow pipe shall be routed to outside water tank.

11.11 The tank shall be filled by means of suitably sized inlet line from pressurized hydrant mains. 4 nos. 63MM ISI marked, SS instantaneous male connectors (2 on each side of the MULTI-PURPOSE FIRE TENDER) shall be connected to the filling line. The inlet lines will be provided from AUDCO Make SS ball valve. Water filling arrangement to the tank shall be provided from upper side of the tank only and the filling line shall be routed to outside water tank.

11.12 The tank shall have an adequately sized breather valve. The inlet line in the tank shall have an adequately strong deflector plate, which will avoid the incoming jet of water from hitting the tank sides/bottom.

11.13 All nozzles for the tank shall have suitable reinforcement pads. Nozzles shall also have adequate stiffeners to take the loads from piping.

11.14 Tank supporting structure on the chassis shall be of SS-316L.

11.15 Reinforcement pads at tank supporting structure shall be of same thickness and material as that of the water tank.

11.16 Suitable strainer (SS) shall be provided at the tank bottom on pump suction line.

11.17 Provision shall be made on either side of the body for visual inspection/maintenance of the water tank.

11.18 The tank will be connected with the pump & nose reel & valve/s will be provided in such a way that any of the following operation are possible:

Tank to pump
Pump to heat exchanger (cooling system)
Auxiliaries connections
Tank to UHP pump
Pump to hose reel
Tank to water level indicator

Pump to Tank
Hydrant to tank direct
Tank to pump to monitor (Foam / Water)

11.19 Tank Construction & Mounting :

11.19.1.1 All water tanks shall be constructed of noncorrosive material or other materials that are protected against corrosion and deterioration.

11.19.1.2 The water tanks shall have a means to permit cleaning of the tank.

11.19.1.3 Water tank should be independent of the body and compartments, it shall be equipped with a method for lifting the tank(s) off of the chassis.

11.19.1.4 Tank shall be cradled, cushioned, spring-mounted, or otherwise protected from undue stress resulting from travel on uneven terrain.

11.19.1.5 Water tank shall be provided with baffles to form a containment or dynamic method of water movement control.

11.19.1.6 Containment method of baffling should be used, a minimum of two transverse or longitudinal vertical baffles shall be provided.

11.19.1.7 There shall be a maximum distance of 48 in. (1220 mm) between any combination of tank vertical walls and baffles.

11.19.1.8 Each baffle shall cover at least 75 percent of the area of the plane that contains the baffle.

11.19.1.9 The water tank will be mounted on the Unit on a sub frame using Rubber Metacones. This sub frame will be made from Anti-Corrosive Treated MS 4" section and will be bolted with the chassis using the high tensile bolts. 'U' Bolts shall not be used for mounting of tanks on Unit. The rubber metacones shall facilitate to absorb the jerks and bending torsions in expansion as well as compression mode without high deflection. The manufacturer shall provide complete design data of metacones and sub frame including the load calculations and metacone quantity sufficiency. Tank will be mounted on the chassis in a manner keeping in view the proper load distribution on the axles. The baffles will be arranged in a manner to facilitate easy cleaning of the tanks. The tank will be mounted on two / three cross bearers to counteract stresses caused by chassis flexing. The Centre of Gravity shall be maintained as low as possible.

11.19.1.10 Cleanout Sumps :

- One cleanout sumps shall be provided.
- A 3 in. (75 mm) or larger removable pipe plug shall be furnished in each sump.

11.20 **Water Level Indicator** :

11.20.1.1 An indicator shall be provided that shows the level or amount of water in the tank(s).

11.20.1.2 A suitably protected water level indicator of the graduated glass tube, clear acrylic shall be provided close to the control panel. Isolation valve shall be provided just after the tap off point near the water tank for the level indicator.

