OIL INDIA LIMITED
(A Government of India Enterprise)
P.O. Duliajan, Pin – 786602
Dist-Dibrugarh, Assam

CORRIGENDUM NO. 5 DATED 03.04.2018 TO E-TENDER NO. CDO6415P18 for **HIRING OF SERVICE FOR OPERATION AND MAINTENANCE OF CGGS MADHUBAN AND FGS CHABUA FOR A PERIOD OF 04 (FOUR) YEARS.**

This Corrigendum is issued to notify the following changes:

1. Extension of dates:

i. Bid Selling Date extended up to **10.04.2018 (15:30 Hrs IST)**

ii. Bid Submission and Bid Opening dates extended up to **17.04.2018 (11:00 Hrs IST)** and **17.04.2018 (14:00 Hrs IST),** respectively.

2. The following documents have been uploaded in the "Amendments" folder in E-portal as replacements of the existing:

i. BEC/BRC
ii. SCC
iii. Annexure-D (Revised)
iv. Checklist
v. Technical Evaluation Sheet

3. The following documents have been uploaded under "Notes and Attachments" tab in E-portal:

i. Price Bidding Format along with Price Breakup (Revised)

4. Also, please take note of the newly uploaded document in the "Amendments" folder in E-portal as under:

i. OIL's reply to Pre-Bid Query

All others terms and conditions of the Bid Document remain unchanged. Details can be viewed at www.oil-india.com.

Modified Standard BEC/BRC to E-TENDER NO. CDO6415P18 for Hiring of Service for "Operation and Maintenance of CGGS Madhuban and FGS Chabua for a period of 04 (Four) years".

1.0 BID EVALUATION CRITERIA (BEC)

The bid shall conform generally to the specifications and terms and conditions given in the Tender Documents. Bids will be rejected in case services offered do not conform to the required parameters stipulated in the technical specifications. Not-withstanding the general conformity of the bid to the stipulated specifications, the following mandatory requirements will have to be particularly met by the Bidders without which the same will be considered as non-responsive and rejected. All the documents related to BRC must be submitted along with the Techno-Commercial Bid.

1.1 FINANCIAL CRITERIA

1.1.1 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. 4,14,06,000.00 (Rupees Four Crores Fourteen Lakhs Six Thousand)** only.

1.1.2 Net worth of the bidder should be positive for preceding financial/accounting year.

Notes to BEC Clause 1.1 above:

a. For proof of Annual turnover and Net worth (refer clauses 1.1.1 & 1.1.2 above), any one of the following documents/photocopies must be submitted along with the bid:

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

OR

ii) A certificate issued by a practicing Chartered/Cost Accountant (with Membership number and Firm Registration number), certifying Annual Turnover & Net worth as per format prescribed in **Annexure-X.**

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 _____ has actually not been audited so far'.

1.2 TECHNICAL CRITERIA

1.2.1 (A) The bidder shall have experience of minimum 02 years or more in carrying out of at least **one** 'SIMILAR' work in Gas Gathering Station/Gas Production Station/Gas

Processing Station/Gas Compression Station/Crude Oil Production Station/Crude Oil Processing Station, of minimum value **Rs. 4,14,06,000.00 (Rupees Four Crores Fourteen Lakhs Six Thousand)** in Central/State Govt. Enterprises/PSUs/Public limited Company in previous 07 (Seven) years reckoned from the original bid closing date.

OR

The bidder shall have experience of minimum 02 years or more in carrying out of at least **One** 'SIMILAR' work of minimum 03 (Three) MMSCMD or more in Natural Gas Production/ Gathering/Processing/Compression in Central/State Govt. Enterprises/PSUs/Public limited Company in previous 07 (Seven) years reckoned from the original bid closing date.

OR

The bidder shall have experience of minimum 02 years or more in carrying out of at least **One** 'SIMILAR' work of minimum 3000 KLPD or more of Crude Oil processing/Crude Oil Production Station in Central/State Govt. Enterprises/PSUs/Public limited Company in previous 07 (Seven) years reckoned from the original bid closing date.

"SIMILAR" Work as mentioned in this Clause (Clause 1.2.1 (A)) means:

"Operation and Maintenance (O&M) service in Gas Gathering Station/Gas Production Station/Gas Processing Station/Gas Compression Station/Crude Oil Production Station/ Crude Oil Processing Station in Central/State Govt. Enterprises/PSUs/Public limited Company" **AND** Operation and maintenance (O&M) service of DCS & PLC based Instrumentation System having connected/interfaced with at least any three (3) of the following field instrumentation system - Flow Meters, Pressure Transmitters, Temperature Transmitters, Gas Detectors, Tank Level Meters.

Notes to BEC Clause 1.2.1 (A) above:

a) For proof of requisite Experience (refer clause 1.2.1 (A) above), the following documents/photocopies must be submitted along with the bid:

i) In case Work Experience is against OIL's contract and is a **completed** job: Job Completion Certificate is to be submitted along with the bid.

ii) In case Work Experience is **NOT** against OIL's contract and is a **completed** job :

a) Photocopy of Contract document or Work order showing details of work.

AND

b) Job Completion Certificate showing:

i) Gross Value of job done - if the bidder quotes on the strength of "value of job done" as per clause 1.2.1 (A) above

OR

Quantum of the job - if the bidder quotes on the strength of "quantum of job done" as per clause 1.2.1 (A) above

ii) Description of job done and Contract/work order no.

iii) Contract Period and Date of completion of the contract.

b) Following work experience will also be taken into consideration:

1. If the prospective bidder has executed contract in which similar work under 1.2.1 (A) above is also a component of the contract.
2. If the prospective bidder is executing similar work under 1.2.1 (A) above which is still running and the contract value/quantity executed prior to original bid closing date is equal to or more than the minimum prescribed value in the BEC.
3. In case the start date of the requisite experience is beyond the prescribed 07 (Seven) years reckoned from the original bid closing date but completion is within the prescribed 07 (Seven) years reckoned from the original bid closing date.

Proof of work experience against Para **b)** under "**Notes to BEC Clause 1.2.1 (A) above"**, to satisfy **i.** similar work under 1.2.1 (A) above **ii.** Minimum prescribed Value/Qty **iii.** Prescribed period of 07 years, to be submitted as below:

1. In case requisite experience is against OIL's Contract: Bidder must submit the breakup of similar work under 1.2.1 (A) above and its value/quantity mentioning SES No. and copies of all relevant SES.

2. In case requisite experience is **NOT** against OIL's Contract: Bidder must submit the breakup of similar work under 1.2.1 (A) above and its value/quantity executed within the prescribed period of 07 (seven) years reckoned from the original bid closing date. The breakup must be certified by the end user or a certificate issued by a practicing Chartered/Cost Accountant Firm (with Membership Number & Firm Registration Number).

1.2.1 (B) The bidder must also possess Experience in Operation and maintenance of Gas engine driven/Diesel engine driven Power Generation Systems of minimum capacity 500 KVA in total in a single unit or in combined number of units under any contractual job carried out in Central/State Govt. Enterprises/PSUs/Public limited Company in previous 07 (Seven) years reckoned from the original bid closing date.

(a) For requisite work experience against **1.2.1 (B)** certificate from client clearly mentioning the details of jobs as described in para **1.2.1 (B)** shall be required for evaluation.

Bid shall be liable for rejection if not accompanied with documentary evidence in support of financial criteria under "Notes to BEC Clause 1.1 above" and in support of experience as mentioned above in a) and b) under "Notes to BEC Clause 1.2.1 (A) above" and (a) under 1.2.1 (B) above.

1.2.2 A job executed by a bidder for its own organization/subsidiary shall not be considered as experience for the purpose of meeting BEC.

Also, any bidder, quoting on the strength of consortium/collaboration agreement or MOU with another party including sub-contract shall not be considered as experience for the purpose of meeting BEC.

1.2.3 The bidder shall give an undertaking as per **PROFORMA-II** along with the Technical bid that they will arrange AMC backup support through OEM for entire period of contract, as mentioned in **SCC,** without which bid will be rejected.

1.2.4 Bidder must quote for O&M Services of both CGGS-Madhuban and FGS - Chabua. otherwise the bid will be rejected.

1.3 Price bid shall be opened in respect of only the techno-commercially acceptable bidders whose bids have been found to be substantially responsive. A substantially responsive bid is one that meets the terms and conditions of the Tender and/or the acceptance of which bid will not result in indeterminate liability on OIL.

1.4 Bidders are required to quote for all the items as per Price Bid Format; otherwise the offer of the bidder will be straightway rejected.

1.5 If there is any discrepancy between the unit price and the total price, the unit price will prevail and the total price shall be corrected. Similarly, if there is any discrepancy between words and figures, the amounts in words shall prevail and will be adopted for evaluation.

1.6 The quantities shown against each item in the "Price Bid Format" shall be considered for the purpose of Bid Evaluation. It is, however, to be clearly understood that the assumptions made in respect of the quantities for various operations are only for the purpose of evaluation of the bid and the Contractor will be paid on the basis of the actual number of days/parameters, as the case may be.

1.7 The bidders are advised not to offer any discount/rebate separately and to offer their prices in the Price Bid Format after considering discount/rebate, if any.

1.8 Conditional and unsolicited discount will not be considered in evaluation. However, if such bidder happens to be the lowest recommended bidder, unsolicited discount without any condition will be considered for computing the contract price.

1.9 In case of identical overall lowest offered rate by more than 1 (one) bidder, the selection will be made by draw of lot between the parties offering the same overall lowest price.

1.10 PURCHASE PREFERENCE CLAUSE: Purchase Preference to Micro and Small Enterprises registered with District Industry Centers or Khadi and Village Industries Commission or Khadi and Village Industries Board or Coir Board or National Small Industries Corporation or Directorate of Handicrafts and Handloom or any other body specified by Ministry of MSME:

1.10.1 In case participating MSEs Quote price within price band of L1+15%, such MSE shall be considered for award of contract by bringing down their price to L1 price in a situation where L1 price is from someone other than a MSE.

1.10.2 In case of more than one such MSE qualifying for 15% purchase preference, the contract shall be awarded to lowest eligible MSE amongst the MSEs qualifying for 15% purchase preference.

1.10.3 In case any part of the work is sub-contracted to a Micro or Small Enterprise as per contract conditions than the contractor shall provide complete details (i.e. name of the subcontractor, value of sub-contacted work, copy of valid registration certificate etc.) of the sub-contractor to OIL.

1.10.4 Documentation Required to be submitted by MSEs:

Copy of valid Registration Certificate, if bidder is a Micro or Small Enterprises(MSE) registered with District Industry Centers or Khadi and Village Industries Commission or Khadi and Village Industries Board or Coir Board or National Small Industries Corporation or Directorate of Handicrafts and Handloom or any other body specified by Ministry of MSME. The Registration Certificate should clearly indicate the monetary limit, if any and the items for which bidder are registered with any of the aforesaid agencies. In case bidding MSE is owned by Schedule Caste or Schedule Tribe entrepreneur, valid documentary evidence issued by the agency who has registered the bidder as MSE owned by SC/ST entrepreneur should also be enclosed.

1.11 PURCHASE PREFERENCE POLICY (LINKED WITH LOCAL CONTENT) (PP-LC)

1.11.1 **Purchase preference policy-linked with Local Content (PP - LC) notified vide letter no. O-27011/44/2015-ONG-II/FP dated 25.04.2017 of MoP&NG shall be applicable in this tender.** (**http://petroleum.nic.in/policy-provide-purchase-preference-linked-local-content-pp-lc-all-psus)**.

1.11.2 Bidders seeking benefits, under Purchase Preference Policy (linked with Local Content) (PP-LC) shall have to comply with all the provisions specified all clauses under clause No. 22 of ITB and shall have to submit all undertakings / documents applicable for this policy.

1.12 Price Bids shall be evaluated on overall lowest cost to OIL (L-1 offer) basis i.e. considering total quoted price for all services including applicable GST (CGST & SGST/UTGST or IGST).

1.13 OIL will prefer to deal with registered bidder under GST. Therefore, bidders are requested to get themselves registered under GST, if not registered yet.

However, in case any unregistered bidder is submitting their bid, their prices will be loaded with applicable GST while evaluation of bid. Where OIL is entitled for input credit of GST, the same will be considered for evaluation of bid as per evaluation methodology of tender document.

1.14 Price Bid uploaded without giving any of the details of the taxes (Including rates and amounts) will be considered as inclusive of all taxes including GST.

When a bidder mentions taxes as extra without specifying the rates & amount, the offer will be loaded with maximum value towards taxes received against the tender for

comparison purposes. If the bidder emerges as lowest bidder after such loading, in the event of order on that bidder, taxes mentioned by OIL on the Purchase Order/Contract will be binding on the bidder.

1.15 Input Tax Credit on GST (Goods & Service Tax) for this service is NOT available to OIL & the bids will be evaluated based on total price including GST.

1.16 Based on the evaluation of techno-commercially qualified bidders, the job will be awarded to L-1 bidder.

2.0 BID REJECTION CRITERIA (BRC):

2.1 The bids are to be submitted in single stage under 02 (two) bid system i.e. Un-priced Techno-Commercial Bid and Price Bid together. Only the Price Bid should contain the quoted price.

2.2 The price quoted by the successful bidder must be firm during the performance of the contract and not subject to variation on any account except as mentioned in the bid document. Any bid submitted with adjustable price quotation other than the above will be treated as non-responsive and rejected.

2.3 Bid security shall be furnished as a part of the Techno Commercial Un-priced Bid. The amount of bid security should be as specified in the forwarding letter. Any bid not accompanied by a proper bid security will be rejected.

2.4 Bid Documents/User Id & Password for OIL's E-Tender portal are not transferable. Bid made by parties who have not submitted the requisite tender fees will be rejected.

2.5 Any bid received in the form of Physical document/Telex/Cable/Fax/E-mail will not be accepted.

2.6 Bids shall be typed or written in indelible ink. The bidder or his authorized representative shall sign the bid digitally, failing which the bid will be rejected.

2.7 Bids shall contain no interlineations, erasures or overwriting except as necessary to correct errors made by bidder, in which case such corrections shall be initiated by the persons(s) signing (digitally) the bid. However, white fluid should not be used for making corrections. Any bid not meeting this requirement shall be rejected.

2.8 Any bid containing false statement will be rejected and action will be taken by Company as per Bid Document.

2.9 Bidders must quote clearly and strictly in accordance with the price schedule outlined in Price Bidding Format attached under "Notes and Attachments" tab in the main bidding engine of OIL's e-Tender portal; otherwise the bid will be rejected. All other techno-commercial documents other than price details to be submitted with Un-priced Techno-Commercial Bid as per tender requirement under "Technical Attachment" Tab Page only.

2.10 Bidder must accept and comply with the following provisions as given in the Tender Document in toto, failing which offer will be rejected:

(i) Firm price
(ii) EMD/Bid Bond
(iii) Period of validity of Bid
(iv) Price Schedule
(v) Performance Bank Guarantee/Security deposit
(vi) Delivery/Completion Schedule
(vii) Scope of work
(viii) Guarantee of material/work
(ix) Liquidated Damages clause
(x) Tax liabilities
(xi) Arbitration/Resolution of Dispute Clause
(xii) Force Majeure
(xiii) Applicable Laws
(xiv) Specifications
(xv) Integrity Pact

2.11 There should not be any indication of price in the Un-priced Techno-Commercial Bid. A bid will be straightway rejected if this is given in the Un-priced Techno-Commercial Bid.

2.12 Bid received with validity of offer less than 120 (one hundred twenty) days from the date of Technical Bid opening will be rejected.

2.13 The Integrity Pact is applicable against this tender. OIL shall be entering into an Integrity Pact with the bidders as per format enclosed vide "Part-VI/Integrity Pact" of the tender document. This Integrity Pact Proforma has been duly signed digitally by OIL's competent signatory. The Proforma has to be returned by the bidder (along with the Un-priced Techno-Commercial 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.

3.0 GENERAL

3.1 In case bidder takes exception to any clause of bidding document not covered under BEC/BRC, then the Company has the discretion to load or reject the offer on account of such exception if the bidder does not withdraw/modify the deviation when/as advised by company. The loading so done by the company will be final and binding on the bidders. No deviation will however be accepted in the clauses covered under BRC.

3.2 To ascertain the substantial responsiveness of the bid the Company reserves the right to ask the bidder for clarification in respect of clauses covered under BEC/BRC also and such clarifications fulfilling the BEC/BRC clauses in toto must be received on or before the deadline given by the company, failing which the offer will be evaluated based on

the submission. However, mere submission of such clarification shall not make the offer responsive, unless company is satisfied with the substantial responsiveness of the offer.

3.3 If any of the clauses in the BRC contradict with other clauses of bidding document elsewhere, the clauses in the BRC shall prevail.

3.4 Bidders should note that the documents/information submitted by the bidder(s) against the tender are presumed to be genuine, authentic and true copy of the originals. However, in case at any stage of tendering process or during execution of the contract or after expiry of contract, if it is detected that bidder has submitted forged or fabricated documents or furnished false information towards fulfilment of any of the tender/contract conditions, Company shall immediately reject the bid of such bidder(s) or cancel/terminate the contract, as the case may be and forfeit EMD/SD submitted by the bidder. Besides, the bidder shall be dealt as per the Banning Policy (available in OIL's website) of Company.

3.5 Bidder(s) must note that requisite information(s)/financial values etc. as required in the BEC/BRC & Tender are clearly understandable from the supporting documents submitted by the Bidder(s); otherwise Bids shall be rejected.

3.6 OIL will not be responsible for delay, loss or non-receipt of applications for participating in the bid sent by mail and will not entertain any correspondence in this regard.

3.7 The originals of such documents [furnished by bidder(s)] shall have to be produced by bidder(s) to OIL as and when asked for.

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TECHNICAL EVALUATION SHEET FOR BEC
TENDER NO. CDO6415P18

Bidders Name: _____

Sl. No.	Clause No. of BEC/BRC	Description	Compliance		Bidder to indicate Relevant Page No. of their Bid to support the remarks/ compliance
			Yes	No	
1	**1.0**	**BID EVALUATION CRITERIA (BEC)** The bid shall conform to the specifications and terms and conditions given in the Bidding Documents. Bids will be rejected in case material and services offered do not conform to the required parameters stipulated in the technical specifications. Notwithstanding the general conformity of the bid 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 will not be considered for evaluation. All the documents related to BEC shall be submitted along with the Technical Bid.			
1.1 FINANCIAL CRITERIA					
2	**1.1.1**	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.4,14,06,000.00** only.			
3	**1.1.2**	Net worth of the bidder must be Positive for the preceding financial/accounting year.			
4	**Note to above Clause 1.1 above**	Notes to BEC Clause 1.1 above: **a.** For proof of Annual Turnover & Net worth, any one of the following documents/photocopies must be submitted along with the bid: (i) Audited Balance Sheet along with Profit & Loss account. OR			

		(ii) A certificate issued by a practicing Chartered/Cost Accountant (with Membership Number and Firm Registration Number), as per format prescribed in Annexure-X. **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 2016-17 have actually not been audited so far'.			
1.2 TECHNICAL CRITERIA					
5	**1.2.1(A)**	The bidder shall have experience of minimum 2 years or more in carrying out of at least **one** 'SIMILAR' Work in Gas Gathering Station/Gas Production Station/Gas Processing Station/Gas Compression Station/Crude Oil Production Station/Crude Oil Processing Station of minimum value of **Rs.4.14 Crore** in Central/State Govt./State Govt. Enterprises/PSUs/Public limited Company in previous 7 (seven) years reckoned from the original bid closing date. **OR** The bidder shall have experience of minimum 2 years or more in carrying out of at least **one** 'SIMILAR" work of minimum 3(three) MMSCMD or more in Natural Gas Production/Gathering/Processing/Compression in Central/State Govt. Enterprises/PSUs/Public limited Company in previous 7 (seven) years reckoned from the original bid closing date. **OR**			

		The bidder shall have experience of minimum 2 years or more in carrying out of at least **one** 'SIMILAR" work of minimum 3000 KLPD or more of Crude Oil processing/ Crude Oil Production Station in Central/State Govt. Enterprises/PSUs/Public limited Company in previous 7 (seven) years reckoned from the original bid closing date. **"SIMILAR"** Work as mentioned in this Clause (Clause 1.2.1 (A)) means: "Operation and Maintenance (O&M) service in Gas Gathering Station/Gas Production Station/Gas Processing Station/Gas Compression Station/Crude Oil Production Station/Crude Oil Processing Station in Central/State Govt. Enterprises/PSUs/Public limited Company" **AND** Operation and maintenance (O&M) service of DCS & PLC based Instrumentation System having connected/interfaced with at least any three (3) of the following field instrumentation system - Flow Meters, Pressure Transmitters, Temperature Transmitters, Gas Detectors, Tank Level Meters.			
6	**Note to BEC clause 1.2.1(A)**	**Notes to BEC Clause 1.2.1 (A) above:** **a)** For proof of requisite Experience (refer clause 1.2.1 (A) above), the following documents/photocopies must be submitted along with the bid: **i)** In case Work Experience is against OIL's contract and is a **completed** job: Job Completion Certificate is to be submitted along with the bid. **ii)** In case Work Experience is **NOT** against OIL's contract and is a **completed** job : a) Photocopy of Contract document or Work order showing details of work.			