11.20.1.3 Electronic LED Water Level Indicators indicating the tank levels as EMPTY, ¼, ½ , ¾ and FULL shall be provided on the pump control panel. These levels shall be indicated by number of glowing LED lights (no LED Lights means empty tankand All LED Lights means full tank). The indicators shall sense the fluid level in the tank with help of a pressure sensing probe. The indicators shall be located on the rear pump control panel in such a manner that the Operator / Firemen can easily view the tank levels while being away from the Unit. **Additional Level Indicator – Two Nos. shall be provided as spare**.

11.21 **Tank-to-Pump Intake Line :**

11.21.1.1 The water tank shall be connected to the intake side of the pump with a valve controlled at the pump operator's position.

11.21.1.2 Filling and Venting :

a. Fill Opening: - A convenient covered fill opening designed to prevent spillage shall be provided.
b. Vent/Overflow Outlet: - A vent/overflow outlet that is sized to allow water to be drawn from the tank.
c. External Fill: - An external fill connection leading directly to the tank shall be provided.
d. The external fill connection shall be provided with a removable or accessible strainer, a shutoff valve capable of being throttled, a minimum 30-degree sweep elbow positioned downward, and a closure cap or plug.

11.22 **Water Tank Capacity Certification :**

a. The manufacturer shall certify the capacity of the water tank prior to delivery of the MULTI-PURPOSE FIRE TENDER.
b. The certified capacity shall be recorded on the manufacturer's record of construction and the certification shall be provided to the OIL when the MULTI-PURPOSE FIRE TENDER is delivered.

11.23 **PIPING:**

11.23.1.1 All piping shall be designed to have minimum pressure drop and achieve the required pressure and flow at various locations.
11.23.1.2 All piping shall be seamless and designed for 10% over the maximum pressures encountered in the pipe.
11.23.1.3 The piping shall be flanged for ease of maintenance. However, joints to be kept minimum.
11.23.1.4 Valves of less than 1.5 inch size shall be forged construction and valve more than 2" size or more size shall be of cast construction.
11.23.1.5 All lines shall be suitably supported so as to provide rigidity and avoid vibrations.
11.23.1.6 Al lines less than 1.5" NB size can be socket welded to matching 3000 LBS rating fittings. All lines above 2" NB size shall be butts welded with full penetration welds.

11.24 **ACCESSORIES :**

11.24.1 CONTROL PANEL :

Adequately illuminated pump operating panel shall be provided at the rear side of the Unit and these shall include the following areas:

Adequately illuminated pump operating panel will include the following:

a. Independent pressure gauges calibrated to 25 KG/CM2 for pump discharge.
b. Pump Pressure gauge
c. Compound gauge
d. Temperature gauge
e. Pump RPM meter for shaft speed
f. Hydrant connection for water tank filling pipes (LHS & RHS Side near)
g. Delivery outlets of the pump along with chain linked blank cap
h. Suction inlet of the pump with chain linked blank cap
i. Control for using the auxiliary foam pick up tube
j. Quick opening valve for lining up water tank to pump
k. Control for flushing out foam equipment &piping
l. Valve for UHP hose reels
m. Light point of pump panel
n. Pump Drain valve
o. Cooling water circuit control
p. Priming valve for water pump
q. Control valve for monitor
r. Hydrant to hose reel connection
s. Around the pump proportionerconnection
t. PTO engagement indicator

u. Driver's calling bell
v. Auxiliary throttle control for the engine
w. Threaded suction inlet of water pump with blind cap
x. Level gauge for water tank & Foam Tank
y. System schematic etched on Stainless Steel plate
z. Operating instruction plate and flushing out instruction plate (both on boldly etched Stainless steel plates)

11.24.2 Following spare tools shall be provided:-
a. Socket wrench 1 Set (6 MM to 31 MM)
b. Socket wrench (2 Inch Dia.) – 02 Nos.
c. Open Spanner (2 Inch Dia.) – 02 Nos.
d. Screw Drivers – 01 Set

11.24.3 In addition to the items mentioned above, Successful Bidder shall provide any other items that he may find essential. Any of these items which are also required in the driver's cabin shall be provided at suitable locations in the driver's cabin. Each lever, switch, valve, gauges, outlet/inlet etc. shall have identification made on metal plate and duly riveted. The microphone of the PA system shall be fixed inside the driver cabin on a flexible stand at a suitable location.

12.0 FOAM CONCENTRATE TANK :

12.1.1 The foam compound tank of **1000liters** net capacity shall be fabricated out of 5MM thick SS-316L plates for the bottom & 4 MM thick SS-316L for the sides & top. In addition 2% of expansion space shall be made in the tank, over and above foam compound capacity.

12.1.2 The both side of water tank shall be Die Pressed Stiffened type.

12.1.3 The foam tank shall be of welded construction and shall be suitably stiffened with SS 316L angles/flats so as to avoid buckling and distortion.

12.1.4 Weld joints shall be minimized

12.1.5 Suitable lifting lugs shall be provided on the tank shell to enable it to be lifted off the Unit for repairs/replacement as necessary.

12.1.6 The tank shall be fitted with a sludge trap of 150 mm. The bottom of the tank shall have a slight slope towards the sludge trap.

12.1.7 The tank shall also have a cleaning hole and drain pipe with AUDCO make S.S. ball valve and 63MM (SS) instantaneous male coupling incorporated in it.

12.1.8 The tank shall have a filling hole of 150MM diameter at top and with a removable conical strainer of SS-316L. The filling manhole shall have a screwed cap. The filler cap shall have an etched SS name plates with marking 'FOAM'. A calibrated dip tape shall be provided on the tank to measure the tank level.

12.1.9 Breather valve shall be provided for automatic venting of the foam compound tank when the foam compound is drawn from it or when the tank is being filled.

12.1.10 The inlet line in the tank shall have an adequately strong deflector plate, which will avoid the incoming jet of foam from hitting the tank side/roof.

12.1.11 All nozzles for the tank shall have suitable reinforcement pads. Nozzles shall also have adequate stiffeners to take the loads from piping. Tank shall be provided with anti vortex device at nozzle for pump suction.

12.1.12 Tank supporting structure on the chassis shall be of SS 316L.

12.1.13 Reinforcement pads at tank supporting structure shall be of same thickness and material as that of the foam tank

12.1.14 Provision shall be made on either side of the body for visual inspection/maintenance of the foam tank.

12.1.15 A calibrated dip tape shall be provided on the tank to measure the tank level.

12.1.16 The foam concentrate tank shall be provided with a fill tower.

12.1.17 The fill tower opening shall be protected by a completely sealed airtight cover.

12.1.18 The cover shall be attached to the fill tower by mechanical means.

12.1.19 The fill opening shall incorporate a removable screen with a mesh not to exceed ¼ in. (6 mm).

12.1.20 The fill tower shall be equipped with a pressure/vacuum vent that enables the tank to compensate for changes in pressure or vacuum when filling or withdrawing foam concentrate from the tank.

12.1.21 The pressure/vacuum vent shall not allow atmospheric air to enter the foam tank except during operation or to compensate for thermal fluctuations.

12.1.22 The vent shall be protected to prevent foam concentrate from escaping or directly contacting the vent at any time.

12.1.23 The vent shall be of sufficient size to prevent tank damage during filling or foam withdrawal.

12.1.24 The foam concentrate tank shall not be equipped with an overflow pipe or any direct opening to the atmosphere.

12.1.25 The foam concentrate tank(s) shall be designed and constructed to facilitate complete interior flushing and cleaning as required.

12.1.26 Level Indicator for foam tank shall be provided as mentioned for Water Tank.

12.1.27 Tank Drain :

12.1.27.1 A minimum 1 in. (25 mm) inside diameter full flow drain valve and piping shall be provided at the lowest point of any foam concentrate tank.

12.1.27.2 The drain shall be piped to drain directly to the surface beneath the Tender without contacting other body or chassis components.