		AND b) Job Completion Certificate showing: i) Gross Value of job done - if the bidder quotes on the strength of "value of job done" as per clause 1.2.1 (A) above **OR** Quantum of the job - if the bidder quotes on the strength of "quantum of job done" as per clause 1.2.1 (A) above ii) Description of job done and Contract/work order no. iii) Contract Period and Date of completion of the contract. **b)** Following work experience will also be taken into consideration: 1. If the prospective bidder has executed contract in which similar work under 1.2.1 (A) above is also a component of the contract. 2. If the prospective bidder is executing similar work under 1.2.1 (A) above which is still running and the contract value/quantity executed prior to original bid closing date is equal to or more than the minimum prescribed value in the BEC. 3. In case the start date of the requisite experience is beyond the prescribed 07 (seven) years reckoned from the original bid closing date but completion is within the prescribed 07 (seven) years reckoned from the original bid closing date. Proof of work experience against Para **b)** under "**Notes to BEC Clause 1.2.1 (A) above"**, to satisfy **i.** similar work under 1.2.1 (A) above **ii.** Minimum prescribed Value/Qty **iii.** Prescribed period of 07 years, to be submitted as below: 1. In case requisite experience is against OIL's Contract: Bidder must submit the breakup of similar work under 1.2.1 (A) above and its			

		value/quantity mentioning SES No. and copies of all relevant SES. 2. In case requisite experience is **NOT** against OIL's Contract: Bidder must submit the breakup of similar work under 1.2.1 (A) above and its value/quantity executed within the prescribed period of 07 (seven) years reckoned from the original bid closing date. The breakup must be certified by the end user or a certificate issued by a practicing Chartered/Cost Accountant Firm (with Membership Number & Firm Registration Number).			
7	**1.2.1(B)**	The bidder must also possess Experience in Operation and maintenance of Gas engine driven/Diesel engine driven Power Generation Systems of minimum capacity 500 KVA in total in a single unit or in combined number of units under any contractual job carried out in Central/State Govt. Enterprises/PSUs/Public limited Company in previous 07 (Seven) years reckoned from the original bid closing date. (a) For requisite work experience against **1.2.1 (B)** certificate from client clearly mentioning the details of jobs as described in para **1.2.1 (B)** shall be required for evaluation.			
8	**1.1,1.2.1(A) & 1.2.1(B)**	**Bid shall be liable for rejection if not accompanied with documentary evidence in support of financial criteria under "Notes to BEC Clause 1.1 above" and in support of experience as mentioned above in a) and b) under "Notes to BEC Clause 1.2.1 (A) above" and (a) under 1.2.1 (B) above.**			
9	**1.2.2**	A job executed by a bidder for its own organization/subsidiary shall not be considered as experience for the purpose of meeting BEC. Also, any bidder, quoting on the strength of consortium/collaboration agreement or MOU with another party including sub-contract shall not be considered as experience for the purpose of meeting BEC.			
10	**1.2.3**	The bidder shall give an undertaking as per **PROFORMA-II** along with the Technical bid that they will arrange AMC backup support through OEM for entire period of contract, as mentioned in **SCC,** without which			

		bid will be rejected.			
11	**1.2.4**	Bidder must quote for O&M Services of both CGGS-Madhuban and FGS-Chabua. Other wise the bid will be rejected.			
12	**1.3**	Price bid shall be opened in respect of only the techno-commercially acceptable bidders whose bids have been found to be substantially responsive. A substantially responsive bid is one that meets the terms and conditions of the Tender and/or the acceptance of which bid will not result in indeterminate liability on OIL.			
13	**1.4**	Bidders are required to quote for all the items as per Price Bid Format, otherwise the offer of the bidder will be straightway rejected.			
14	**1.5**	If there is any discrepancy between the unit price and the total price, the unit price will prevail and the total price shall be corrected. Similarly, if there is any discrepancy between words and figure, the amounts in words shall prevail and will be adopted for evaluation.			
15	**1.6**	The quantities shown against each item in the "Price Bid Format" shall be considered for the purpose of Bid Evaluation. It is, however, to be clearly understood that the assumptions made in respect of the quantities for various operations are only for the purpose of evaluation of the bid and the Contractor will be paid on the basis of the actual number of days/parameter, as the case may be.			
16	**1.7**	The bidders are advised not to offer any discount/rebate separately and to offer their prices in the Price Bid Format after considering discount/rebate, if any.			
17	**1.8**	Conditional and unsolicited discount will not be considered in evaluation. However, if such bidder happens to be the lowest recommended bidder, unsolicited discount without any condition will be considered for computing the contract price.			
18	**1.9**	In case of identical overall lowest offered rate by more than 1 (one) bidder, the selection will be made by draw of lot between the parties offering the same overall lowest price.			
19	**1.10**	**1.10 PURCHASE PREFERENCE CLAUSE:** Purchase Preference to Micro and Small Enterprises registered with District Industry Centers or			

		Khadi and Village Industries Commission or Khadi and Village Industries Board or Coir Board or National Small Industries Corporation or Directorate of Handicrafts and Handloom or any other body specified by Ministry of MSME: **1.10.1** In case participating MSEs quote price within price band of L1+15%, such MSE shall be considered for award of contract by bringing down their price to L1 price in a situation where L1 price is from someone other than a MSE. **1.10.2** In case of more than one such MSE qualifying for 15% purchase preference, the contract shall be awarded to lowest eligible MSE amongst the MSEs qualifying for 15% purchase preference. **1.10.3** In case any part of the work is sub-contracted to a Micro or Small Enterprise as per contract conditions than the contractor shall provide complete details (i.e. name of the subcontractor, value of sub-contacted work, copy of valid registration certificate etc.) of the sub-contractor to OIL. **1.10.4 <u>Documentation Required to be submitted by MSEs:</u>** Copy of valid Registration Certificate, if bidder is a Micro or Smal Enterprises(MSE) registered with District Industry Centers or Khadi an Village Industries Commission or Khadi and Village Industries Board o Coir Board or National Small Industries Corporation or Directorate o Handicrafts and Handloom or any other body specified by Ministry o MSME. The Registration Certificate should clearly indicate the monetar limit, if any and the items for which bidder are registered with any of th aforesaid agencies. In case bidding MSE is owned by Schedule Caste o Schedule Tribe entrepreneur, valid documentary evidence issued by th agency who has registered the bidder as MSE owned by SC/S entrepreneur should also be enclosed.			
20	**1.11**	**1.11 PURCHASE PREFERENCE POLICY (LINKED WITH LOCAL CONTENT) (PP-LC)** **1.11.1 Purchase preference policy-linked with Local Content (PP - LC) notified vide letter no. O-27011/44/2015-ONG-II/FP**			

		dated 25.04.2017 of MoP&NG shall be applicable in this tender. (**http://petroleum.nic.in/policy-provide-purchase-preference-linked-local-content-pp-lc-all-psus)**. **1.11.2** Bidders seeking benefits, under Purchase Preference Policy (linked with Local Content) (PP-LC) shall have to comply with all the provisions specified all clauses under clause No. 22 of ITB and shall have to submit all undertakings/documents applicable for this policy.			
21	**1.12**	Price Bids shall be evaluated on overall lowest cost to OIL (L-1 offer) basis i.e. considering total quoted price for all services including applicable GST(CGST & SGST/UTGST or IGST).			
22	**1.13**	OIL will prefer to deal with registered bidder under GST. Therefore, bidders are requested to get themselves registered under GST, if not registered yet. However, in case any unregistered bidder is submitting their bid, their prices will be loaded with applicable GST while evaluation of bid. Where OIL is entitled for input credit of GST, the same will be considered for evaluation of bid as per evaluation methodology of tender document.			
23	**1.14**	Price Bid uploaded without giving any of the details of the taxes (Including rates and amounts) will be considered as inclusive of all taxes including GST. When a bidder mentions taxes as extra without specifying the rates & amount, the offer will be loaded with maximum value towards taxes received against the tender for comparison purposes. If the bidder emerges as lowest bidder after such loading, in the event of order on that bidder, taxes mentioned by OIL on the Purchase Order/Contracts will be binding on the bidder.			
24	**1.15**	Input Tax Credit on GST (Goods & Service Tax) for this service is NOT available to OIL &The bids will be evaluated based on total price including GST.			
25	**1.16**	Based on the evaluation of techno-commercially qualified bidders, the			

		job will be awarded to L-1 bidder			
2.0 BID REJECTION CRITERIA (BRC):					
26	**2.1**	2.1 The bids are to be submitted in single stage under 02 (Two) bid system i.e. Un-priced Techno-Commercial Bid and Price Bid together. Only the Price Bid should contain the quoted price.			
27	**2.2**	The price quoted by the successful bidder must be firm during the performance of the contract and not subject to variation on any account except as mentioned in the bid document. Any bid submitted with adjustable price quotation other than the above will be treated as non-responsive and rejected.			
28	**2.3**	Bid security shall be furnished as a part of the Techno Commercial Un-priced Bid. The amount of bid security should be as specified in the forwarding letter. Any bid not accompanied by a proper bid security will be rejected.			
29	**2.4**	Bid Documents/User Id & Password for OIL's E-Tender portal are not transferable. Bid made by parties who have not submitted the requisite tender fees will be rejected.			
30	**2.5**	Any bid received in the form of Physical document/ Telex/Cable/Fax/E-mail will not be accepted.			
31	**2.6**	Bids shall be typed or written in indelible ink. The bidder or his authorized representative shall sign the bid digitally, failing which the bid will be rejected.			
32	**2.7**	Bids shall contain no interlineations, erasures or overwriting except as necessary to correct errors made by bidder, in which case such corrections shall be initiated by the persons(s) signing (digitally) the bid. However, white fluid should not be used for making corrections. Any bid not meeting this requirement shall be rejected.			
33	**2.8**	Any bid containing false statement will be rejected and action will be taken by Company as per Bid Document.			
34	**2.9**	Bidders must quote clearly and strictly in accordance with the price schedule outlined in Price Bidding Format attached under "Notes and Attachments" tab in the main bidding engine of OIL's e-Tender portal; otherwise the bid will be rejected. All other techno-commercial documents other than price details to be submitted with Un-priced Techno-Commercial Bid as per tender requirement in the c-Folder link			

		(collaboration link) under "Technical RFx Response" Tab Page only.			
35	**2.10**	Bidder must accept and comply with the following provisions as given in the Tender Document into, failing which offer will be rejected: **(i)** Firm price **(ii)** EMD/Bid Bond **(iii)** Period of validity of Bid **(iv)** Price Schedule **(v)** Performance Bank Guarantee/Security deposit **(vi)** Delivery/Completion Schedule **(vii)** Scope of work **(viii)** Guarantee of material/work **(ix)** Liquidated Damages clause **(x)** Tax liabilities **(xi)** Arbitration/Resolution of Dispute Clause **(xii)** Force Majeure **(xiii)** Applicable Laws **(xiv)** Specifications **(xv)** Integrity Pact			
36	**2.11**	There should not be any indication of price in the Un-priced Techno-Commercial Bid. A bid will be straightway rejected if this is given in the Un-priced Techno-Commercial Bid.			
37	**2.12**	Bid received with validity of offer less than 120 (one hundred twenty) days from the date of Technical Bid opening will be rejected.			
38	**2.13**	The Integrity Pact is applicable against this tender. OIL shall be entering into an Integrity Pact with the bidders as per format enclosed vide Part-VI of the tender document. This Integrity Pact proforma has been duly signed digitally by OIL's competent signatory. The proforma has to be returned by the bidder (along with the Un-priced Techno-Commercial 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.			
39		**3.0 GENERAL:** **3.1** In case bidder takes exception to any clause of bidding document not covered under BEC/BRC, then the Company has the discretion to load or reject the offer on account of such exception if the bidder does			

		not withdraw/modify the deviation when/as advised by company. The loading so done by the company will be final and binding on the bidders. No deviation will however be accepted in the clauses covered under BRC. **3.2** To ascertain the substantial responsiveness of the bid the Company reserves the right to ask the bidder for clarification in respect of clauses covered under BEC/BRC also and such clarifications fulfilling the BEC/BRC clauses in toto must be received on or before the deadline given by the company, failing which the offer will be will be evaluated based on the submission. However, mere submission of such clarification shall not make the offer responsive, unless company is satisfied with the substantial responsiveness of the offer. **3.3** If any of the clauses in the BRC contradict with other clauses of bidding document elsewhere, the clauses in the BRC shall prevail. **3.4** Bidders should note that the documents/information submitted by the bidder(s) against the tender are presumed to be genuine, authentic and true copy of the originals. However, in case at any stage of tendering process or during execution of the contract or after expiry of contract, if it is detected that bidder has submitted forged or fabricated documents or furnish false information towards fulfillment of any of the tender/contract conditions, Company shall immediately reject the bid of such bidder(s) or cancel/terminate the contract, as the case may be and forfeit EMD/SD submitted by the bidder. Besides, the bidder shall be dealt as per the Banning Policy (available in OIL's website) of Company. **3.5** Bidder(s) must note that requisite information(s)/financial values etc. as required in the BEC/BRC & Tender are clearly understandable from the supporting documents submitted by the Bidder(s); otherwise Bids shall be rejected. **3.6** OIL will not be responsible for delay, loss or non-receipt of applications for participating in the bid sent by mail and will not entertain any correspondence in this regard. **3.7** The originals of such documents [furnished by bidder(s)] shall			

		have to be produced by bidder(s) to OIL as and when asked for.			

Check List to be filled up by Bidder

BEC Clause	Description	Bidder Response Yes or No	Please name the document submitted
Notes to BEC Clause 1.1	Whether Bidder is submitting Financial documents as per "**Notes to BEC Clause 1.1 a) i)" or** "**Notes to BEC Clause 1.1 a) ii)"**		Please mention the clause No.
1.2.1 (A)	**Whether bidder is quoting on the strength of** "**one** 'SIMILAR' Work in Gas Gathering Station/Gas Production Station/Gas Processing Station/Gas Compression Station/Crude Oil Production Station/Crude Oil Processing Station of minimum value of **Rs. 4,14,06,000.00** in Central/State Govt. Enterprises/PSUs/Public limited Company in previous 7 (seven) years reckoned from the original bid closing date"?		
	OR **Whether bidder is quoting on the strength of** "**One** 'SIMILAR" work of minimum 03 (three) MMSCMD or more in Natural Gas Production/Gathering/Processing/Compression in Central/State Govt. Enterprises/PSUs/Public limited Company in previous 07 (Seven) years reckoned from the original bid closing date"?		
	OR **Whether bidder is quoting on the strength of** "**One** 'SIMILAR" work of minimum 3000 KLPD or more of Crude Oil processing/ Crude Oil Production Station in Central/State Govt. Enterprises/PSUs/Public limited Company in previous 7		

BEC Clause	Description	Bidder Response Yes or No	Please name the document submitted
	(seven) years reckoned from the original bid closing date"?		
1.2.1 (A)	**"SIMILAR"** Work as mentioned in this Clause (Clause 1.2.1 (A)) includes the following experiences: "Operation and Maintenance (O&M) service in Gas Gathering Station/Gas Production Station/Gas Processing Station/Gas Compression Station/Crude Oil Production Station/Crude Oil Processing Station in Central/State Govt. Enterprises/PSUs/Public limited Company" **AND** Operation and maintenance (O&M) service of DCS & PLC based Instrumentation System having connected/interfaced with at least any three (3) of the following field instrumentation system - Flow Meters, Pressure Transmitters, Temperature Transmitters, Gas Detectors, Tank Level Meters.		Please name the document submitted
Notes to BEC Clause 1.2.1 (A) above	Whether bidder is submitting work experience as per "**Notes to BEC Clause 1.2.1(A) above, a), i) & ii)" OR** "**Notes to BEC Clause 1.2.1(A), b)"?**		Please mention the clause No.
1.2.1(B)	The bidder must also possess Experience in Operation and maintenance of Gas engine driven/Diesel engine driven Power Generation Systems of minimum capacity 500 KVA in total in a single unit or in combined number of units under any contractual job carried out in Central/State Govt. Enterprises/PSUs/Public limited Company in previous 07 (Seven) years reckoned from the original bid closing date. (a) For requisite work experience against **1.2.1 (B)** certificate		

BEC Clause	Description	Bidder Response Yes or No	Please name the document submitted
	from client clearly mentioning the details of jobs as described in para **1.2.1 (B)** shall be required for evaluation. **Whether bidder is submitting work experience as per 1.2.1(B) (a) above ?**		Please name the supporting document submitted
1.2.2	Whether bidder is quoting on the strength of consortium/collaboration agreement or MOU with another party including sub contract?		
1.2.3	Whether undertaking as per **PROFORMA-II** is submitted?		
1.2.4	Whether Bidder is quoting for both CGGS Madhuban and FGS Chabua?		

SPECIAL CONDITIONS OF CONTRACT (SCC)

1.0 INTRODUCTION

Oil India Limited (OIL) is a Navaratna Company; a Public Sector Undertaking (PSU) under the Ministry of Petroleum & Natural Gas (MoP&NG), Govt of India engaged in the business of exploration, production and transportation of crude oil and natural gas and production of LPG .OIL has its operating fields in upper Assam in Dibrugarh, Tinsukia and Sibsagar districts of Assam. Its field head quarter is at Duliajan in Dibrugarh district, Assam.

1.01 GENERAL DESCRIPTION OF CGGS MADHUBAN

The CGGS & OTP is constructed at Madhuban (near W#NHK 50) at a distance of around 6 km from Duliajan, in Dibrugarh district of Assam, under Hugrijan Mining lease. Total area of CGGS & OTP is **18 hectare** and same is protected by a 12feet high boundary wall. The periphery of the entire CGGS&OTP is 2.5 Km (approx.).