12.1.28 The foam concentrate tank shall be constructed and installed to be independent of the tender body.

12.1.29 The foam concentrate discharge system design shall prevent the siphoning of foam concentrate.

12.1.30 A label that reads “Foam Tank Fill” shall be placed at or near any foam concentrate tank fill opening.

12.1.31 The foam concentrate tank outlet connection shall be designed and located to prevent aeration of the foam concentrate and shall allow withdrawal of 80 percent of the foam concentrate tank storage capacity under all operating conditions with the Tender on level ground.

12.1.32 The foam concentrate tank inlet connection, if provided, shall prevent aeration of the foam concentrate under all operating conditions.

12.1.33 The foam tank will be mounted on the Unit on a sub frame using Rubber Metacones. This sub frame will be made from Anti-Corrosive Treated MS 4” section and will be bolted with the chassis using the high tensile bolts. 'U' Bolts shall not be used for mounting of tanks on Unit. The rubber metacones shall facilitate to absorb the jerks and bending torsions in expansion as well as compression mode without high deflection. The manufacturer shall provide complete design data of metacones and sub frame including the load calculations and metacone quantity sufficiency. Tank will be mounted on the chassis in a manner keeping in view the proper load distribution on the axles. The baffles will be arranged in a manner to facilitate easy cleaning of the tanks. The tank will be mounted on two / three cross bearers to counteract stresses caused by chassis flexing. The Centre of Gravity shall be maintained as low as possible.

12.1.34 A manual rotary transfer pump shall be provided for transferring foam compound from drums to the foam compound tank without causing any frothing in the tank. Arrangement shall be provided to connect this pump through a tube to the tank filling line.

13.0 PERFORMANCE GUARANTEE :

13.1.1 The manufacturer shall guarantee the design, material, workmanship and the performance of the unit for a period of 18 months from the date of the supply of completed Unit. The Successful Bidder, at M/s Oil India Ltd. premises, shall rectify any mechanical defect,

faulty workmanship or operational defects found during this period within reasonable time without any extra cost.

14.0 TRAINING :

14.1.1 After supply of the Unit, the Successful Bidder shall provide one week training on operation & maintenance of fire Unit including chassis at M/s Oil India Ltd. site and charges for the same shall be included in the price.

Abbreviation:

Unit - Complete Multi-Purpose Fire Tender
MVA - Motor Vehicle Act
RPM - Revolutions per Minute
LED - Light-Emitting Diode
PSV- Pressure Safety Valve

Annexure – A

For GVW

S. No.	Item	Numbers
1.	Water tank of capacity 4000 Litres capacity (Wt. Approx. 5000 Kg)	01
2.	Foam Tank of capacity 1000 Litres capacity (Wt. Approx. 1500 Kg)	01
3.	Dry Chemical Powder Vessel (Wt. Approx. 1200 Kg)	01
4.	Chassis (Wt. Approx. 4300 Kg)	01
5.	Pumps, PTO & Propeller Shaft (Wt. Approx. 1000 Kg)	01
6.	Fabrication & Piping (Wt. Approx. 1200 Kg)	01
7.	Weight of crew members (weight 420 Kg)	06
8.	Delivery hoses (type – B) with GM coupling (22.5 M length)	15
9.	Suction Hose	4
10.	SCBA Sets	2
11.	Foam Branches (FB – 10X)	4
12.	Triple purpose branch	4
13.	Standard branch	4
14.	Male to Male coupling	2
15.	Female to female coupling	2
16.	Fire suits	2
17.	Roof top ladder (10.5 M, Aluminium)	1
18.	Portable monitor	1
19.	Akron Branch	4
20.	Ceiling Hook	1
21.	Dividing Breechings	2
22.	Collecting breaching	2
23.	Collecting head	1
24.	MFG	2
25.	Safety Helmets	10
26.	Gum boots	10
27.	Manila rope (1” diameter, 50M length)	1
28.	Suction wrenches	2
29.	Strainer	1

Annexure -B

Dry Chemical Powder Potassium Urea Based

1. General: The Powder shall be Potassium Allophonate / Carbonate based dry chemical powder, a reaction product of Potassium Bicarbonate – Urea suitable for large scale high intensity flammable oil & gas fire. The product should be UL Approved.

2. Physical & Chemical Parameters:
a. Appearance : Off-White free flowing powder
b. Particle Size : 50 – 70 microns
c. Apparent density : 0.5 - 0.7 gm/cc
d. Water Repellency : 1.5% Max
e. Moisture content : less than 0.25%(m/m)
f. Temperature stability : ± 60°C

3. Performance Test: Shall able to extinguish a 20B / 144B Hydrocarbon tray fire by filling 3.5 kg (max) Powder in 5 kg extinguisher.

4. Physiological Effect:
a. The DCP shall not have harmful ingredients
b. It should be environmental friendly & nontoxic to humans and animals.
c. Should submit certificates of 1) Non-Toxicity 2) Non-Skin Irritation Test

5. Compatibility:
The DCP shall be compatible with all type of firefighting foams.

6. Approvals:
The Dry Chemical Powder (DCP) should be Listed/Approved by UL as per UL-299C on fire extinguishing Dry Chemical for special application.

The dry powder should follow the latest Oil Industries Safety Directorate norms (OISD-116), as mentioned in Section 12, Page No. 24.

7. Packing:
The DCP shall be packed in 25kg good quality HDPE drums which should be hermetically sealed.

8. Shelf Life:DCP shall have minimum shelf life of 05 years without any degrading of chemical & physical properties.

9 .Documents:

a. Must submit valid UL: 229C Certificate along with offer and supply.
b. Thermal Gravimetric Analysis (TGA) with decomposition between 215°C and 260°C should be submitted of a reputed Lab along with the supply, IR analysis report as conducted by UL to be also to be submitted along with the supply.
c. The bidder should submit ISO 9001:2008, ISO 14001: 2004 & OHSAS 18001:2007 certificate copies along with supply.
d. Warrantee / guarantee Certificate for the DCP along with supply.
e. MSDS of the material along with supply.
f. Original manufacturer test report along with supply.
g. Disposal Procedure for the material along with supply.
h. If the powder is imported the latest Bill of Lading is to be produced along with supply.
i. OIL reserves the right to send the sample from the supplied powder for further testing to any authorized national laboratory in India.

10. MARKING:

Each container/drum containing Dry Chemical Powder shall be labelled with the following information:

(a) Manufacturer's name or trade mark.
(b) Quantity of the Powder, in Kg (Net and Gross weight)
(c) Type of the Powder and Foam Compatible.
(d) Date of manufacture/Batch No.
(e) UL Marking.

TECHNICAL CHECK LIST:

(FIRE TENDER Fabrication Part)			
Sl. No.	**Parameters / Requirements**	**Bidder's Offer**	**Remarks, (If Any)**
1.	Make & model of Chassis		
2.	Make & model of Power take-off unit for driving Plunger Pump		
3.	Make & model of Main Pump		
4.	Make & model of Water Ring Primer		
5.	Make & model of Exhaust Ejector Primer		
6.	Make & model of foam proportioner		
7.	Make & model of Isolation Valve (150NB)		
8.	Make & model of Isolation Valve (50 NB)		
9.	Make & model of water cum foam Monitor		
10.	Make & model of Plunger Pump of 400 LPM at 100 bar pressure		
11.	Make & model of High-pressure fog guns		
12.	Make & model of Hydro chem DCP Nozzle		
13.	Make & model shutter		
14.	Make & model of automatic nozzle		
15.	Make & model of optical warning devices LED lights		
16.	Make & model of level gauges		
17.	Make & model of driver & Officer's seat		
18.	Make & model of crew seats		
19.	Make & model of SCBA Set		
20.	Make & model of Aluminium Ladder		
21.	Make & model of electronic siren		
22.	Make & model of N2cylinders		
23.	Make & model of N2 reducer		
24.	Make & model of N2 safety release valve		
25.	Make & model of Isolation valves use in DCP System		
26.	Make & model of Dry Chemical Powder		

ANNEXURE- DDD

INTEGRITY PACT

Between

Oil India Limited (OIL) hereinafter referred to as "The Principal"

And

(Name of the bidder).....hereinafter referred to as "The Bidder/Contractor"

Preamble:

The Principal intends to award, under laid down organizational procedures, contract/s for **SDI4036P20.** The Principal values full compliance with all relevant laws and regulations, and the principles of economic use of resources, and of fairness and transparency in its relations with its Bidder/s and Contractor/s.