In order to supply committed amount of 6 MMSCMD of natural gas containing at least 7% C_2+ content to M/s Brahmaputra Cracker and Polymer Limited (BCPL) from a single point,OIL collects all the C_2+ rich gas from the field production centers at CGGS Madhuban which is a high volume, self-contained gas gathering, metering & custody transferring installation with a total gas handling capacity of 12 MMSCMD which was commissioned on 19.12.2014.From this installation C_2+ rich gas is supplied to BCPL and returned lean gas along with lean gas collected from fields is then supplied to various internal and external consumers

SALIENT FEATURES OF THE INSTALLATION

- ✓ State of the art installation with online monitoring, control and emergency shut down system (DCS & ESD system),
- ✓ Fire & Gas detection systems,
- ✓ Firefighting systems,
- ✓ Enclosed ground flare system,
- ✓ Closed Blow Down vessel to collect condensate & oily particle from various skids,
- ✓ Effluent Treatment Plants (with CRWS & OWS) system,
- ✓ Security watch towers & security cabins,
- ✓ Access control system and CCTVs at strategic locations,
- ✓ Rain water harvesting ponds with preservation of bio-diversity.
- ✓ Zero discharge to outside environment,
- ✓ Green belt all around the installation.

Other auxiliary facility/equipment

- ♣ On line gas chromatographs & analyser system
- ♣ Instrument air system,
- ♣ Corrosion inhibitor system,
- ♣ Metering & Custody transfer system,
- ♣ Power generation with Gas Genset & back up with Diesel gen set,
- ♣ Control room & operators building with access control system & CCTV at entrance,

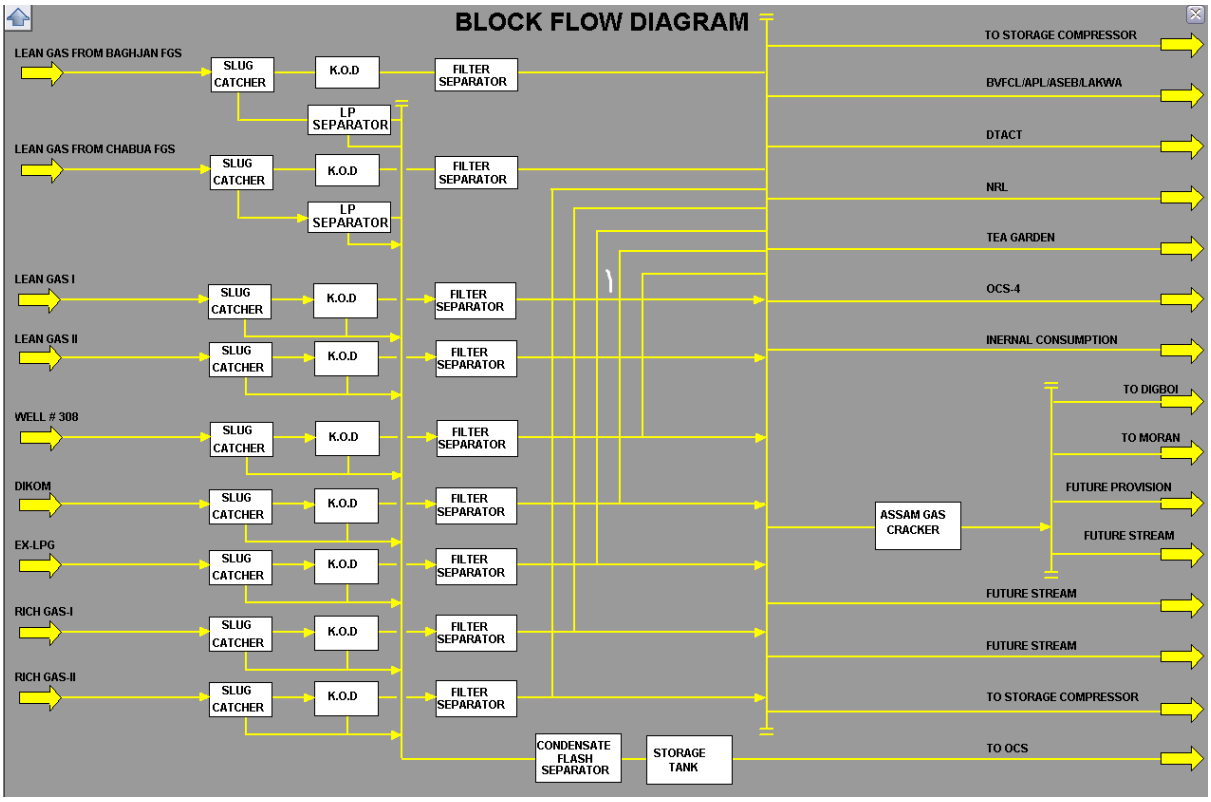
- ♣ Shift workers cabin for workers,
- ♣ Security watch tower (05) & watch tower with security cabin (02) with OIL telephone facility at each tower,
- ♣ Security barrack for 36 security staff with a strong room & magazine room
- ♣ 4.5m wide & 2.1Km long motorable road outside the boundary wall for security patrolling is provided (Maintenance is under OIL's Scope). Also a 1.5 m wide drain adjacent to the road is also provided.

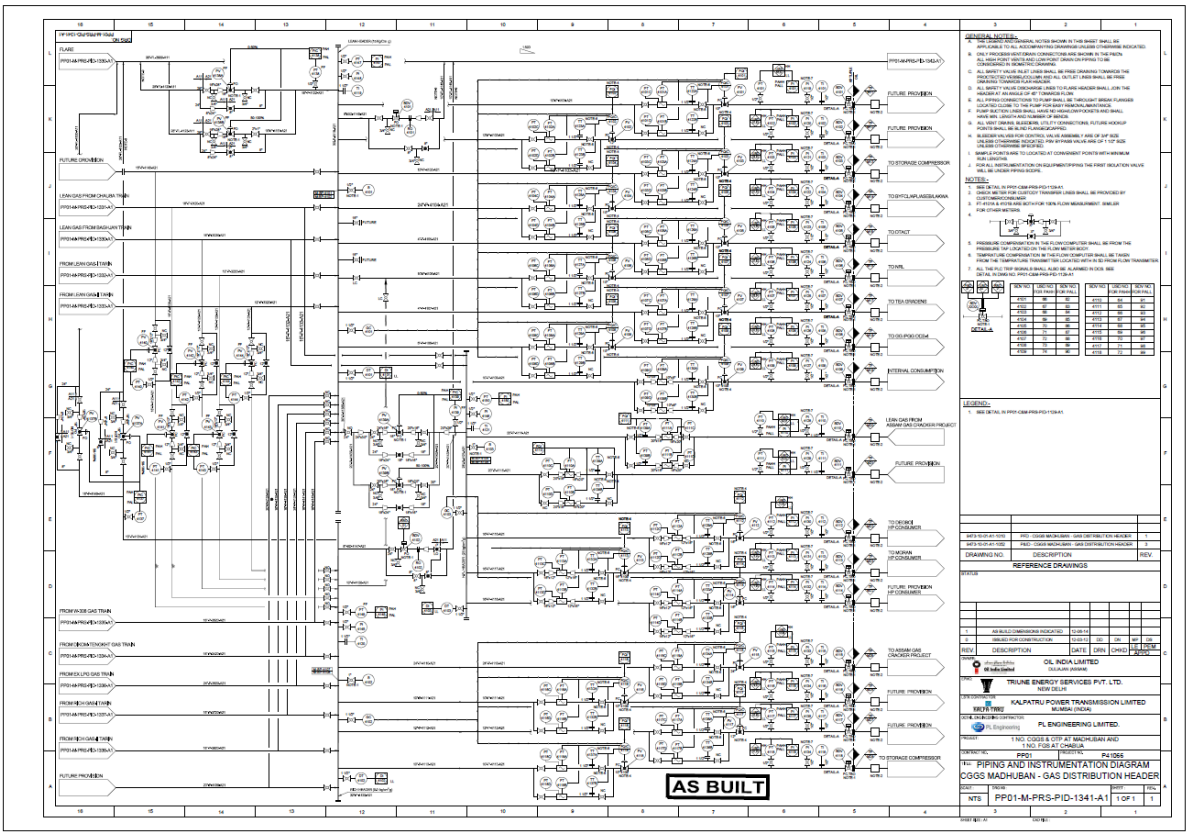
Safety distances (approximate) between various unit/installation

Sl. no.	From	To	Distances
1	Process unit	Boundary wall	60m
2	Process unit	Control room Bldg	70m
3	Process unit	Fire water tank	100m
4	Process unit	Truck loading point	50m
5	Process unit	Tank Farm	50m
6	Process unit	Ground flare	200m
7	Process unit	ETP plant	50m
8	Control room Bldg	Boundary wall	30m
9	Control room Bldg	Truck loading point	80m
10	Control room Bldg	Tank farm	160m
11	Control room Bldg	ETP	120m
12	Boundary wall	ETP	80m
13	Boundary wall	Tank farm	60m
14	Boundary wall	Fire water tank	20m

1.02 DESCRIPTION OF PROCESS & EQUIPMENT

Gas streams flow block diagram and P&ID for gas distribution header are given below:





PIG LAUNCHING AND RECEIVING TERMINALS/SYSTEMS &PIPELINES

There are at present 7 Nos of Pig receiving & launching systems in CGGS&OTP-Madhuban premises. They are for:

i. 16"OD Pipeline from Bhaghjan areas,
ii. 16"OD Pipeline from Chabua areas,
iii. 24"OD Pipeline from LPG-OTP - 2 (two) nos,
iv. 24"OD Pipeline to LPG-OTP,
v. 16"OD Pipeline from Dikom-Tengakhat-Hatilai areas,
v. 16"OD Pipeline to Dikom-Tengakhat-hatiali areas,

Another three more pig receiving/launching systems will also be installed in the CGGS&OTP premises shortly.

In addition, there are several other incoming & out goings pipelines are running to/from CGGS without pig launcher/receiver systems such as (i) Gas line from wells # 308 areas(Kathalguri), (ii) Gas line to Kathalguri/Digboi areas, (iii) Gas line to DNPL etc.

Also there is a provision of supply of rich gas from Baghjan, Chabua, Well #308 areas to LPG plant directly through a controller at Pig receiving/launching area.

GAS TREATMENT TRAINS

At present there are total 9 nos. of incoming trains as follows:

1. Lean Gas Train for Chabua,
2. Rich Gas Train for Dikom – Tengakhat ,
3. Rich Gas Train for Well # 308,
4. Lean Gas Train for Baghjan,
5. Lean Gas-I Train (Future),
6. Lean Gas-II Train (Future),
7. Rich Gas Train for Ex-LPG,
8. Rich Gas-I Train (LPG Upstream excess gas)
9. Rich Gas-II Train (Future)

Gas from each train is received in a Slug Catcher. Slug Catcher removes slug of liquid if any from the gas. The gas then passes through Two Phase KOD and Filter Separator for removal of residual liquid and impurities present in the gas. The lean gas then goes to Lean Gas Header operating at 15 Kg/cm2g and the rich gas goes to Rich Gas Header operating at 9 Kg/cm2g. Condensates separated out from Slug Catchers and Two Phase KODs of each train are taken to a Condensate Flash Separator under level control for stabilization of condensate. Water separated out from Slug Catchers, Two Phase KODs, Filter Separator and Condensate Flash Separator is drained to Raw Effluent Tank for treatment in Effluent Treatment Plant.

LEAN GAS TRAIN FOR BAGHJAN

Lean gas (@ 1.5 MMSCMD) from Baghjan FGS is received in the Slug Catcher of this train. Slug Catcher removes slug of liquid from the gas and routes the same to LP separator under pressure control. The gas from slug catcher passes through Two Phase

KOD and Filter Separator for removal of residual condensate present in the gas. The lean gas then goes to Lean Gas Header operating at 15 Kg/cm2g. A part of this lean gas also goes to Fuel Gas System. Condensates separated out from LP separator and Two Phase KOD are taken to Condensate Flash Separator under level control for stabilization of condensate. This Condensate Flash Separator also receives condensates from other trains. Slug Catcher and Condensate Flash Separator are provided with 2 X 100% PSVs. PSV and other discharges are routed to Flare System. Water separated out from LP separator and Condensate Flash Separator is drained to Raw Effluent Tank.

LEAN GAS TRAIN FOR CHABUA

Lean gas (@ 1.5 MMSCMD) from Chabua FGS is received in the Slug Catcher package of this train. Slug Catcher removes slug of condensate from the gas and routes the same to LP separator under pressure control. The gas from slug catcher passes through Two Phase KOD and Filter Separator for removal of residual condensate present in the gas. The lean gas then goes to Lean Gas Header operating at 15 Kg/cm2g. A part of this lean gas also goes to Fuel Gas System. Condensate separated out from LP separator and Two Phase KOD is taken to Condensate Flash Separator under level control for stabilization of condensate. Water separated out from LP separator and Condensate Flash Separator is drained to Raw Effluent Tank.

LEAN GAS-I TRAIN

Lean gas (@ 0.5 MMSCMD) is received in the Slug Catcher of this train. Slug Catcher removes slug of condensate from the gas. The gas then passes through Two Phase KOD and Filter Separator for removal of residual condensate present in the gas. The lean gas then goes to Lean Gas Header operating at 15 Kg/cm2g. A part of this lean gas also goes to Fuel Gas System. Condensate separated out from Slug Catcher and Two Phase KOD is taken to Condensate Flash Separator under level control for stabilization of condensate. Water separated out from Slug Catcher and Condensate Flash Separator is drained to Raw Effluent Tank.

LEAN GAS-II TRAIN (FUTURE)

Lean gas (@ 0.5 MMSCMD) is received in the Slug Catcher of this train. Slug Catcher removes slug of condensate from the gas. The gas then passes through Two Phase KOD and Filter Separator for removal of residual condensate present in the gas. The lean gas then goes to Lean Gas Header operating at 15 Kg/cm2g. A part of this lean gas also goes to Fuel Gas System. Condensate separated out from Slug Catcher and Two Phase KOD is taken to Condensate Flash Separator under level control for stabilization of condensate. Water separated out from Slug Catcher and Condensate Flash Separator is drained to Raw Effluent Tank.

RICH GAS TRAIN FOR DIKOM – TENGAKHAT

Rich gas (@ 1.5 MMSCMD) is received in the Slug Catcher of this train. Slug Catcher removes slug of condensate from the gas. The gas then passes through Two Phase KOD and Filter Separator for removal of residual condensate present in the gas. The rich gas then goes to Rich Gas Header operating at 9 Kg/cm2g. A part of this rich gas also goes to Fuel Gas System. Condensate separated out from Slug Catcher and Two Phase KOD

is taken to Condensate Flash Separator under level control for stabilization of condensate. Water separated out from Slug Catcher and Condensate Flash Separator is drained to Raw Effluent Tank.

RICH GAS TRAIN FOR WELL # 308

Rich gas (@ 1.5 MMSCMD) is received in the Slug Catcher of this train. Slug Catcher removes slug of condensate from the gas. The gas then passes through Two Phase KOD and Filter Separator for removal of residual condensate present in the gas. The rich gas then goes to Rich Gas Header operating at 9 Kg /cm2g. A part of this rich gas also goes to Fuel Gas System. Condensate separated out from Slug Catcher and Two Phase KOD is taken to Condensate Flash Separator under level control for stabilization of condensate. Water separated out from Slug Catcher and Condensate Flash Separator is drained to Raw Effluent Tank.

RICH GAS TRAIN FOR EX-LPG

Rich gas (@ 2.5 MMSCMD) is received in the Slug Catcher of this train. Slug Catcher removes slug of condensate from the gas. The gas then passes through Two Phase KOD and Filter Separator for removal of residual condensate present in the gas. The rich gas then goes to Rich Gas Header operating at 9 Kg/cm2g. A part of this rich gas also goes to Fuel Gas System. Condensate separated out from Slug Catcher and Two Phase KOD is taken to Condensate Flash Separator under level control for stabilization of condensate. Water separated out from Slug Catcher and Condensate Flash Separator is drained to Raw Effluent Tank.

RICH GAS-I TRAIN (LPG UPSTREAM GAS)

Rich gas (@ 1.5 MMSCMD) is received in the Slug Catcher of this train. Slug Catcher removes slug of condensate from the gas. The gas then passes through Two Phase KOD and Filter Separator for removal of residual condensate present in the gas. The rich gas then goes to Rich Gas Header operating at 9 Kg / cm2g. A part of this rich gas also goes to Fuel Gas System. Condensate separated out from Slug Catcher and Two Phase KOD is taken to Condensate Flash Separator under level control for stabilization of condensate. Water separated out from Slug Catcher and Condensate Flash Separator is drained to Raw Effluent Tank.

RICH GAS-II TRAIN

Rich gas (@ 1.5 MMSCMD) is received in the Slug Catcher of this train. Slug Catcher removes slug of condensate from the gas. The gas then passes through Two Phase KOD and Filter Separator for removal of residual condensate present in the gas. The rich gas then goes to Rich Gas Header operating at 9 Kg / cm2g. A part of this rich gas also goes to Fuel Gas System. Condensate separated out from Slug Catcher and Two Phase KOD is taken to Condensate Flash Separator under level control for stabilization of condensate. Water separated out from Slug Catcher and Condensate Flash Separator is drained to Raw Effluent Tank.

GAS DISTRIBUTION AND CUSTODY TRANSFERS

Gas after filter separators from all the trains is collected into one manifold which is divided into two parts with a spectacle blind. One part of manifold is for collection of rich gases which is supplied to BCPL's GDU plant at Madhuban. Other part of the manifold collects lean gases which is supplied to other consumers.

Rich gas is supplied to M/s Brahmaputa Crackers and Polymers Ltd.(M/s BCPL). After extraction of C2 + components from the rich gases, M/s Brahmaputra Crackers and Polymers Ltd.(M/s BCPL) returns remaining lean gas to separate lean gas HP manifold .This lean gas is then supplied to other consumers. Gas supply to each consumer is metered using ultrasonic meters, flow integrators (FQIC) and finally a control valve to control the flow rate. All pressure, temperature indicators are provided at battery limit. To control manifold pressures in case of fluctuations due to consumer demand, manifolds are connected to flare for venting excess gas under pressure control. If demand continues to be low, field chokes will have to be closed to reduce the gas being flared. Lean gas can be routed to rich gas manifold through PIC-PCV control. It is also possible to route each FGS rich gas train separately to lean gas manifold. Gas composition analyzers are provided in both lean and rich gas headers to correct the custody metering flow based on change in composition. Condensate from all FGS trains is collected in condensate flash separator and gas is flashed out. Flash separator is a 3-phase separator and removes gas and water from the condensate. Gas is routed to flare, water to effluent treatment and condensate to storage tanks and loading system. Three condensate storage tanks are provided to store separated condensate. Two condensate loading pumps are provided (2 x 100%) for either tanker loading or routing condensate to OCS. Flare system is designed to handle total gas flaring. Gas from all FGS trains to be flared are routed to flare through a common KOD which removes liquid and sends gas to flare. Flare is low noise, enclosed and low luminosity flare for environmental considerations. Liquid collected in flare KOD is routed to CBD vessel through flare KOD pumps (2 x 100%). An independent instrument air system is provided to cater to total needs of the CGGS. A fuel gas system is provided which takes gases from all FGS trains (for flexibility) and gases are filtered and heated (electric heater) and then supplied at controlled pressure to flare system and for gas engine generators. CBD (Closed Blowdown System) is provided for oil drains and collections from various points in the CGGS. The collected oil is routed to condensate flash separator for reprocessing by a submersible pump in the CBD vessel. An OWS (Oily Water System) is also provided for collection of washings which may be oil contaminated. OWS pit has internal weir to separate oil and route it by a submersible pump to CBD vessel. Water collected is also routed to raw effluent tank by another submersible pump for further treatment. Raw water for process use and drinking is ground (bore well) water which is treated (Sand filtration, carbon filter and UV sterilization) and stored in one process water tank and two potable water tanks for further distribution. Produced water from all the trains is collected in a header and is routed to raw effluent water tank for storage. It is further treated in Effluent Treatment Unit in a series of steps to remove oil/sludge. Treated water is stored in Treated Water Tank and pumped (2 x 100%), metered and routed to Truck loading station or to OCS for further disposal. Loss prevention system has been provided in CGGS which includes corrosion inhibitor injection system to control corrosion and enhance equipment life. Injection is made at various points of system based on corrosion study report.

CONDENSATE STORAGE AND LOADING

The stabilized condensate from condensate Flash Separator is collected in a Condensate Storage Tanks T-1001 (250m3 capacity), T-1002 (500m3 capacity) &T-1003 (500m3 capacity). The condensate is then pumped to nearest OCS to spike with crude oil. Water drained out from the tanks is to be drained to OWS system.

GAS DISTRIBUTION HEADERS

The Lean Distribution Header operating at 15 kg/cm2g receives lean gases from Baghjan and Chabua, Lean Gas-I and Lean Gas-II trains. From this header lean gas is sent to BVFCL/APL/ASEB/Lakwa via LPG OTP, NRL, Digboi, Dibrugarh, Moran customers, Tea Gardens, OCS-4 and OIL's internal consumptions. The Rich Distribution Header operating at 9 kg/cm2g receives rich gases from Well # 308 areas, Ex-LPG, Dikom-Tengkhat, Rich Gas-I and Rich Gas-II trains. From this header rich gas is sent to M/s BCPL. The lean gas coming back from M/s BCPL is received in a HP header (25 kg/cm^2 g). There is provision to send HP gas to Digboi, Dibrugarh and Moran customers from HP Header. Presently this 25 kg/cm^2HP lean gas is sentto15 kg/cm^2lean gas header under pressure control.

WATER SYSTEM

Raw water is drawn from deep tube well by Raw Water Pump of50m3/hr capacity. The raw water is treated in a Water Treatment Package unit, which includes Pressure Sand Filters, Activated Carbon Filters and Chlorination Unit and UV sterilization Unit. The filtered water is stored in overhead Process Water Tank and from there goes to distribution. The chlorinated filtered water is stored in overhead Potable Water Tank-I & Potable Water Tank-II and from there goes to distribution. The raw water from Raw Water Pump discharge header is tapped for cleaning, hose station and fire-fighting purposes. Water Treatment Unit is to supply the treated water for process and potable use.

The Water Treatment package includes the following:
1. Pressure Sand Filter-25 m3/hr capacity
2. Activated Carbon Filters– 5 m3/hr capacity
3. UV Sterilizer- 5 m3/hr capacity
4. Activated carbon Filters – 5 m3/hr capacity
5. Local Control panel and complete instrumentation within the package.

RAW WATER

Turbidity (NTU)	:	**36-83**
pH value	:	**7.0-7.1**
Total Hardness	:	**72-76 (ppm CaCO3)**
Alkalinity	:	**100-125 (ppm CaCO3)**
Chloride	:	**6 – 10 (ppm Cl)**
Iron	:	**2.19-2.66 (ppm Fe)**
Total Dissolved Solid	:	**168-188 (ppm)**
Silica	:	**47.8 – 64.7 (ppm)**

RAW WATER SOURCE

Raw water shall be supplied to Water Treatment Unit through Raw Water pump (Deep Bore Well Pump) of capacity 50m3/hr at a discharge pressure of 4 kg/cm2 g.

SERVICE WATER

The raw water is passed through Pressure Sand Filter of 25 m3/hr capacity for removal of suspended solids. The Sand Filter is provided with a bed of Manganese dioxide above the sand bed for removal of Iron. Out of the 25m3/hr of the service (filtered) water, 20 m3/hr is stored in the service water tank and remaining 5m3/hr is taken to potable water stream.

Turbidity (NTU)	:	**5**
pH value	:	**7-7.5**
Capacity	:	**20 m3/hr**
Pressure	:	**1.5 kg/cm2 g**

POTABLE WATER

The 5 m3/hr filtered water is passed through Active Carbon Filter and UV sterilizer for storage in Potable Water tank. The active Carbon filter is to remove odor and UV sterilizer to make the potable water free from bacteria and pathogens.

Turbidity (NTU)	:	**5**
pH value	:	**7-7.5**
Iron	:	**< 0.3 (ppm)**
Sterilization	:	**UV Sterilized**
Capacity	:	**5 m3/hr**
Pressure	:	**1.5 kg/cm2 g**

AMBIENT AIR CONDITIONS

Ambient Temp (Max/Min)	:	40 /7 Deg C
Dry Bulb Temp (Max / Min)	:	36 /8 Deg C
Max Relative humidity	:	95%

INSTRUMENT AIR

Temperature	:	40 ℃
Pressure	:	4.8 – 8.0 Kg/cm2 g
Dew point	:	-40 ℃ at 1 ATM.

FUEL GAS SYSTEM

The fuel gas header receives gases from any of the train under operation. The gas is filtered in Gas Filters. There is a provision to heat the filtered gas in an electric heater up to 45 deg C and sent to Fuel Gas header under pressure control.

FLARE SYSTEM (NON-LUMINOUS, LOW DB AND ECO-FRIENDLY)

The flare system is to receive PSV discharges, blowdowns and other venting from equipment and distribution headers in a Flare KOD and then goes to Ground Flare System. The collected oil from Flare KOD is recycled back to underground CBD Vessel with the help of Condensate Recycle Pumps. The capacity of ground Flare Packages is 8.0MMSCMD (4MMSCMD each).

The ground flare system is of enclosed type to conceal the flame visibility and reduce combustion noise. The ground flare is provided with burners inside a steel refractory lined open enclosure.

Flare System is designed to meet the following general requirements:

A. The design of burners is such that: -

   a. Flame is smokeless
   b. Flame is non-luminous
   c. Low sound effect is as per OMR/ OISD regulations.
   d. Flame is eco-friendly (low NOX emission).
   e. Burners efficiency is not less than 98%

B. The ignition system is comprised of pilot burners, pilot ignitors (flame front generator), pilot monitor and flame stabilizer. Sufficient pilots are provided to ensure proper ignition, including automatic restart on flame out, alarm and status signals to the plant DCS

C. Flame is hidden behind refractory lined CS shell. The refractory lining material is of ceramic fibre or refractory castables suitable for minimum hot face temperature of 1200 deg

D. Height of stack is such that the maximum GLC of pollutants including NOX never exceeds the prescribed ambient air quality limit as per latest National Environmental Act. Windfence is provided to diffuse any wind from impinging directly on the burner windows, and to assist in distributing air around the unit.

E. Staging control is provided for better smokeless flaring. The flare burners are manifolded in grouped stages. Staging valves is actuated by Staging Control System. Burners are designed to fire into the combustion chamber causing circulation and improved mixing for smokeless combustion.

Special features to guarantee the maximum operating reliability and the operating flexibility without any effect on the quality and capacity of the products are:

i) Refractory lined steel enclosure for combustion.
ii) Burners for Low Pressure gas system with associated instruments.
iii) Package includes a PLC based Staging Control System for smokeless combustion and
better shutdown control.
iv) Ignition system comprises of pilot burners, pilot ignitor (flame front generator), pilot
monitor and flame stabilizer.
v) Local electric/control panel including local shut-down, remote shut-down signals (process and emergency shut-down) and indication of equipment status.
vi) Flare ignition panel, with all necessary instrumentation, piping valves and temperature detection system.
vii) All items necessary for the safe and satisfactory operation and maintenance of the system like cables & junction boxes, Flare tip thermocouples etc.
viii) Auxiliary equipment provided inside Package Unit battery limits (B.L.) as, controllers, control valves, self-actuated valves, shutdown valves (SDV's), instrument both local and board mounted, manual valves, piping, fittings etc.

As stated above, the Ground Flare Package consists of refractory lined steel enclosure, burners and flare ignition panel. The pilot burners are fed by fuel gas; the ignition panel ignites the pilot burners by flame-front ignition or spark ignition. To avoid flame visibility and to reduce noise, burners are hidden behind refractory lined CS shell. A continuous introduction of purge gas (fuel gas) is used to prevent back flow (air ingress). The flare system is equipped with a velocity seal to limit the purge gas flow rate. The ignition system comprises of suitable no. of pilot burners required for each stage, flame front generator, pilot monitor, flame stabilizer etc. Each pilot is fitted with its dedicated flame detector to monitor the flame presence. The flame detectors (thermocouple type) are of guaranteed robust design and have a quick response time.

Ground flare system is designed for allowable radiation levels and maintenance free requirement over its operating life. The ignition system is flame front generator type or electrical spark ignitor type, designed to ignite the pilot burners at the design wind conditions. Separate ignition lines are provided for each pilot.

THE MAIN DESIGN DATA ARE

Data	Value	Unit
Design Capacity	8.0	MMSCMD
Design life	15	Year
Design wind speed	10 (max)	m/s
Noise level (max)	40 (Note-2)	dB
Radiation level	2000	Btu / ft2.hr

FLARE TIP

Flare Type:	Low Pressure
Design Relief Flow: (maximum)	8.0 MMSCMD
Design Relief Temperature:	-40 to +80 ° C
Pressure Drop at the Burners: (maximum)	100 mm WC
Typical Flare Gas Composition:	Mole %
Methane	90.6
Ethane	3.61
Propane	1.61
i- Butane	0.30
n-Butane	0.42
i-Pentane	0.03
n-Pentane	0.7
n-Nonane	0.0
CO2	0.74
H2O	0.05
N2	1.13
n-Hexane	0.72
n-Heptane	0.08
n-Octane	0.01
n-Decane	0.0

AVAILABLE UTILITIES

Fuel Gas

Temperature at Package B/L	45 °C
Pressure (normal)	3.0 kg/cm2
LHV	11000 kcal/kg
Dew Point	25 °C

Instrument Air

Supply temperature (Min / Max)	40 °C / 50 °C
Supply Pressure	5.0 – 8.5 Kg/cm2 g
Dew point	-40 °C at 1 ATM.

EFFLUENT SYSTEM

The water from various Slug Catchers, LP separators, KODs, Filter Separators, Storage Tanks etc. are received in Raw Effluent Tank. The oily wastewater is pumped to the Effluent Treatment Package for treatment. After treatment the treated effluent is stored in treated effluent tank for injection to water disposal/injection wells. The provision has also been kept to pump the waste water to the nearest OCS for treatment and disposal by OIL. Provision is also made to load this effluent in tanker for further transport by OIL to nearest OCS/ETP.

The effluent Treatment unit at CGGS includes:

1. Effluent Feed Pump
2. Corrugated Plate Interceptor (CPI)
3. Induced Gas Floatation (IGF)
4. Multi Media Filter (MMF)/VSEP/NF/RO
5. Micro Filtration System (Cartridge filter)

6. Chemical Dosing Facilities
7. Sludge Drying Bed
8. Slop oil handling
9. All related piping within the skid
10. Complete instrumentation and control

ETP Package includes all the laboratory equipments/apparatus required for testing of effluent parameters such as the presence of scale promoting ions (calcium, barium, iron, carbonate, sulphate, sulphide, and oxides). The laboratory facilities also include corrosion monitoring by simulating the corrosive environment. ETP Package is provided with auto recycling arrangement to ensure treated effluent quality as per the requirement. The recycling arrangement consists of an online ODMS (Oil Discharge Monitoring System) that is to measure the oil content in water (in ppm levels) and Motor Operated Valves to carry out the auto circulation in case of high oil in water content. ETP Package is provided with field corrosion monitoring devices such as ER (electrical resistance monitoring), LPR (linear polarization resistance monitoring) etc.

INLET EFFLUENT QUALITY

Design Capacity	:	10 m3/h
Free Oil	:	1000 ppm
Emulsified Oil	:	1000 ppm
Total Oil Content	:	2000 ppm
Total Suspended Solids	:	400 ppm

SOURCE EFFLUENT

Design Capacity	:	10 m3/h
Source	:	Slug catcher, two phase KOD etc

TREATED EFFLUENT QUALITY

Total Oil Content	:	10 ppm (max)
Total Suspended Solid	:	5 ppm (max)
Particle Size	:	5 micron (max)
Oxygen Content	:	20 ppb (max)
Turbidity	:	< 10 NTU
Silica	:	< 10 ppm
Iron	:	0.2 ppm

CHEMICAL INJECTION IN TREATED EFFLUENT

a) Oxygen Scavenger	:	50 ppm (100 lph)
b) Corrosion Inhibitor	:	50 ppm (100 lph)
c) Anti-Scalant	:	50 ppm (100 lph)
d Bactericide	:	10 ppm
e Dosing Tank Capacity	:	7 days.

Treated effluent quality is to be suitable for injection to water injection well or disposal well.

PROCESS DESCRIPTION

Produced water separated out in slug catchers, two phase KODs etc.is received in a raw effluent tank. The oily effluent from this tank is pumped to Corrugated Plate Interceptor (CPI) for separation of free oil. From CPI the effluent flows to Induced Gas floatation (IGF) by gravity for separation of emulsified oil. From IGF the oil and suspended solid free effluent is pumped to Multi Media Filter (MMF) for removal of residual oil and suspended solids and then finally to cartridge filter for final polishing. The treated effluent is stored in a treated effluent tank. Treated effluent is dosed (within the ETP package) with oxygen scavenger, corrosion inhibitor, anti-scalant and bactericide, before it is stored in treated effluent tank. Dosing tanks and pumps are provided for dosing of chemicals in the treated effluent. Treated effluent shall be suitable for injection to water injection well or to disposal well.

Oil separated out from effluent water tank CPI and IGF is collected in a oil tank and pumped back to CBD Vessel. Sludge drained out from CPI and IGF is taken to a sludge drying bed for its dewatering.

INSTRUMENT AIR SYSTEM

Instrument air requirement of the CGGS is met by a Instrument Air Package, which includes Instrument Air Compressor, Water Separator, Surge Vessel, Air Pre-filter, Instrument Air Dryer and Air After-filter. The instrument air from the dryer package is received in Instrument Air Receivers (V-1031A/B) and then sent to instrument air header.
The Package unit includes:

i) Inlet air filters.
ii) Air Compressors (Make Atlas Copco ZT45)-02 Nos.
iii) Compressor After cooler
iv) Water Separator
v) Surge Vessel
vi) Air Pre-filter
vii) Heatless Dryer
viii) Instrument Air Filter
ix) Local Control panel and complete instrumentation within the package

Capacity of each of the Instrument Air Package is of 390 Nm3/hr. The Package is skid mounted for ease of relocation if required. In addition, 01(one) no. diesel engine driven portable air compressor is also available at the installation to meet any emergency situation.
The Instrument air and unit is provided with a local control panel, which is housed in control room.

DRY INSTRUMENT AIR SPECIFICATION

Design Flow rate	**:**	390 Nm3/hr.
Design Pressure	:	12 kg/cm2 g
Design Temp. (Min /Max)	:	7 / 70 Deg C
Operating Pressure	:	8.5 kg/cm2 g
Operating Temp (Min /Max)	:	30 / 50 Deg C
Water Dew point	:	-40 Deg C at 1 Atm
Solid Particles	:	99.9% > 1 micron removed
Air Quality	:	Oil Free

Instrument air having a dew point of -40°C at atmospheric pressure is required for pneumatic actuation of instrumentation control valves, shut down valves, blow down valves etc. Two air compressors (one operating, one stand by) of adequate capacity & one portable air compressor of same capacity are provided to compress the atmospheric air to 9 Kg/cm2 pressure. The compressed air is then further passed through Instrument air drying unit (Desiccant type) so as to obtain the dry air required to meet the instrument air requirement. In case of power failure, the air receiver that acts as the surge vessel, supplies air up to 5 Kg/cm2 to the air drying unit. The compressed air first passes through air pre filter (Filter coalescer) designed to remove water/ particulates > 1 micron with a maximum pressure drop of 0.5 kg/cm2. The instrument air dryer is of twin tower adsorption dryers with one tower online and one tower regenerating.

The dryers operates on cyclic automatic regeneration, with a side stream of the dry air generated by the online dryer being used as regeneration stream. Moisture analyzer continuously sample and monitor the moisture content and determine the Dew point of dry air. The package is provided with a portable air compressor (in addition to the two compressors) with provision to line up, and is of skid mounted for relocation and diesel engine driven. The package is skid mounted complete with all associated instruments and inter connected piping.

CLOSED BLOWDOWN SYSTEM

Pure oil drains from slug catchers, Two phase separators, Flare KODs and other process equipment stored in underground Closed Blowdown Vessel. The stored oil is slowly pumped to Condensate Flash Vessel.

OILY WATER SEWER SYSTEM

Oily water drains from process equipments, process curbed areas, and leakages from pumps etc. are routed to OWS Drain Pit for gravity separation of free oil and water. The water free from bulk of the oil is pumped to Effluent Tank and the skimmed oil is pumped to underground CBD Vessel for recycling back to inlet of Condensate Flash Vessel.

FIREFIGHTING SYSTEM

Fire protection systems consists of fire water reservoir, fire pump room, fire water piping with all fittings, valves & supports, Safety shower & eyewash etc. Firewater distribution ring main is sized for 120% of the design water rate. Design and providing fire water system for a minimum residual pressure of 7kg/cm2 at the hydraulically remotest point of application at the designed flow rate around the facility. Hydrant and monitors are located along roadside at appropriate distance from storage or equipment to be protected. Double-headed hydrants with two separate landing valves on 100 mm stand post is provided with outlet situate 1.2 mtrs. above ground level. Connection for fixed water monitors is provided with independent isolation valves.

HOSE PIPES/BRANCH PIPE/NOZZLES Adequate nos. of hoses (Type B) of 63 mm diameter as per IS Standard is provided at least at the rate of two lengths (15m each) per hose box. All coupling of hose pipe is of instantaneous spring-lock type and nozzle is not less than 16mm. All coupling branch pipes and nozzles is of gunmetal or stainless steel and comply with IS: 903. Number of hose, branch pipes and nozzles is as per the requirement of TAC.

Mobile Foam System is of one no. of portable (trailer) foam monitor is provided for pool fire anywhere in the facility. The system is able to throw water also as the need arises for fighting fire or exposure protection.

Fixed foam system of semi-automatic type is provided along with alternate provision for injecting foam with fire tender, for FGS Condensate Test Tanks and Condensate Storage Tank in CGGS. Foam compound storage tank dedicated to the fixed foam system is of SS material having capacity of 2 (two) KL. In addition to the fixed foam system, FGS Condensate Test tanks and Condensate Storage Tank in CGGS is also protected with medium velocity fixed water spray system and water monitor coverage.

Diesel engine driven fire water pumps (1 working + 1 standby) is provided in CGGS and is of 410 m3/hr capacity and the connected firewater storage tank's capacity is approximately 850 m3 based on minimum 2 hours' aggregate pumping capacity. This satisfies the firewater requirement for CGGS as laid down in OISD-STD-189 and TAC for High Hazard (A) occupancy. Firewater pumps are of TAC/BIS approved type.