In order to achieve these goals, the Principal cooperates with the renowned international Non-Governmental Organization "Transparency International" (TI). Following TI's national and international experience, the Principal will appoint an external independent Monitor 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

(1) The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles:

1. No employee of the Principal, 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 him/herself or third person, any material or immaterial benefit which he/she is not legally entitled to.

2. The Principal will, during the tender process treat all Bidders with equity and reason. The Principal will in particular, before and during the tender process, provide to all Bidders the same information and will not provide to any Bidder confidential/additional information through which the Bidder could obtain an advantage in relation to the tender process or the contract execution.

3. The Principal will exclude from the process all known prejudiced persons.

(2) If the Principal 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 Page 2 of 6 substantive suspicion in this regard, the Principal will inform its Vigilance Office and in addition can initiate disciplinary actions.

Section: 2 -Commitments of the Bidder/Contractor

(1) The Bidder/Contractor commits itself 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.

1. The Bidder/Contractor will not, directly or through any other person or firm, offer, promise or give to any of the Principal's employees involved in the tender process or the execution of the contract or to any third person any material or immaterial benefit which h e/she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the tender process or during the execution of the contract.

2. The Bidder/Contractor 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.

3. The Bidder/Contractor will not commit any offence under the relevant Anticorruption Laws of India; further the Bidder/Contractor will not use improperly, for purposes of competition or personal gain, or pass on to others, any information or document provided by the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.

4. The Bidder/Contractor 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.

(2) The Bidder/Contractor will not instigate third persons to commit offences outlined above or be an accessory to such offences.

(3) The Bidder/Contractor signing Integrity Pact shall not approach the Courts while representing the matters to IEMs and he/she will await their decision in the matter.

Section 3 -Disqualification from tender process and exclusion from future Contracts

If the Bidder, before contract award has committed a transgression through a violation of Section 2 or in any other form such as to put his reliability or risibility as Bidder into question, the Principal is entitled to disqualify the Bidder from the tender process or to terminate the contract, if already signed, for such reason.

1. If the Bidder/Contractor has committed a transgression through a violation of Section 2 such as to put his reliability or credibility into question, the Principal is entitled also to exclude the Bidder/Contractor from future contract award processes. The imposition and duration of the exclusion will be determined by the severity of the transgression. The severity will be determined by the circumstances of the case, in particular the number of transgressions, the position of the transgressions within the company hierarchy of the Bidder and the amount of the damage. The exclusion will be imposed for a minimum of 6 months and maximum of 3 years.

2. The Bidder accepts and undertakes to respect and uphold the Principal'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 independent legal advice.

3. If the Bidder/Contractor can prove that he has restored/recouped the Damage caused by him and has installed a suitable corruption prevention system, the Principal may revoke the exclusion prematurely.

4. A transgression is considered to have occurred if in light of available evidence no reasonable doubt is possible.

5. Integrity Pact, in respect of a particular contract, shall be operative from the date Integrity Pact is signed by both the parties till the final completion of the contract **or as mentioned in Section 9- Pact Duration whichever is later**. Any violation of the same would entail disqualification of the bidders and exclusion from future business dealings

Section 4 -Compensation for Damages

1. If the Principal has disqualified the Bidder from the tender process prior to the award according to Section 3, the Principal is entitled to demand and recover from the Bidder liquidated damages equivalent to Earnest Money Deposit / Bid Security.

(2) If the Principal has terminated the contract according to Section 3, or if the Principal is entitled to terminate the contract according to Section 3, the principal shall be entitled to demand and recover from the Contractor liquidated damages equivalent to Security Deposit / Performance Bank Guarantee.

3. The bidder agrees and undertakes to pay the said amounts without protest or demur subject only to condition that if the Bidder/Contractor can prove and establish that the exclusion of the Bidder from the tender process or the termination of the contract after the contract award has caused no damage or less damage than the amount or the liquidated damages, the Bidder/Contractor shall compensate the Principal only to the extent of the damage in the amount proved.

Section 5 -Previous transgression

1. The Bidder declares that no previous transgression occurred in the last 3 years with any other Company in any country conforming to the TI 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 the contract, if already awarded, can be terminated for such reason.

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

1. The Principal will enter into Pacts on identical terms with all bidders and contractors.

2. The Bidder / Contractor undertake(s) to procure from all subcontractors a commitment in conformity with this Integrity Pact. The Bidder/Contractor shall be responsible for any violation(s) of the provisions laid down in this agreement/Pact by any of its sub-contractors/sub-vendors.

3. The Principal will disqualify from the tender process all bidders who do not sign this Pact or violate its provisions.

Section: 7 -Criminal charges against violating Bidders/Contractors/ Subcontractors

If the Principal 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 will inform the Vigilance Office.

Section: 8 -External Independent Monitor/Monitors

1. The Principal appoints competent and credible external independent 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 Chairperson of the Board of the Principal.

3. The Contractor accepts that the Monitor has the right to access without restriction to all Project documentation of the Principal 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/Contractor/Subcontractor with confidentiality.

4. The Principal 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 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 and request the Management to discontinue or heal the violation, 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 Independent External Monitor shall give an opportunity to the bidder / contractor to present its case before making its recommendations to the Principal.

6. The Monitor will submit a written report to the Chairperson of the Board of the Principal within 8 to 10 weeks from the date of reference or intimation to

him by the 'Principal' and, should the occasion arise, submit proposals for correcting problematic situations.

7. If the Monitor has reported to the Chairperson of the Board a Substantiated suspicion of an offence under relevant Anti-Corruption Laws of India, and the Chairperson has not, within reasonable time, taken visible action to proceed against such offence or reported it to the Vigilance Office, the Monitor may also transmit this information directly to the Central Vigilance Commissioner, Government of India.

8. 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 respective contract, and for all other Bidders 6 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 Chairperson of the Principal.

Section:10 -Other provisions

1. This agreement is subject to Indian Law. Place of performance and jurisdiction is the Registered Office of the Principal, i.e. New Delhi. The Arbitration clause provided in the main tender document / contract shall not be applicable for any issue / dispute arising under 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 intensions.

A J SARMAH
CMM (IP)

.....	**.....**
For the Principal	**For the Bidder/Contractor**
	Witness 1: .....
	Witness 2: .....

Place. DULIAJAN
Date . 02.05.2020

Technical Bid Checklist **Annexure-EEE**

Tender No.	
Bidder's Name :	

SL. NO.	BEC / TENDER REQUIREMENTS	Compliance by Bidder	
		Indicate 'Confirmed' / 'Not Confirmed' / Not applicable	Indicate Corresponding page ref. of unpriced bid or Comments
1	Confirm that validity has been offered as per NIT.		
2	Confirm that Bid Security / Earnest Money has been submitted as per NIT (Wherever Applicable) ?		
3	Confirm that you shall submit Performance security (in the event of placement of order) (Wherever Applicable) ?		
4	Confirm that duly signed Integrity Pact has been submitted as per NIT (Wherever Applicable) ?		
5	Confirm that you have submitted documentary evidence of successfully executing one Purchase order as stipulated in NIT in any of the preceding 5 financial years (*)		
6	Confirm that you have submitted Balance Sheet and Profit and Loss Account of any of the preceding 3 financial years certified by a chartered accountant.		
7	Confirm that the bid has been signed using Class 3 digital certificate with Organisation's Name as per NIT.		
8	Confirm that you have not taken any exception/deviations to the NIT .		