JOCKEY PUMPS 1 working (Electric Motor Driven centrifugal pump) + 1 Standby (Electric Motor centrifugal pump) is of capacity 12.3 Cum/hr (3% of designed fire water rate) at network pressure not less than 7 kg/cm2.
Well ventilated pump room is (meeting the requirement of TAC) to house pumps and electric/instrument panels. It offers minimum obstruction to the convenient handling

and hoisting of equipment therein. The pump room has provision for lifting, lowering and handling of firewater pumps, diesel engine, etc. placed therein.
Fire extinguishers are of suitable types and capacities is provided strategically and fixed on hangers in all buildings and hazardous areas; and near electrical installations, or any other hazardous locations. Types, capacities and distribution of these fire extinguishers conform to the requirements of OMR-84, OISD-189, TAC, NFPA, IS-2190. etc. Hose pipes and nozzle is installed near each hydrant in glass fronted hose boxes of suitable design as per relevant standard.
Appropriate facility (15' x 10' approximately) is provided for storage of foam jerrycans/drums, additional fire hoses & other fire fighting appliances and parking of portable (trailer) monitor, adjacent to the firewater pump house of each station.

FUEL GAS HEATER

The fuel gas heater comprises of electric circulation heaters, control panels, pressure relief valves, vessel drain/purge valves. Isolation valves and other required inter connections. The signals from instruments within the package are terminated on Junction Box provided by the package vendor. Treatment Package is Skid Mounted. The typical components of FUEL GAS HEATER PACKAGE are coils, radiation control / management system, three way control valve at feed inlet to control the outlet temperature etc. The system is kept stand by at present.

PROCESS DESCRIPTION

The fuel gas (Natural gas) at 5.0 kg/cm2g pressure and 20deg C temperature is first filtered in a fuel gas filter (not in scope of this package) to remove liquid particles and suspended particulate matter. The filtered fuel gas is then preheated from 20deg C to 45deg C in the fuel gas heater, before being supplied to burners. The fuel gas electric heater is skid mounted compact design

DESIGN DATA

	INLET	OUTLET
Fuel gas (Nm3/hr)	200	200
Temperature deg C	20	45
Pressure kg/cm2 g	5.0	-

INLET OF FUEL GAS ELECTRIC HEATER

Properties	**values**
Fuel gas flow (Nm3/hr)	200
Density (Kg/m3)	5.0
Molecular Weight	18.5
Specific Heat (KJ/kg-C)	2.5
Cp / Cv	1.381
Z Factor	0.9296
Viscosity cP	0.012

SLUG CATCHER-BAGHJAN TRAIN

The Slug Catcher is of finger type and consists of several modules; inlet distribution manifold, separation bottles, gas outlet header and liquid collection. The signals from instruments within the package are terminated on Junction Box provided by the package vendor.

UNIT DESCRIPTION

The typical components of Finger Type Slug Catcher are inlet distribution manifold, separation bottles, gas outlet header and liquid collection headers, junction box terminal for pressure signal.

PROCESS DESCRIPTION

Feed (gas/liquid stream) is received into the Slug Catcher at CGGS- Madhuban through a 16" line from FGS-Baghjan. The inlet distribution header takes the incoming gas/liquid stream, slows it down, and split it into several smaller streams to allow uniform flow into the separation bottles.

In separation bottles majority of the gas/liquid separation is achieved. The gas separated is continuously displaced from the separation bottles, through gas risers to the gas outlet header. Gas outlet header is provided to collect separate gases from different separation bottles through individual risers, and continuously delivers the gas into the downstream system. Liquid collection headers hold the liquid at line pressure and number and length of these collection headers depends on storage requirements.

DESIGN DATA

Inlet line size:		16"
Inlet line length:		42 kms
Estimated Slug Volume:		425 m^3
Flow Rate:	Gas	1.5 MMSCMD
	HC Liquid	300 klpd
	Water	20 klpd
Pressure:	Operating	17 barg
	Design	47 barg
Temperature:		27 °C
Molecular weight of gas:		18.9
Density of HC Liquid:		800 kg/m^3

DESIGN SPECIFICATION

	Inlet distribution header	Finger	Gas risers	Gas outlet header	Liquid collection header
Nos.	2	8	8	1	2
Size (inch)	48	48	16	10	48
Length (mm)	-	65000	2000	-	-

SLUG CATCHER -CHABUA TRAIN

The Slug Catcher is of Vessel type and is provided with the internals (half open pipe, inlet
calming baffles, outlet wire mesh etc.). The signals from instruments within the package are terminated on Junction Box provided by the package vendor. The Unit is designed and constructed in order to guarantee maximum operating reliability and the operating flexibility without any effect on the quality and capacity of the products.

UNIT DESCRIPTION

The unit consists of a horizontal vessel along with its control. The estimated slug volume in the Chabua train is 110m3.

PROCESS DESCRIPTION

Feed (gas/liquid stream) is received into the Slug Catcher which is 3 phase separator at CGGS Madhuban through a 16" line from FGS-Chabua.

DESIGN DATA

Inlet line size: 16"
Inlet line length: 27 kms
Estimated Slug Volume: 110 m^3
Flow Rate: Gas 1.5 MMSCMD
HC Liquid 200 klpd
Water 20 klpd
Pressure: Operating 17 barg
Design 47 barg
Temperature: 27 °C
Molecular weight of gas: 18.9
Density of HC Liquid: 800 kg/m^3

DESIGN SPECIFICATION

Length of the Vessel (mm)	: 15200
Diameter of the Vessel (mm)	: 3800
Gas inlet nozzle (inch)	: 16
Gas outlet nozzle (inch)	: 16
Liquid inlet nozzle (inch)	: 3

INSTRUMENTATION CONTROL SYSTEMS

Foundation Field bus technology is used for network communication for control and instrumentation systems. The main components of the instrument and control system which can affect the overall efficiency and optimal functioning of the plant are DCS, PLC, Metering, F & G system, Field transmitters, Control valves, Shutdown valves, Gas Chromatograph. The emergency shutdown system is based on PLC which is SIL3 certified.

OBJECTIVES

The Automation, Control and Instrumentation requirements are:

i) Provenness of the selected technology
ii) Operability
iii) Reliability
iv) Maintenance
v) Un-compromised levels of protection of Health, Safety, Security and Environment. The automation system utilizes state of the art Foundation Field bus instrumentation for the control and monitoring of this plant.
vi) All instruments are designed and manufactured for intrinsic safety for the applicable hazardous areas. Fieldbus network is designed based upon FISCO (Field bus Intrinsically Safe Concept) technology. Also High powered trunk concept is used with field barriers inside DGMS approved junction boxes, no live maintenance on trunk and surge protector in each trunk as well as both side of field barrier.
vii) All field instruments are provided with lightning protection circuits and designed and manufactured to operate in 100% relative humidity environment.

Lightning & surge protection for field bus systems is considered. This is used to protect electronic circuits and equipment within the field bus system and the associated field bus trunk from high voltages and surge currents induced by lightning and other form of transients. Redundant field bus power system is used so that the system becomes “hot-swappable” meaning that individual power conditioning modules and input power supplies can be replaced without interrupting power or communication on the field bus segment.

SYSTEM DESCRIPTION

The control and automation system for the plant is an integrated system comprising a DCS for plant control and a PLC for executing shutdown function, Dedicated Flow

computers for custody transfer applications, an addressable fire alarm panel is also provided. This is a fully integrated control system which improves plant productivity and safety. This system also provides inputs to SCADA. Modbus integration of the DCS with ESD PLC, Flare control DCS, Flow computers, Gas chromatograph is done. Facilities for on-line trending, Historical Trending, Reports, Alarms, Alarm History, event list etc. are provided.

The system has the following integrated core functions-
Operations: Various displays provide a consistent method for interacting with multiple applications. The displays are designed to provide an intelligent and focused presentation enabling rapid response. Optimal reaction requires real- time knowledge that an upset has occurred, or will occur. The system provides notification through its audible and visual alarm and event presentation. The system provides a complete set of O&M Contractor functions that include realistic process graphics with standard faceplates, superior trending capabilities, intelligent alarm and event handling and production reporting. Complete functionality simplifies and streamlines O&M Contractor interaction for more reliable control.

Safety: Safety of the plant is considered by using SIL certified PLC system for Emergency Shutdowns.

Information Management: Powerful information management software collects, stores, retrieves and presents historical process and business data to enhance the usefulness of data from all operations.

Control and I/O : Comprehensive suite of standards based hardware and software meets the needs of total plant control. Controllers are complimented with a full line of industrial I/O interfaces to meet all plant environments.

Device management: System integration of intelligent field devices via foundation fieldbus standards lowers lifecycle costs through significant cost savings in the design, implementation and operation of field equipment. The process control system is field bus compatible.

The system also includes a plasma display. For Emergency shutdown, a PLC based system is used. This is a fail-safe PLC with SIL 3 certification and is dual modular redundant.

TECHNICAL DETAILS OF DCS SYSTEM

Sl. No.	Material	UOM	Description	QTY	Part Number	Make
1	MD Plus Controller	Nos	MD Plus Controller Make:Emerson Model:VE3006 Local bus power supply: 5VDC,1.4A max	12	VE3006	Emerson
2	2 wide Power/Controller Carrier	Nos	2 wide Power/Controller Carrier Make:Emerson	12	VE3051C0	Emerson

			Model:VE3051C0			
3	Enhance System Power Supply 24/12 v DC input	Nos	24/12 v DC System Power Supply Make:Emerson Model:VE5009	12	VE5009	Emerson
4	Analog Input Cards	Nos	Analog Input Cards: 8 Channels 4-20 mA; HART;Fused I/O Termination Block Make:Emerson Model:VE 4003S2B2	2	VE 4003S2B 2	Emerson
5	Discrete Input cards	Nos	Discrete Input cards : 8 Channels 24 v DC; Dry contact; I/O Termination Block Make:Emerson Model:VE4001S2T2B1	11	VE4001S 2T2B1	Emerson
6	Discrete Output cards	Nos	Discrete Output cards : 8 Channels 24 v DC; High Side; I/O Termination Block Make:Emerson Model:VE4002S1T2B1	9	VE4002S 1T2B1	Emerson
7	Simplex H1 Fieldbus I/O Interface cards	Nos	Simplex H1 Fieldbus I/O Interface cards and terminal block Model:VE4017PO	7	VE4017P O	Emerson
8	Redundant H1 Fieldbus Interface cards,	Nos	Redundant H1 Fieldbus Interface cards, Two wide termination block with 2 ports Make:Emerson Model:VE4037PO	29	VE4037P O	Emerson
9	Redundant serial Interface cards	Nos	Redundant serial Interface cards with 2 ports & Termination block Make:Emerson Model:Make:Emerson Model:VE4036P2	4	VE4036P 2	Emerson
	DeltaV Smart Switch	Nos	Smart 24 port Switch; each port is 10/100 Base Tx Copper RJ45; includes 2 RJ45 uplink ports and 2 slots for VE6050-Series Transceiver modules; European Power Cord	2		Emerson
10	8 wide I/O interface carrier with carrier shield bar	Nos	8 wide I/O interface carrier with carrier shield bar Make:Emerson Model:VE4050S2K1C0	24	VE4050S 2K1C0	Emerson
	Carrier Blank Cap	Nos	Model: VE6101	28	Carrier Blank Cap	Emerson

11	8 wide I/O interface carrier with Carrier Shield bar and Dual Enhanced Carrier Extension Cables	Nos	8 wide I/O interface carrier with Carrier Shield bar and Dual Enhanced Carrier Extension Cables Make: Emerson Model:VE4050E2CO	6	VE4050E 2CO	Emerson
12	Bulk Power Supply	Nos	Bulk Power Supply 12 VDC 20A Make - Phoenix (Emerson) Model No. QUINT-PS/1AC/12DC/20	6	QUINT-PS/1AC/ 12DC/20	Emerson
13	Bulk Power Supply	Nos	Bulk Power Supply 24 VDC 40A Make - Phoenix (Emerson) Model No. QUINT-PS/1AC/24DC/40	4	QUINT-PS/1AC/ 24DC/40	Emerson
14	Quint Diode	Nos	Make - Phoenix (Emerson) Model No. - QUINT-DIODE/40	5	QUINT-DIODE/4 0	Emerson
15	FISCO Power Supply	Nos	FISCO Power Supply (FF Accessories) Make - MTL (Emerson) Model 9122	71	9122	MTL
16	Surge Protection for Trunk Protection	Nos	Surge Protection for Trunk Protection (FF Accessories) Make - MTL (Emerson) Model - FP-32	71	FP-32	MTL
17	Redundant Logic Solver Module for DeltaV SIS	Nos	Redundant Logic Solver Module for DeltaV SIS Make:Emerson Model:VS3202	41	VS3202	Emerson
18	SISNet Terminator Assembly	Nos	SISNet Terminator Assembly Make:Emerson Model:VS6051	4	VS6051	Emerson
19	Redundant SISNet Repeater	Nos	Redundant SISNet Repeater Make:Emerson Model:VS6002	4	VS6002	Emerson
20	8 wide I/O interface carrier with Carrier Shield bar,Dual Enhanced Carrier Extender Cables, and Redundant SISNet coax cables	Nos	8 wide I/O interface carrier with Carrier Shield bar,Dual Enhanced Carrier Extender Cables, and Redundant SISNet coax cables Make:Emerson Model:VE4050E2C2	10	VE4050E 2C2	Emerson

21	Relays	Nos	SIS Relay for DI 5A,250VAC Paramount Coil-24VDC 640ohm Make:Emerson Model:VS6907	190	VS6907	Emerson
22	Relays	Nos	SIS Relay for D0 5A,250VAC Paramount Coil-24VDC 640ohm Make:Emerson Model:VS6907	177	VS6907	Emerson
23	Barrier	Nos	Analog I/P Barrier Make:STAHL (Emerson) Model:9160/13-10-11	111	9160/13-10-11	STAHL
24	Barrier	Nos	Digital I/P Barrier Make:STAHL Model:9170/10-14-12	216	9170/10-14-12	STAHL

TECHNICAL DETAILS OF FIELD INSTRUMENTATION ITEMS AT CGGS

Instrumentation items list (CGGS - MADHUBAN)					
SL NO	**ITEM**	**UOM**	**TOTAL QTY**	**MAKE**	**RANGE**
1	Temperature Transmitter (HART)	Nos	36	Emerson (Rosemount)	0 – 100 deg C
2	Temperature Transmitter (FF)	Nos	10	Emerson (Rosemount)	0 – 100 deg C
		Nos	48	Honeywell	0 – 400 deg C
3	Pressure Transmitter (FF & HART)	Nos	124	Emerson (Rosemount)	Max Range:0– 50 kg/sqcm
4	Differential Pressure Transmitter (FF)	Nos	10	Emerson (Rosemount)	0 – 1 kg/sq cm
5	Flow Transmitter DP-TYPE (FF)	Nos	8	Rosemount (Emerson)	Max range 0 - 60000 cubic mtr/ hr
6	Level Transmitter DISPLACER TYPE (HART & FF)	Nos	2	Chemtrol	Max range 0 – 2400 mm
7	Servo opreated internal displacer type level transmitter (HART)	Nos	3	Endress + Hauser	Max range 0 – 2450 mm

8	Level Transmitter DP-TYPE (FF & HART)	Nos	30	Emerson	
9	Level Transmitter (GWR TYPE) ,(HART & FF)	Nos	24	Magnetrol	
10	Interface Level Transmitter GWR TYPE,(FF)	Nos	8	Emerson	
11	Level Transmitter FMCW TYPE,(FF)	Nos	3	Emerson	Max range: 0 – 8600 mm
12	Thermocouples (K type)	Nos	48	Altop Industries	Max temp 1200 deg C
13	Ultrasonic Flowmeter	Nos	36	Daniel	-
14	Coriolis mass flow meter	Nos	2	Micromotion (Emerson)	-
15	Flare flow meter (Ultrasonic type)	Nos	1	Sick GMBH	-
16	Dew Transmitter	Nos	3	Alpha moisutre systems (Emerson)	-
17	Magnetic flowmeter	Nos	2	Emerson	
18	Pressure Indicator	Nos	77	GIC	Max Range 0 – 40 kg/sq cm
19	Temperature Indicator	Nos	36	GIC	Range 0- 100 deg c
20	Temperature Element	Nos	42	Altop Industries	
21	Flow Element (Orifice type)	Nos	11	-	
22	Level Indicator	Nos	61	-	
23	Self actuated control valve	Nos	4	Fisher	
24	Level Control Valve	Nos	18	Fisher	

25	SOV for SDV,BDV & ROV	Nos	72	Rotex& ASCO	
26	Limit Switches for SDV,BDV &ROV	Nos	72	P&F	
27	AFR for SDV,BDV &ROV	Nos	72	Norgren/SN	Max 0- 10 kg/sq cm
28	AFR for Control Valve	Nos	65	Norgren/SN	Max 0- 10 kg/sq cm
29	Positioners for Control Valve	Nos	65	Fisher & Dresser	
30	AFR for Control Valve	Nos	65	Fisher & Dresser	
31	Remote ON/OFF Valve	Nos	6	Intervalve India	
32	SOV for flare burners	Nos	48	Rotex	
33	DCS/ESD System	Nos	12	Emerson	
34	PDC	Nos	1	Emerson	
35	CCTV System	Nos	1	-	
36	Gas Chromatograph analyser	Nos	4	Daniel	
37	Metering panel	Nos	3	Daniel	
38	Infrared Flame detectors	Nos	18	Spectrex	
39	Hydrocarbon Gas Detector	Nos	28	Crowcon	
40	Open Path Gas Detector (Transmitter/Receiver)	Nos	3	Spectrex	
41	Fire Alarm system	Set	1	Tyco	
42	Air Compressor	Nos	2	Atlascopco	

43	Diesel operated air compressor	No	1	Kirloskar	

POWER SUPPLY

IN PLANT POWER SUPPLY

It is arranged through in plant generator set using Gas as fuel; this power is used for all the loads. In plant power supply is by suitably designed Gas engine driven Generator set (make "Caterpillar") with 100% backup i.e. 1W+1S. The Generator Set consists of an engine, a generator, and a control system with Auto Mains Failure (AMF) panel with paralleling facility and all other necessary accessories at CGGS Madhuban. All the generators have 20% spare capacity for future loads over & above the present load requirement.

CRITICAL POWER (UPS FOR MADHUBAN, CHABUA)

It is arranged through uninterrupted power supply system which is designed for the following type of loads, at least for 12 hrs whenever GG power is not available. The critical loads shall be of following types: - Critical instrumentation loads/ controls - Critical security system loads - Critical communication loads - Plant shut down loads - Critical Lighting loads Critical loads are those, which require continuous power without momentary interruption.

EMERGENCY POWER (DG SET FOR MADHUBAN)

It is arranged through suitably designed DG Set. Emergency power shall feed the following type of loads whenever power from gas driven generators is not available. The emergency loads shall be of following types: - UPS load - Lighting transformer for hazardous area - Fire Water System - Any other load considered essential Emergency loads are those, which require power when gas generators are not available for safety reasons.

BLACK START/EMERGENCY POWER (DG SET FOR CHABUA)

It is arranged through suitably designed DG Set. Black Start power shall feed the following loads to prepare gas(fuel) required for GG set. The Black Start loads shall be of following types: - Instrument air system - Water treatment system (for fire fighting system) - Heater load (for gas heater) - Lighting - UPS - Any other load considered essential.