NOTE: Please fill up the greyed cells only.

(*) Purchase Orders along with copies of any of the documents in respect of satisfactory execution of the Purchase Orders should be submitted – (i) Satisfactory Inspection Report (OR) (ii) Satisfactory Supply Completion / Installation Report (OR) (iii) Consignee Receipted Delivery Challans (OR) (iv) Central Excise Gate Pass / Tax , Invoices issued under relevant rules of Central Excise / VAT (OR) (v) any other documentary evidence that can substantiate the satisfactory execution of the purchase order cited above.

Response Sheet **Annexure-FFF**

Tender No.	
Bidders Name	

Bidders Response Sheet

Sl No.	Description	Remarks
1	Place of Despatch	
2	Whether Freight charges have been included in your quoted prices	
3	Whether Insurance charges have been included in your quoted prices	
4	Make of quoted Product	
5	Offered Validity of Bid as per NIT	
6	Bid Security Submitted (if applicable)	
6	Details of Bid Security Submitted to OIL (if applicable)	
	a) Bid Security Amount (In Rs):	
	b) Bid Security Valid upto:	
7	Whether you shall submit Performance Security in the event of placement of order on you (if applicable)	
8	Integrity Pact Submitted (if applicable)	
9	Whether you have submitted documentary evidence of successfully executing one Purchase order as stipulated in NIT in any of the preceding 5 financial years (*)	
10	Whether you have submitted Balance Sheet and Profit and Loss Account of any of the preceding 3 financial years certified by a chartered accountant.	
11	Delivery Period in weeks from placement of order	
12	Complied to Payment terms of NIT (if applicable) otherwise to Standard Payment Terms of OIL or not.	
13	If bidder is MSE whether you have quoted your own product	
14	If Bid security submitted as Bank Guarantee, Name and Full Address of Issuing Bank including Telephone, Fax Nos and Email id of branch manager	

NOTE: Please fill up the greyed cells only.

(*) Purchase Orders along with copies of any of the documents in respect of satisfactory execution of the Purchase Orders should be submitted – (i) Satisfactory Inspection Report (OR) (ii) Satisfactory Supply Completion / Installation Report (OR) (iii) Consignee Receipted Delivery Challans (OR) (iv) Central Excise Gate Pass / Tax , Invoices issued under relevant rules of Central Excise / VAT (OR) (v) any other documentary evidence that can substantiate the satisfactory

ANNEXURE - GGG

(TO BE FILLED UP BY ALL THE VENDOR IN THEIR OWN LETER HEAD)
(ALL FIELDS ARE MANDATORY)

Tender No.	**:……**
Name of Beneficiary	**:M/s.……**
Vendor Code	**:……...**
Address	**:...……**
	...……...
Phone No. (Land Line)	**:...……**
Mobile No.	**:...……**
E-mail address	**:...……**
Bank Account No. (Minimum	
Eleven Digit No.)	**:...……**
Bank Name	**:...……**
Branch	**:...……**
Complete Address of your	**:...……**
Bank	**:...……**
IFSC Code of your Bank	
a) RTGS	**:……...**
b) NEFT	**:……...**
PAN	**:……...**
VAT Registration No.	**:……...**
CST Registration No.	**:……...**
Service Tax Registration No.	**:……...**
Provident Fund Registration	**:……...**

I/We confirm and agree that all payments due to me/us from Oil India Limited can be remitted to our above mentioned account directly and we shall not hold Oil India Limited responsible if the amount due from Oil India Limited is remitted to wrong account due to incorrect details furnished by us.

……
Office Seal **Signature of Vendor**

Counter Signed by Banker:
Seal of Bank:

Enclosure: Self attested photocopies of the following documents-

1) **PAN Card**
2) **VAT Registration Certificate**
3) **Service Tax Registration**
4) **CST Registration**
5) **Provident Registration Certificate**
6) **Cancelled cheque of the bank account mentioned above (in original).**
7) **Bank Statement not older than 15 days on the date of submission.**