LV Generator (with Gas fuel) for CGGS Madhuban

A. Number of generator: 2 Nos. (1W+1S)
B. Generator rating/Voltage/Power factor: 906kVA/ 415V/ 0.8
C. Starting: Battery (AMF Type)
D. Paralleling Facility: Available

LV Generator (with Diesel fuel for critical load)) for CGGS Madhuban

A. Number of generator: 1 No.
B. Generator rating/Voltage/Power factor: 200 kVA/ 415V/ 0.8
C. Starting: Battery
D. Paralleling Facility: Not Required

TECHNICAL DETAILS OF GAS ENGINE DRIVEN GENSET

Engine			**Alternator**	
Gas Engine Model No. G3512		i)	Make/Model	Caterpillar/SR4
906 KVA/725 KW		ii)	kVA	906
		iii)	Rated FL Current(Amps)	1308
		iv)	PF	0.80
		v)	Phase/Frequency	3Phase/50hz
		vi)	RPM	1500
		vii)	Rated Voltage	400 Volt AC
		viii)	Insulation	Class H
		ix)	Excitation	33 Volts, 7.2 Ampere
		x)	Rectifier Bridge Type	6 wire, delta, parallel
		xi)	Harmonics Content	

TECHNICAL DETAILS OF DG SET

Engine		**Alternator**	
Greaves Cotton Ltd(United Machinery and appliances) Model:GW200	i)	Make	Stamford
200 KVA/160 KW	ii)	kVA	200
	iii)	Rated FL Current(Amps)	270.2
	iv)	PF	0.80
	v)	Phase/Frequency	3Phase/50hz
	vi)	RPM	1500
	vii)	Rated Voltage	415 Volt AC
	viii)	Insulation	Class H
	ix)	Excitation	58 Volts, 2.3 Ampere
	x)	Rectifier Bridge Type	S. Star
	xi)	Harmonics Content	

UTILIZATION VOLTAGE

A. Generator neutral	Resistance earthed with generator NGR and neutral contactor
B. MV distribution system	Three phase three wire (as generator is resistance grounded)
C. MV motor voltage	415 VAC, 3 phase, 50 Hz
D. Mechanical transfer at MV (at PCC level) two incomers with interlock	Yes
E. Motor rated below 0.18 kW	240 VAC, 1 ph

F. UPS system in incoming power supply	415 VAC, 3 phase, 50 Hz
G. Power panels and auxiliary service boards incoming power supply	240 VAC, 3 phase, 3 wire, 50 Hz
H. Welding receptacles	415 VAC, 3 phase, 50 Hz
I. Bulk load like process heaters etc.	415 VAC, 3 phase, 50 Hz
J. Lighting for non-hazardous area	240 V AC, 3 phase, 50 Hz through 415/240 VAC lighting transformer with NGR
K. Convenience outlets for non-hazardous areas	240 V AC, 3 phase, 50 Hz through 415/240 VAC lighting transformer with NGR
L. Lighting for hazardous area	240 V AC, 3 phase, 50 Hz through 415/240 VAC lighting transformer with NGR
M. Convenience outlets for hazardous areas	240 V AC, 3 phase, 50 Hz through 415/240 VAC lighting transformer with NGR
N. Motor operated valves	415 VAC, 3 phase
O. UPS output voltage	230 VAC, 1 phase
P. Normal instrumentation power supply	230 V +/- 5%, 50 Hz +/- 2% AC

VOLTAGE AND FREQUENCY VARIATION

AC SYSTEM

The following maximum variations from its nominal value shall be considered for equipment:

Voltage - 415V ±5 %
Frequency - 50Hz ±5 %

The following maximum variations shall be considered:-

- For electrical control circuit ±5%

SYSTEM NEUTRAL EARTHING

Neutral of the GG sets are grounded with neutral grounding resistor (NGR) and neutral contactor in the respective circuits.

CONTROL OF ELECTRICAL SYSTEM

All circuit breaker are controlled locally i.e. from respective switchboard/panel. No remote control is used for circuit breakers. No auto-changeover/bus transfer Scheme is used for incomer breakers.
Motors are controlled from field as well as from a remote distribution control system (DCS), located in Control Room. Local push button stations are provided in field near each motor. Control from DCS is as follows:

i) Start command from DCS
ii) Stop command from DCS
iii) Feedback – Available to DCS
iv) Feedback – Run to DCS
iv) Feedback – Trip on Fault to DCS
v) Permissive interlocks as required from DCS
vi) Selection of Local/Remote control from DCS

For wiring of motor starter interface with DCS, a marshalling section is provided with PCC/MCC, where wiring from all starters is terminated. The marshalling cabinet consists of aux. relays with coil rated for 24 V DC output to be generated by DCS for motor Start/Stop and Local/Remote selection. All the signals are hard wired from DCS to marshalling cabinet from where the signals are internally hardwired to respective MCC modules. For status feedback of motors to DCS the signals of motor starter status is hard wired up to marshalling cabinet and converted to signals suitable for transmitting to DCS/PLC through serial link

GENERATOR

Power generators form a complete package consisting of engine, alternator panel, control panel etc. Generator is designed to have allowable voltage dip when largest motor of the system is started with all other loads are ON. Unless otherwise specified the excitation system is brushless type. The generators have automatic voltage regulators. Proper instrumentation is provided for monitoring all parameters. Necessary alarm/annunciation is provided for abnormal condition.

The generators have protection against short circuit, earth faults, overloads, field failure, prime mover failure & earth leakage etc. Stator ends are brought out to terminal box mounted externally. The terminal boxes have sufficient space to receive the specified size of cables. Rotating rectifier diodes is located in easily accessible location to have ease of maintenance.
Breaker in generator control panel is closed on to load only after the requisite voltage builds up. Two generators (1W+1S) are provided; hence they are suitable for auto mains failure. Provision of paralleling is also provided

UPS

Static Uninterrupted Power Supply (UPS) system comprises of the following major equipment:

- Rectifier/charger

- Batteries
- Static inverter
- Electronic static switch and regulated transformer (where specified) in bypass circuit.
- Manual maintenance bypass switch.
- Metering + protection equipment and annunciation, synchronizing equipment & all logic's.
- Outgoing feeders/Distribution boards as specified elsewhere.

The UPS system is an integrated system comprising static rectifiers, battery, static inverters, static switches, manual by pass switch, AC distribution board , voltage stabilizer in by pass, isolating and protection devices and all other equipment/ accessories required for completeness of the system. The UPS system shall be suitable to feed all loads connected to output which are primarily instruments, DCS, computers, disc drives and other SMPS equipment leading to high crest factor of the load. The UPS system is based on latest generation technology having proven performance of satisfactory operation for similar applications. The inverter is static PWM, IGBT type. All components is capable of withstanding the thermal and dynamic stresses resulting from internal and external short circuits and circuit switching operations etc. The design of the UPS is such as to minimize the risk of short circuits and ensure personal and operational safety.

A.C. DISTRIBUTION BOARD

AC distribution board is floor mounted, fixed type with compartmentalized construction, having horizontal and vertical bus-bars. All bus bars are PVC sleeved. Vertical cable alley is provided for the termination of outgoing cables. Suitable supports are provided for supporting incoming and outgoing cables. All outgoing switches are air insulated load break type. Fuses on outgoing feeders are fast acting semiconductor type /HRC type (as required based on type of load) and cable entry is from bottom. The entire system is provided with alarm control, indication and annunciation instruments are provided. The gland plate of the distribution board is non-magnetic type.

FIRE ALARM SYSTEM& GAS DETECTORS

Online fire alarm system covers all the plant buildings, process area, utility area, storage areas, etc. Similarly, online gas detectors are also provided in the plant area for detection of gas leakages in the plant area. The configuration for the above systemsare based on as per statutory/regulatory requirements**.**

CCTV SYSTEM

CCTV System complete with camera(s) & monitor(s) is provided in CGGS & OTP, Duliajan to monitor process area, utility area, storage areas etc

The above descriptions of processes/equipments are not complete and are meant to give overall information about the plant. It is advised the O&M Contractor to visit the plant for detailed information before submitting bid.

CONTROL ROOM, OFFICE BUILDING

CGGS is having a state of the art control room & operator building along with Electrical, Battery room and office rooms, conference hall, kitchens, toilets etc. with centralized AC & individual room wise AC system.

SHIFT WORKERS CABIN – 1 NO

A shift workers' cabin has been constructed for the rest & shelter for workers engaged in the plant. Attached toilet facility is also available with the cabin.

SECURITY CONTROL ROOM WITH SECURITY BARRACKS AND WATCH TOWERS:

The station is manned by security personnel round the clock on 24x7 basis. Separate security barrack is available within the installation.

There are 4(four) security watch towers for monitoring the security of the installation along the boundary walls. Security watch towers are manned round the clock on 24 x7 basis.

ROADS AND DRAINS

RCC road to the plant, access to other facilities of the plant and around the process area has been constructed in CGGS Madhuban. Also drain on both sides of the road has been constructed for draining out the rain water from the plant.

BOUNDARY WALL & PERIPHERY ROADS

CGGS Madhuban premise is encircled with 3.66m high boundary wall with two nos. of entrance gate along with periphery patrolling road along with emergency exit gates.

GREEN BELTS, OPEN AREAS, GROUND WATER RESERVOIRS & PONDS FOR ENVIRONMENTAL PROTECTION & CONSERVATION OF NATURAL RESOURCES

The plant area is surrounded by green belt areas and different varieties of trees are planted along the boundary wall of the main plant. In addition there are 2(two) no. of ponds available around the flare pit area for fishery purpose.

2(two) ground water reservoirs are also constructed inside the plant premise for harvesting rain water.

Open areas and road sides are used for gardening purpose

1.03 GENERAL DESCRIPTION OF FGSCHABUA

SITE LOCATION, AREA & PERIPHERY

The FGS Chabua is constructed at Chabua at a distance of around 6 km from Chabua Town, in Dibrugarh district of Assam, under Hugrijan Mining lease. Total area of FGS Chabua is **around 2.7hectares** and same is protected by a 12 feet high boundary wall. The periphery of the entire FGS is around 650 m and flare pit periphery is around 340m.

TECHNICAL DETAILS:

Design Capacity : 1.25 MMSCMD

Turndown : 20%
No. of Wells : 10 nos
Shut-in well condition : Shut-in pr. 320 7-20Ksc, Tempr. 7-20^{0}C
Capacity of Wells:

Well no.	Normal flow rate	Designed flow rate	Min. Operating pressure	Max. operating pressure
Well-1	0.13 MMSCMD	0.30 MMSCMD	100 Ksc	210 Ksc
Well-2	0.13 MMSCMD	0.30 MMSCMD	100 Ksc	210 Ksc
Well-3	0.13 MMSCMD	0.30 MMSCMD	100 Ksc	210 Ksc
Well-4	0.13 MMSCMD	0.30 MMSCMD	100 Ksc	210 Ksc
Well-5	0.13 MMSCMD	0.30 MMSCMD	100 Ksc	210 Ksc
Well-6	0.13 MMSCMD	0.30 MMSCMD	100 Ksc	210 Ksc
Well-7	0.13 MMSCMD	0.30 MMSCMD	100 Ksc	210 Ksc
Well-8	0.13 MMSCMD	0.30 MMSCMD	100 Ksc	210 Ksc
Well-9	0.13 MMSCMD	0.30 MMSCMD	100 Ksc	210 Ksc
Well-10	0.13 MMSCMD	0.30 MMSCMD	100 Ksc	210 Ksc

Nos of Indirect water Bath heaters : 05 Nos,

Capacity of Inlet Manifolds
a) Test Manifold : 0.50 MMSCMD
b) Lean Gas Manifold : 1.25 MMSCMD
c) Rich Gas Manifold : 1.25 MMSCMD

Capacity of Separators
a) Test Separator : 0.50 MMSCMD
b) Production Separator, Lean : 0.75 MMSCMD
c) Production Separator, Rich : 0.50 MMSCMD

Capacity of Flares : 1.25 MMSCMD at a separator

No. of Stream days per Year : 365 Days

Designed liquid separation capacity : 200 KLPD

Designed water separation capacity : 100 KLPD

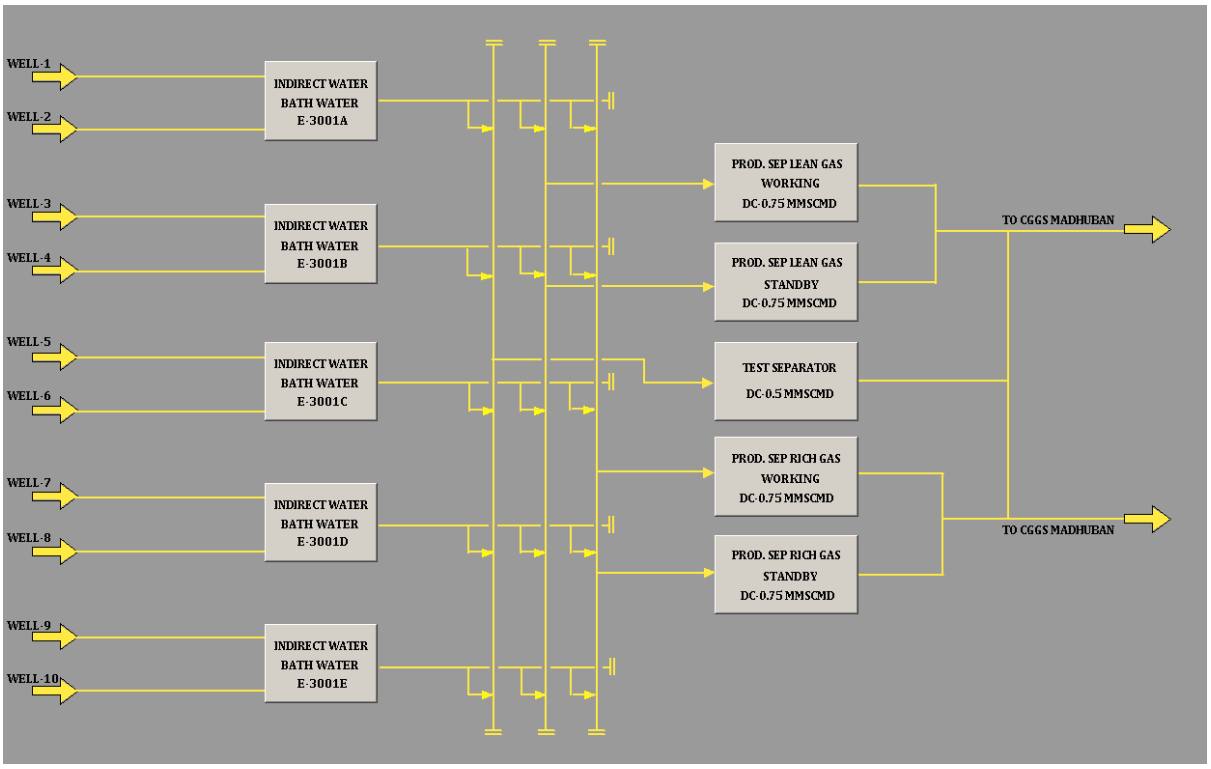
Pigging Facility : 16”OD pig launching system with 10”NB inter-connection line from Hatiali, Chabua areas.

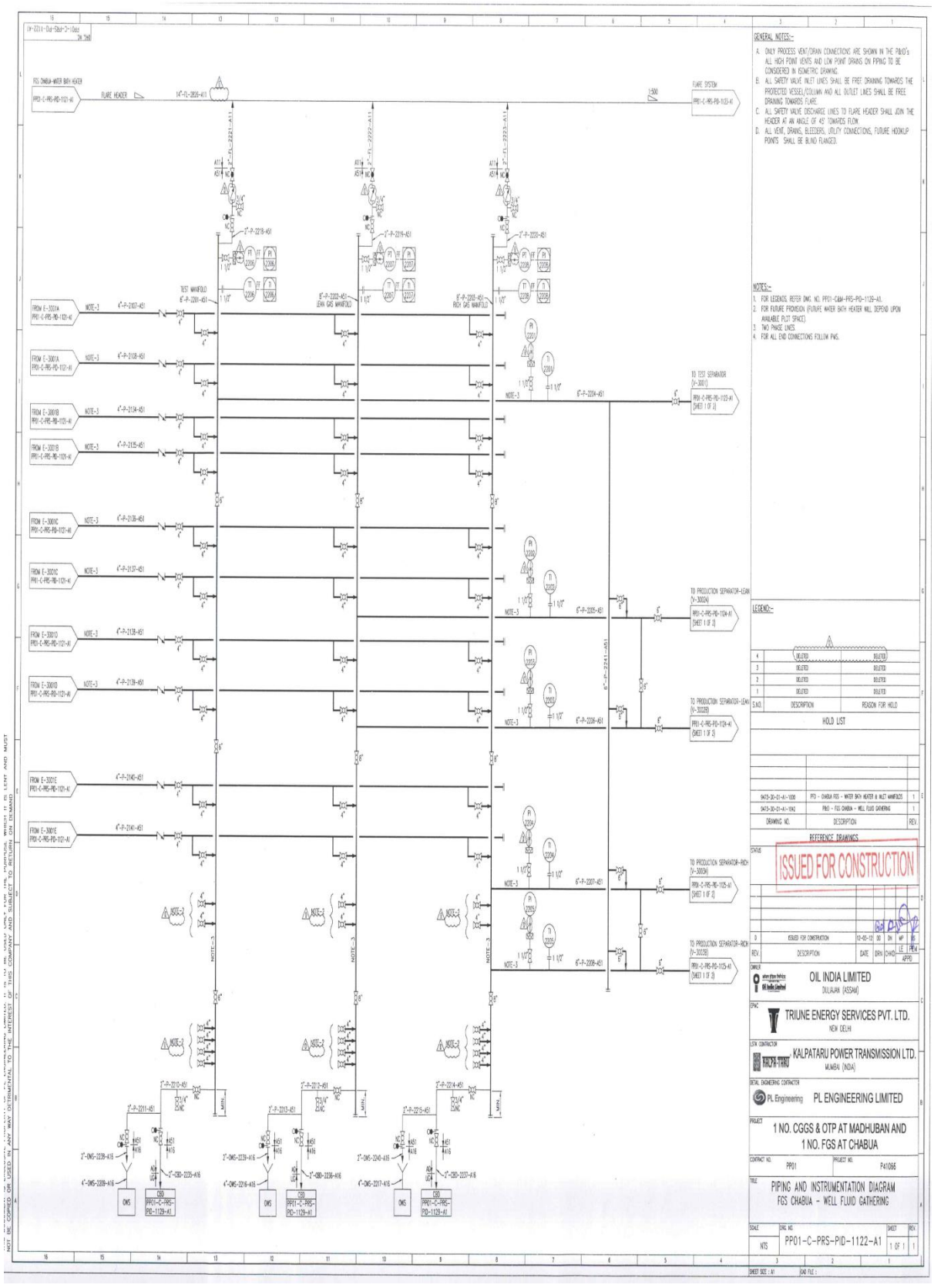
Drain line to COD/QPS : 2 (two) nos. of 4"NB drain lines, one connected with COD line & another with QPS Chabua.

PROCESS DESCRIPTION

Field Gathering Station at Chabua is constructed to gather well fluids from 10 nos. of wells. 5 Nos. of Indirect Bath Heaters (E-3001 A/B/C/D/E) are installed, each catering to 2nos. of wells. The well fluid is heated from 7^0C to 70^0C in the first compartment of bath heater and then pressure reduction to 30 kg/cm^{2}g is effected through choke valve. In the second compartment the fluid is again heated to 40^0C. Bath heaters are skid mounted for ease in relocation. Three inlet manifolds are provided, namely Test manifold, Lean gas manifold and Rich gas manifold. Each well can be connected to any of the three manifolds. All the three manifolds are designed on modular concept (for easy relocation) and one module of a manifold cater to 4nos. of wells. Test manifold is designed for 0.5 MMSCMD capacity and Lean & Rich Gas manifolds each are designed for 1.25 MMSCMD capacity.

Gas flow block diagram and P&ID for well fluid is given below:





All the separators are skid mounted for easy relocation. 1 No. of horizontal 3-phase separator of 0.5 MMSCMD capacity is provided to test individual wells, Mass Flow Meters/Ultrasonic flowmeter are provided for accurate measurement of condensate and water/Gas during detailed well testing. To cross check the quantities of condensate and water separated in the test separator during detailed well testing, Condensate Gauge Tank and Water Gauge Tank are provided for accurate measurement of the fluids. Ultrasonic type flow meter is provided to measure the gas flow from the separator.

2 Nos. (1W + 1S) Production Separators for lean gas and 2 Nos. (1W + 1S) Production Separators for rich gas are provided. Gas when produced is sent to CGGS Madhuban. Separated water shall be sent to ETP for treatment and disposal.

The flare system shall receive PSV discharges, blowdowns and other venting from equipment and inlet manifold in a Flare KOD and then goes to Ground Flare System The Flare KOD also receives recovered oil from CBD and OWS system. The collected oil from Flare KOD is recycled back to inlet of Production Separator with the help of Oil Recycle Pump. The Ground Flare Package is designed for 1.25 MMSCMD and it includes a PLC based burner management system etc.

TEST AND PRODUCTION SEPARATOR

All the separators are skid mounted for easy relocation. 1 No. of horizontal3-phase separator of 0.5 MMSCMD capacity is provided to test individual wells. Mass Flow Meters are provided for accurate measurement of condensate and water. To cross check the quantities of condensate and water separated in the test separator, atmospheric Gauge Tank Package is provided for accurate measurement of the fluids. Ultrasonic type flow meter is provided to measure the gas flow from the separator.

2 Nos. (1W + 1S) Production Separators for lean gas and 2 Nos. (1W+ 1S) Production Separators for rich gas are provided.

WATER SYSTEM

Raw water is drawn from deep tube well by Raw Water Pump of50m3/hr capacity. The raw water is treated in a Water Treatment Package unit, which includes Pressure Sand Filters, Activated Carbon Filters and Chlorination Unit. The filtered water is stored in overhead Process Water Tank and from there goes to distribution. The chlorinated filtered water is stored in overhead Potable Water Tank-I and Potable Water Tank-II and from there goes to distribution. The raw water from Raw Water Pump discharge header is stored for cleaning, hose station and fire-fighting purposes.

FUEL GAS SYSTEM

The fuel gas header receives gas from Production separator outlets. The gas is filtered in Gas Filters There is a facility to heat the filtered gas in an electric heater upto 45 degC.

FLARE SYSTEM

The flare system shall receive PSV discharges, blowdowns and other venting from equipment and inlet manifolds. Condensates due to any of the two-phase discharges are collected in a Flare KOD. Condensates from flare KOD is routed to underground CBD vessel and the gas then goes to Ground Flare System. The Ground Flare Package is designed for 1.25 MMSCMD and it includes a PLC based burner arrangement system etc.

EFFLUENT SYSTEM

The water separated out in test and production separators are received in Raw Effluent Tank. The oily wastewater from the tank is pumped to the Effluent Treatment Package for treatment and after treatment the treated effluent is stored in Treated effluent Tank for injection to water injection/disposal wells. Provision has also been kept to pump the wastewater to the nearest OCS for treatment and disposal by OIL. Provision is also made to load this water in tanker for further transport by OIL to nearest OCS.

INSTRUMENT AIR SYSTEM

Instrument air requirement of the FGS is met by a Instrument Air Package, which includes Instrument Air Compressor, Surge Vessel, Air Pre-filter, Instrument Air Dryer and Air After-filter. The instrument air from the dryer package is received in Instrument Air Receivers and then sent to instrument air header.

CLOSED BLOWDOWN SYSTEM

Pure oil draining from inlet manifolds, separators, Flare KODs and other process equipment are stored in an underground Closed Blowdown Vessel. The stored oil is pumped to inlet of the Production separator for further separation/treatment with the help of a submerged pump.

OILY WATER SEWER SYSTEM

Oily water drains from process equipment, process curbed areas, and leakages from pumps etc are routed to OWS Drain Pit for gravity separation of free oil and water. The water free from bulk of the oil is pumped to Raw Effluent Tank and the skimmed oil is pumped to underground CBD vessel for recycling back to inlet of Production Separator.

WATER SYSTEM

Raw water is drawn from deep tube well by Raw Water Pump of 50m3/hr capacity. The raw water is treated in a Water Treatment Package unit, which includes Pressure Sand Filters, Activated Carbon Filters and Chlorination Unit and UV sterilization Unit. The filtered water is stored in overhead Process Water Tank and from there goes to distribution. The chlorinated filtered water is stored in overhead Potable Water Tank-I & Potable Water Tank-II and from there goes to distribution.

The raw water from Raw Water Pump discharge header is tapped for cleaning, hose station and fire-fighting purposes.

Water Treatment Unit is to supply the treated water for process and potable use. The Water
Treatment package includes the following:

1. Pressure Sand Filter-25 m3/hr capacity,
2. Activated Carbon Filters– 5 m3/hr capacity,
3. UV Sterilizer- 5 m3/hr capacity,
4. Activated carbon Filters – 5 m3/hr capacity,
5. Local Control panel and complete instrumentation within the package.

RAW WATER

Turbidity (NTU)	:	**36-83**
pH value	:	**7.0-7.1**
Total Hardness	:	**72-76 (ppm CaCO3)**
Alkalinity	:	**100-125 (ppm CaCO3)**
Chloride	:	**6 – 10 (ppm Cl)**
Iron	:	**2.19-2.66 (ppm Fe)**
Total Dissolved Solid	:	**168-188 (ppm)**
Silica	:	**47.8 – 64.7 (ppm)**

RAW WATER SOURCE

Raw water shall be supplied to Water Treatment Unit through Raw Water pump (Deep Bore Well Pump) of capacity 50m3/hr at a discharge pressure of 4 kg/cm2 g.

SERVICE WATER

The raw water is passed through Pressure Sand Filter of 25 m3/hr capacity for removal of suspended solids. The Sand Filter is provided with a bed of Manganese dioxide above the sand bed for removal of Iron. Out of the 25m3/hr of the service (filtered) water, 20 m3/hr is stored in the service water tank and remaining 5m3/hr is taken to potable water stream.

Turbidity (NTU)	:	**5**
pH value	:	**7-7.5**
Capacity	:	**20 m3/hr**
Pressure	:	**1.5 kg/cm2 g**

POTABLE WATER

The 5 m3/hr filtered water is passed through Active Carbon Filter and UV sterilizer for storage in Potable Water tank. The active Carbon filter is to remove odor and UV sterilizer to make the potable water free from bacteria and pathogens.

Turbidity (NTU)	:	**5**
pH value	:	**7-7.5**
Iron	:	**< 0.3 (ppm)**
Sterilization	:	**UV Sterilized**
Capacity	:	**5 m3/hr**
Pressure	:	**1.5 kg/cm2 g**

AMBIENT AIR CONDITIONS

Ambient Temp (Max/Min)	:	40 /7 Deg C
Dry Bulb Temp (Max / Min)	:	36 /8 Deg C
Max Relative humidity	:	95%

FIRE ALARM SYSTEM

Fire alarm system covers all the plant buildings, process area, utility area, storage areas, etc. The configuration for the above system is done based project requirements.

CONTROL ROOM, OFFICE BUILDING

FGGS Chabua having a state of the art control room (with centralized AC system) & operator building along with Installation Manger's Room, Rack room, Electrical room, Battery rooms, Laboratory room, kitchens & toilets.

SECURITY WATCH TOWERS & SECURITY CABINS

2 (two) nos. of security cabins (RCC building) along with watch tower (steel structure) are available at the both entrenches of the FGGS premises.

Also 3 (three) nos. of security watch tower (steel structure) are installed at FGS premises for security surveillance of the plant.

SHIFT WORKERS CABIN

A shift workers' cabin has been constructed for the rest & shelter for workers engaged in the plant. Attached toilet facility is also available with the cabin.

ROADS & DRAINS

Bitumen road to the plant, access to other facilities of the plant and around the process area has been constructed in the FGGS Chabua installation. Also drain on both sides of the road has been constructed for draining out the rain water from the plant.

BOUNDARY WALLS & PERIPHERY ROADS

FGGS Chabua premise is encircled with 3.66m high boundary wall with two nos. of entrance gate along with periphery patrolling road.

LAND SCAPINGS, GREEN BELTS, GARDENS & HORTICULTURE

The entire 2.7-hectare area of FGGS Chabua Plant, in two plots, one main process plant and other Enclosed Ground Flare System, is mainly occupied with Piping, Equipment, Buildings, Roads etc. Saplings are planted along the inside of the boundary wall of the main plant and in-side the EGFS area.

Landscaping& Gardening has been done inside the main plant premises with flowers, bushes, ponds etc.

Other Systems

ELECTRICAL SYSTEM

i. 2 Nos 619kVA, 415V, 50Hz, 0.8pf Gas Generator set with Auto Mains Failure (AMF) panel with paralleling facility and all other necessary accessories each at Chabua and Baghjan.

ii. 1 No 250 KVA, 415V, 50Hz, Diesel Generator set (For black start) with all other necessary accessories.

iii. Suitable rated 415 V AC PMCC.

iv. 2 Nos Lighting Distribution Board one each for non hazardous and hazardous area lighting.

v. 1 No 415/240 V 3 phase Lighting transformer of suitable rating as required for hazardous area lighting

vi. 1 No 415/440 V 3 phase Lighting transformer of suitable rating as required for non hazardous area lighting for each location.

vii. 2 Nos. 40KVA UPS system along with battery banks and UPS Distribution Board

viii. Indoor and Outdoor Lighting boards.

ix. Indoor and Outdoor Lighting fixtures and lighting poles with all accessories.

x. 3 nos. 30 meters High Mast GI Lighting Poles with control gear box/junction box and all other accessories.

xiv. LV Power and Control Cables in RCC cable trenches & buried

xv. Earth electrodes and earth strips.

xvii. Any other equipment not listed above but installed in the FGGS Chabua for uninterrupted power supply for round the clock running of the installation.

INSTRUMENTATION CONTROL SYSTEMS

The FGGS Chabua is equipped with field instruments for the various process, systems, packages, plants as per the P&IDs.

DCS monitoring and controlling system, ESD PLC, Gas &Fire Alarm Panel, Access Control System, operator/engineering workstations, ESD pushbutton panel, metering panel, printers, scanners and any other control room equipment required for the safe, proper and efficient operation of the plant are installed in the Control Room Building.
All the transmitter & controller instruments are connected & controlled though integrated DCS system and they are online.

DETAILS OF LIST OF INSTRUMENTS IN THE CONTROL ROOM AND FIELD INSTRUMENTS FOR CHABUA FGS

Foundation Field bus technology is used for network communication for control and instrumentation systems. The main components of the instrument and control system which can affect the overall efficiency and optimal functioning of the plant are DCS, PLC, Metering, F & G system, Field transmitters, Control valves, Shutdown valves, Gas Chromatograph. The emergency shutdown system is based on PLC which is SIL3 certified.

OBJECTIVES

The Automation, Control and Instrumentation requirements are:

i) Proneness of the selected technology
ii) Operability
iii) Reliability
iv) Maintenance
v) Un-compromised levels of protection of Health, Safety, Security and Environment.
The automation system utilizes state of the art Foundation Field bus instrumentation for the control and monitoring of this plant.
vi) All instruments are designed and manufactured for intrinsic safety for the applicable hazardous areas. Fieldbus network is designed based upon FISCO (Field bus Intrinsically Safe Concept) technology. Also High powered trunk concept is used with field barriers inside DGMS approved junction boxes, no live maintenance on trunk and surge protector in each trunk as well as both side of field barrier.
vii) All field instruments are provided with lightning protection circuits and designed and manufactured to operate in 100% relative humidity environment.

Lightning & surge protection for field bus systems is considered. This is used to protect electronic circuits and equipment within the field bus system and the associated field bus trunk from high voltages and surge currents induced by lightning and other form of transients. Redundant field bus power system is used so that the system becomes “hot-swappable” meaning that individual power conditioning modules and input power supplies can be replaced without interrupting power or communication on the field bus segment.

SYSTEM DESCRIPTION

The control and automation system for the plant is an integrated system comprising a DCS for plant control and a PLC for executing shutdown function, Dedicated Flow computers for custody transfer applications, and an addressable fire alarm panel is also provided. This is a fully integrated control system which improves plant productivity and safety. This system also provides inputs to SCADA. Modbus integration of the DCS with ESD PLC, Flare control DCS, Flow computers, Gas chromatograph is done. Facilities for on-line trending, Historical Trending, Reports, Alarms, Alarm History, event list etc. are provided.

The system has the following integrated core functions-

Operations: Various displays provide a consistent method for interacting with multiple applications. The displays are designed to provide an intelligent and focused presentation enabling rapid response. Optimal reaction requires real- time knowledge that an upset has occurred, or will occur. The system provides notification through its audible and visual alarm and event presentation. The system provides a complete set of O&M Contractor functions that include realistic process graphics with standard faceplates, superior trending capabilities, intelligent alarm and event handling and production reporting. Complete functionality simplifies and streamlines O&M Contractor interaction for more reliable control.

Safety: Safety of the plant is considered by using SIL certified PLC system for Emergency Shutdowns.

Information Management: Powerful information management software collects, stores, retrieves and presents historical process and business data to enhance the usefulness of data from all operations.

Control and I/O: Comprehensive suite of standards based hardware and software meets the needs of total plant control. Controllers are complimented with a full line of industrial I/O interfaces to meet all plant environments.

Device management: System integration of intelligent field devices via foundation fieldbus standards lowers lifecycle costs through significant cost savings in the design, implementation and operation of field equipment. The process control system is field bus compatible.

The system also includes a plasma display. For Emergency shutdown, a PLC based system is used. This is a fail-safe PLC with SIL 3 certification and is dual modular redundant.

TECHNICAL DETAILS OF DCS SYSTEM

Sl. No.	Material	UOM	Description	QTY	Part Number	Make
1	MD Plus Controller	No's	MD Plus Controller Make: Emerson Model:VE3006 Local bus power supply: 5VDC,1.4A max	10	VE3006	Emerson
2	2 wide Power/Controller Carrier	No's	2 wide Power/Controller Carrier Make: Emerson Model:VE3051C0	10	VE3051C0	Emerson
3	Enhance System Power Supply 24/12 v DC input	No's	24/12 v DC System Power Supply Make: Emerson Model:VE5009	10	VE5009	Emerson

4	Analog Input Cards	No's	Analog Input Cards: 8 Channels 4-20 mA; HART; Fused I/O Termination Block Make: Emerson Model:VE 4003S2B2	3	VE 4003S2B 2	Emerso n
5	Discrete Input cards	No's	Discrete Input cards : 8 Channels 24 v DC; Dry contact; I/O Termination Block Make: Emerson Model:VE4001S2T2B1	14	VE4001S 2T2B1	Emerso n
6	Discrete Output cards	No's	Discrete Output cards : 8 Channels 24 v DC; High Side; I/O Termination Block Make: Emerson Model:VE4002S1T2B1	9	VE4002S 1T2B1	Emerso n
7	Redundant H1 Field bus Interface cards,	No's	Redundant H1 Field bus Interface cards, Two wide termination block with 2 ports Make: Emerson Model:VE4037PO	17	VE4037P O	Emerso n
8	Redundant serial Interface cards	No's	Redundant serial Interface cards with 2 ports & Termination block Make: Emerson Model:Make:Emerson Model:VE4036P2	6	VE4036P 2	Emerso n
9	8 wide I/O interface carrier with carrier shield bar	No's	8 wide I/O interface carrier with carrier shield bar Make: Emerson Model:VE4050S2K1C0	8	VE4050S 2K1C0	Emerso n
10	Carrier Blank Cap	No's	Model: VE6101	18	Carrier Blank Cap	Emerso n
11	8 wide I/O interface carrier with Carrier Shield bar and Dual Enhanced Carrier Extension Cables	No's	8 wide I/O interface carrier with Carrier Shield bar and Dual Enhanced Carrier Extension Cables Make: Emerson Model:VE4050E2CO	4	VE4050E 2CO	Emerso n
12	Bulk Power Supply	No's	Bulk Power Supply 12 VDC 20A Make - Phoenix (Emerson) Model No. QUINT-PS/1AC/12DC/20	4	QUINT-PS/1AC/ 12DC/20	Emerso n

13	Bulk Power Supply	No's	Bulk Power Supply 24 VDC 40A Make - Phoenix (Emerson) Model No. QUINT-PS/1AC/24DC/40	4	QUINT-PS/1AC/24DC/40	Emerson
14	Quint Diode	No's	Make - Phoenix (Emerson) Model No. - QUINT-DIODE/40	4	QUINT-DIODE/40	Emerson
15	FISCO Power Supply	No's	FISCO Power Supply (FF Accessories) Make - MTL (Emerson) Model 9122	33	9122	MTL
16	Surge Protection for Trunk Protection	No's	Surge Protection for Trunk Protection (FF Accessories) Make - MTL (Emerson) Model - FP-32	33	FP-32	MTL
17	Redundant Logic Solver Module for DeltaV SIS	No's	Redundant Logic Solver Module for DeltaV SIS Make: Emerson Model:VS3202	24	VS3202	Emerson
18	SISNet Terminator Assembly	No's	SIS Net Terminator Assembly Make: Emerson Model:VS6051	3	VS6051	Emerson
19	Redundant SIS Net Repeater	No's	Redundant SIS Net Repeater Make: Emerson Model:VS6002	3	VS6002	Emerson
20	8 wide I/O interface carrier with Carrier Shield bar, Dual Enhanced Carrier Extender Cables, and Redundant SIS Net coax cables	No's	8 wide I/O interface carrier with Carrier Shield bar, Dual Enhanced Carrier Extender Cables, and Redundant SIS Net coax cables Make: Emerson Model:VE4050E2C2	6	VE4050E2C2	Emerson
21	Relays	No's	SIS Relay for DI 5A,250VAC Paramount Coil-24VDC 640ohm Make: Emerson Model:VS6907	115	VS6907	Emerson

22	Relays	No's	SIS Relay for D0 5A,250VAC Paramount Coil-24VDC 640ohm Make: Emerson Model:VS6907	144	VS6907	Emerson
23	Barrier	No's	Analog I/P Barrier Make:STAHL (Emerson) Model:9160/13-10-11	60	9160/13-10-11	STAHL
24	Barrier	No's	Digital I/P Barrier Make:STAHL Model:9170/10-14-12	108	9170/10-14-12	STAHL

TECHNICAL DETAILS OF FIELD INSTRUMENTATION ITEMS AT FGGS-CHABUA

Instrumentation items list (FGGS-Chabua)					
SL NO	**ITEM**	**UOM**	**TOTAL QTY**	**MAKE**	**RANGE**
1	Temperature Transmitter (FF)	No's	12	Honeywell	50-500deg C
2	Temperature Transmitter (HART)	No's	1	YOKAGAWA	50-500 deg C
3	Temperature Transmitter (FF)	No's	17	Emerson (Rosemount)	0 – 100 deg C
4	Temperature Transmitter (FF)	No's	33	Emerson (Rosemount)	0 – 150deg C
5	Thermocouple(K-Type)	No's	37	Emerson (Rosemount)	Max temp 1200 deg
6	Pressure Transmitter (FF)	No's	10	Emerson (Rosemount)	Max Range:0–400 kg/sqcm
7	Pressure Transmitter (FF)	No's	10	Emerson (Rosemount)	Max Range:0–50 kg/sqcm
8	Pressure Transmitter (FF)	No's	3	Emerson (Rosemount)	Max Range:0–150 kg/sqcm
9	Pressure Transmitter (FF)	No's	15	Emerson (Rosemount)	Max Range:0–70 kg/sqcm
10	Pressure Transmitter (FF)	No's	2	Emerson (Rosemount)	Max Range:0–14 kg/sqcm
11	Pressure Transmitter (FF)	No's	2	Emerson (Rosemount)	Max Range:0–10 kg/sqcm

12	Pressure Transmitter (FF)	No's	2	Emerson (Rosemount)	Max Range:0–5 kg/sqcm
13	Pressure Transmitter (FF)	No's	4	Honeywell	Max Range:0–60 kg/sqcm
14	Pressure Transmitter (HART)	No's	7	Emerson (Rosemount)	Max Range:0–15 kg/sqcm
15	Pressure Transmitter (HART)	No's	1	YOKOGAWA	Max Range:0–3 kg/sqcm
16	Pressure Transmitter (FF)	No's	1	Emerson (Rosemount)	Max Range:0–4 kg/sqcm
17	Differential Pressure Transmitter (FF)	No's	1	Emerson (Rosemount)	0 – 1 kg/sq cm
18	Servo operated internal displacer type level transmitter (HART)	No's	3	Endress + Hauser	Max range 0 – 3000 mm
19	Level Transmitter DP-TYPE (FF)	No's	1	Emerson	Max range 0 – 3000 mm
20	Level Transmitter DP-TYPE (FF)	No's	2	Emerson	Max range 0 – 2650 mm
21	Level Transmitter DP-TYPE (FF)	No's	1	Emerson	Max range 0 – 2000 mm
22	Level Transmitter (GWR TYPE) ,(HART & FF)	No's	25	Magnetrol	Max range 0 – 1750 mm
23	Level Transmitter (RADAR TYPE) ,(FF)	No's	2	Emerson (Rosemount)	Max range 0 – 3000 mm
24	Level Transmitter (HART &FF)	No's	2	MESSUMFORMER/ Transmitter	Max range 0 – 3000 mm
25	Level Transmitter (GWR TYPE) ,(FF)	No's	3	Emerson (Rosemount)	Max range 0 – 3000 mm
26	Level Transmitter DP-TYPE (FF)	No's	1	Emerson (Rosemount)	Max range 0 – 3500 mm
27	Level Transmitter DP-TYPE (FF)	No's	1	Emerson (Rosemount)	Max range 0 – 4500 mm
28	Level Transmitter (FF)	No's	2	Honeywell	Max range 0 – 1750 mm

29	Ultrasonic Flow meter(HART)	No's	5	SICK	Range- 0-1600 m^3/hr
30	Coriolis mass flow meter(FF)	No's	6	Micro motion (Emerson)	Range-0-5 m^3/hr
31	Flare flow meter (Ultrasonic type)	No's	1	Sick GMBH	-
32	Flow transmitter (Mag. Type)	No's	4	Emerson	0-2100 m^3/hr
33	Flow transmitter (Mag. Type)	No's	2	Emerson	0- 10 m^3/hr
34	Flow Transmitter (Orifice type)	No's	2	Emerson	0-29 m^3
35	Flow Transmitter(Orifice type)	No's	1	Emerson	0-175 m^3
36	Flow Transmitter (Orifice type)	No's	1	Emerson	0-8 m^3
37	Flow Transmitter (Orifice type)	No's	1	Emerson	0-6 m^3
38	Flow Transmitter	No's	1	Emerson	0-1735 mm
39	Flow transmitter (Orifice Type)	No's	10	Emerson	0- 50 m^3/hr
40	PCV(FF)	No's	11	Masoneilin	
41	TCV(FF)	No's	40	Masoneilin	
42	PCV(FF)	No's	2	Fisher	
43	LCV (FF)	No's	10	Masoneilin	
44	LCV (FF)	No's	1	Fisher	
45	FCV (FF)	No's	3	Fisher	

46	AFR for Control Valve	No's	67	Fisher & Dresser	
47	Positioners for Control Valve	No's	67	Fisher & Dresser	
48	SOV for flare burners	No's	12	Rotex	
49	PDC	No's	1	Emerson	
50	Gas Chromatograph analyzer	No's	1	Daniel	
51	Infrared Flame detectors	No's	7	Spectrex	
52	Hydrocarbon Gas Detector	No's	14	Crowcon/IR MAX	
53	Open Path Gas Detector (Transmitter/Receiver)	No's	2	Spectrex	
54	Fire Alarm system	Set	1	Tyco	
55	Air Compressor	No's	2	Atlascopco	
56	Diesel operated air compressor	No	1	Kirloskar	
57	SDV	No	19	VIRGO	
58	SDV	No	35	ROTEX	
59	BDV	No	5	ROTEX	
60	ROV	No	2	IV-Intervalve	
61	SOV	No	94	ROTEX	
62	SOV	No	19	EX-3	
63	Sand Probe	No	10	ROXAR	

64	PALL	No	10	SWITZER	
65	PAL	No	20	SWITZER	
66	PAHH	No	10	SWITZER	
67	LSLL	No	10	Automat	
68	TALL	No	10	Automat	

An RTU panel for SCADA system is also installed by OIL for data collection to SCADA MCS at Duliajan.

2.0 SCOPE OF WORK

The Scope of Work (SoW) for O&M Contractor for CGGS Madhuabn and FGS Chabua shall cover, but not limited to points given below.

It is to be noted that O&M of FGS Chabua has two options, Option-I for full operating conditions and Option-II for minimum operating conditions. Successful bidder will be advised which Option to adopt at the time of issuing of LOA. However, during the execution of the contract if the other Option is to be adopted, the O&M contractor will have to do so. In that case, OIL will give the O&M contractor 30 days' notice for change of Option and the contractor will have to mobilize workforce/manpower accordingly.

OIL reserves the right to decide whether the station will be under full operating conditions (Option-I) or under minimum operating conditions (Option-II). In case the O&M contractor refuses to follow the option given by OIL, the contract will be terminated.

2.01 DUTIES OF THE O&M CONTRACTOR

The O&M Contractor shall take all appropriate steps to maintain in force & execute the Contract in accordance with the terms of the Contract. All operations and maintenance will be carried out by the O&M Contractor in accordance with policies, work program within the plant in accordance of the provisions of contract and the directions of the Mines Manager, Installation Manager or his authorized representative and in accordance with standard and safe industry practice within the purview of all statutory norms applicable in upstream oil industry.
Guarantee on the plant/installation performance at desired level(as per the design rating& OEM recommendations) which shall entail amongst others, the functioning of power generation and distribution system, instrument air supply system, fuel gas system, firefighting system, water supply system, effluent treatment system, flare system, condensate handling system, gas well testing system, communication system, field and control room instrumentation & control system, control room computer system, HVAC system, online measurement systems, laboratory equipment etc. etc. of

the plant for 365/366 days at desired rating. O&M Contractor shall have to ensure Operation and maintenance of the PLANTS at CGGS Madhuban and at FGS Chabua on the round the clock basis.

2.02 **HSE (HEALTH, SAFETY AND ENVIRONMENT)**

i) The O&M Contractor shall operate and maintain the plant in a diligent, safe and efficient manner strictly in accordance with provisions stipulated obligations imposed upon by applicable laws of India - Indian Mines Act, Oil Mines Regulations, OISD norms, Indian Explosives Act and Central Electricity Authority Regulations (2010), Petroleum Rules, Environmental Acts/Regulations of Govt. of India & State Govt. Pollution Board, Assam etc. in force.

O&M Contractor shall also have to comply with the applicable guidelines of the Statutory bodies like DGMS, OISD, State and Central Pollution Control Board(s), PESO, Legal Metrology Department, OIL's HSE policy and other relevant statutory policies in existence or likely to come into existence.
For any HSE matters not specified or without any stipulated provision in the contract document, the O&M Contractor will abide by the relevant and prevailing acts/rules/regulations & sound industry practices pertaining to Health, Safety and Environment.

ii) It will be solely the O&M Contractor's responsibility to fulfil all legal formalities with respect to the Health, Safety and Environmental aspects of entire O&M job under the contract (namely formalities related to the person & the equipment employed by the O&M Contractor and the environment etc.) under the jurisdiction of Dibrugarh district, Assam.

Further, during carrying out all the O&M jobs at CGGS Madhuban and FGS Chabua, it will be entirely the responsibility of the O&M Contractor to ensure strict adherence to all HSE measures, statutory rules and to ensure safety of all workers of the O&M Contractor. All terms & conditions under clause no 2.02 and 3.0 shall be applicable to all persons of O&M Contractor deployed at CGGS Madhuban and FGS Chabua.

iii) The O&M Contractor has to update and timely submit all HSE related paper-works including but not limited to reporting, record keeping etc. to external agencies and/or to OIL. The report-formats will be as per prevalent ones in OIL and/or as suggested by statutory bodies and as per prevailing laws.
In case of employee's daily attendance in statutory formats, the O&M Contractor shall regularly take and maintain attendance of all its employees coming to work at CGGS Madhuban and FGS Chabua and such attendance need to be countersigned by installation Manager. As stated in man power clause, the O&M Contractor shall promptly report to Installation Manager if deviation in attendance from already submitted man power roster happens on a day and same will be recorded in prescribed form as per applicable mines rules or any other formats required by the IM of the station.

O&M Contractor shall have to report all incidents including near miss to Installation Manager/departmental representative of the concerned department

of OIL. The O&M Contractor has to arrange daily tool box meeting, jobs safety analysis, SOP and regular site safety meetings etc. as per applicable mines rules and maintain records.

iv) The O&M Contractor shall have to update written Site Specific Safe Operating Procedure (Site Specific SOPs) for the works to be carried out, including an assessment of risk, wherever possible and safe methods to deal with it/them as per direction of Installation Manager. Such SOPs need to be approved by the installation manager. The SOP should clearly state all the risks that may arise to men, machineries & material during execution of any O&M jobs to be done by the O&M Contractor and how it is to be managed.

The O&M Contractor shall provide a copy of the SOP to the Installation Manager or his deputed competent persons at CGGS Madhuban and FGS Chabua who shall be supervising the O&M Contractor's work. The O&M Contractor shall keep an up-to-date SOP (approved by OIL) and provide a copy of the changes to OIL's person as above.

The O&M contractor shall submit the Initial Medical Examination (IME) in prescribed "Form-O" of all employees to be engaged for O&M job.

O&M Contractor has to ensure that all work is carried out in accordance with the Statute and SOP and for that purpose he may deploy adequately qualified and competent personnel. For work of a specified scope/nature, he should develop and provide to the mine owner a site specific code of practice in line.

If HSE policy/SOPs of the O&M Contractor or part thereof is/are considerably different from OIL's HSE policy leading to confusion of procedural steps /SOPs, the O&M Contractor must frame draft of "Bridging Document" with roles and responsibilities clearly defined in regards to the concerned parts for making a uniform HSE policy for O&M of CGGS Madhuban and FGS Chabua. This draft must be furnished to OIL within 2 months from LOA of the contract. A final "Bridging Document" will be put in force after discussion on the draft among the two parties in conjunction with HSE departments of both the parties.

v) In case the O&M Contractor is found non-compliant of HSE laws as required, OIL will have the right for directing the O&M Contractor to take prompt action to comply with the requirements or to cease work until the non-compliance is corrected. OIL has right to with-held the monthly O&M bill in case of noncompliance the above.

O&M Contractor shall be responsible for any pollution, accident (causing injury to man, damage to machinery) and clean-up operation due to pollution caused by the O&M Contractor as a fall out of noncompliance of HSE rules & regulations. OIL's technical team shall investigate cause(s) of pollutions, accidents and/or any other non-compliance of HSE rules & regulations by the O&M Contractor and the findings thereof shall be final.

vi) O&M Contractor will have to submit material quality certificates and other related documents to OIL and OIL will allow to use the item after examination of

all the documents and physical verification in case O&M Contractor changes any part of machine/equipment/unit etc. during maintenance work. O&M Contractor will be solely responsible in case of accident or further damage to equipment caused due to supply of sub-standard & spurious material during maintenance works not certified from OIL's technical team.

vii) O&M Contractor shall carry out Daily Plant General Inspection in the entire plant and such inspection reports need to be generated and to be submitted to Company's representative daily before 7:30AM. O&M Contractor shall do visual inspections of all equipment; facilities etc. wherever possible and identify level of deposition, attrition/depletion, and deterioration in materials and also identify problems of any equipment/facilities.

The O&M Contractor shall also identify likelihood of any related unsafe working environment due to the above and promptly inform OIL.

The O&M Contractor shall be responsible for any unplanned circumstances / events in the plant operation that may take place due to material failure resulting from O&M jobs of the O&M Contractor. The O&M Contractor shall also be responsible for failure to identify or to report any abnormality as above not leading to subsequent unplanned circumstances / events. The cause(s) of such circumstances / events shall be investigated by OIL's technical team and finding thereof shall be final.

viii) Mines Manager, GMS Mines & CA Mines may appoint one or more of the O&M Contractor's personnel as competent person(s) for carrying out specific job(s) coming under the contract within a certain domain of authority. O&M Contractor shall have to abide by the same. The authority of such competent persons shall, under no circumstances, supersede that of the Installation Manager of CGGS Madhuban and FGS Chabua. Appointment of the competent persons is not a pay-roll appointment.

ix) All persons deployed at CGGS Madhuban and FGS Chabua by the O&M Contractor must undergo Mines Vocational Training, Initial Medical Examination, Periodic Medical Examination and other requisite statutory trainings like but not limited to firefighting training as per OMR & OISD, First Aid Training, Gas Testing Training etc.

The health check-up of O&M Contractor's personnel is to be done by the O&M Contractor in authorized Health Centers as per OIL's requirement and proof of such test(s) is to be submitted to OIL in proper format as per applicable Mines Rules. The frequency of periodic medical examinations is as per statutory requirement.

The O&M Contractor shall submit to DGMS returns as per applicable Mines Rules indicating – Name of his firm, Registration number, Name and address of person heading the firm, Nature of work, type of deployment of work persons, Number of work persons deployed, how many work persons hold VT Certificate, how many work persons undergone IME and type of medical coverage given to the work persons. The return shall be submitted quarterly (by 10th of April, July, October & January).

Bidders may take note of the fact that OIL provides some of the statutory training like MVT/First Aid/Fire Fighting etc. to O&M Contractor's employees engaged by OIL near its field Head Quarter, Duliajan.

If OIL arranges any safety classes/training etc for the working personnel at site the O&M Contractor must arrange to release its personnel for any such training without hampering normal O&M jobs.

x) Every person deployed at CGGS Madhuban and FGS Chabua by the O&M Contractor must wear all required safety gadgets / PPE items which are to be provided by the O&M Contractor. No person will be allowed to work at CGGS Madhuban and FGS Chabua without PPE and such debarring of any of the O&M Contractor's person(s) may lead to penalty under clause no 5.0 vide Man power **clause no 3.0** if O&M Contractor cannot arrange substitute(s) for the debarred person(s).

The O&M Contractor shall provide proper Personal Protective Equipment as per the hazard identified and risk assessed for the job and conforming to statutory requirement and OIL's PPE schedule. Safety appliances like Safety Boots, Safety Helmet and Full Body harness etc. have to be DGMS approved. Necessary supportive documents/approvals shall have to be submitted as proof.

If the O&M Contractor fails to provide the safety items as mentioned above to the working personnel, the O&M Contractor may apply to the Company (OIL) for providing the same. OIL will provide the safety items, if available. But in turn, OIL will recover the actual cost of the items by deducting from O&M Contractor's Bill. However, it will be the O&M Contractor's sole responsibility to ensure that all the persons engaged by him in the mines use the proper PPE while at work. All the safety gears mentioned above are to be provided to the working personnel before commencement of the work.

xi) The O&M Contractor must also possess various other safety items including but not limited to 2 (two) fire suits, 1 (one) lifting-jack for rescuing trapped persons, high intensity safety torches (minimum 5 nos.) at site. The FA box must have all the required and fresh batches of medicines and other items.

xii) O&M Contractor must maintain all firefighting equipment, appliances and entire firefighting operation for round the clock availability in 100% operational condition. In this respect, all terms and conditions under clause no 2.00 to 2.16 for maintenances and provisioning of items etc. shall be applicable and adequate manning of Firefighting system shall be as per man power **clause no 3.0**

Regular maintenance & servicing jobs and operations need to be followed for firefighting system of the plant as per the formats approved by OIL.

The O&M Contractor shall carry out Painting & Hydrostatic test of the DCP Extinguisher along with cap & hose assembly once every three years or as per statutory requirements and that of CO2 extinguisher before every refilling or once in 5 years or as per statutory requirements, whichever is earlier at their cost. This also includes painting of other Firefighting equipment (i.e. Monitors, Hose boxes, Hydrants, Foam Tanks, Inductors etc.) & Fire water ring main etc.

O&M Contractor must keep all the drenching pumps and jockey pumps in full operational condition at all time and keep the entire firefighting pump system in Auto Mode. For that purpose, ring main pressure must be maintained at

minimum 7 Kg/cm2 as per design of installation requirement with the help of the jockey pumps.

Fire water ring main line is connected to adjacent M/s BCPL's Compressor station with 2 (two) isolation valves for CGGS Madhuban. For maintaining the system in Auto Mode O&M Contractor must ensure shut in of the isolation valves. O&M Contractor must arrange to immediately open the valves for Mock Drill and Fire Fighting in consultation with M/s BCPL's control room (compressor station).

All the drenching pumps and jockey pumps must be put to different test with test-frequencies as per OIL's approved format. Routine checks, periodic inspection, maintenance & testing as per the requirements of OISD-STD-142 need to be done for all other firefighting equipment of the plant.

Reports of all testing/checks/inspection/observations etc. conducted on firefighting system and any corrective actions required/taken are to be as per **clause no 2.16(v).**

OIL approved format as stated above are for general guidelines on the required activities of maintenance and/or servicing jobs along with their required frequencies of firefighting units of the plant. All these activities in the formats shall be only a part of the total maintenance and servicing jobs and are not exhaustive. The O&M Contractor cannot and shall not decline to do any other activities required for trouble free, smooth uninterrupted 24-hour operation of CGGS Madhuban and FGS Chabua as per safe & sound industry practice.

OIL and/or the O&M Contractor - after consultation & consent from OIL - may include/change/modify any formats for maintenance and/or servicing jobs at any point in time during the currency of the contract.

In case of O&M Contractor's failure specifically to maintain Fire Fighting pumps in Auto Mode, and ring main pressure at minimum of 7 Kg/cm2, failure to start any drenching pump and failure to comply other terms stated in this clause no 2.02 (xii), **Penalty as per clauses of 5.0** will be imposed on the O&M Contractor.

xiii) O&M Contractor must always check the quality / usability of the AFFF i.e Aqueous Film Forming Foam available at site. The AFFF compound needs to be replaced when the compound loses its quality or when its self-life/ validity expires whichever is earlier.

xiv) O&M Contractor must conduct Mock drills (fire & other scenarios) at CGGS Madhuban and FGS Chabua once every fortnight or as per statutory requirement.

xv) O&M Contractor will provide all necessary support & co-operation in terms of resources, man-power and other facilities if OIL decides to obtain HSE related certifications including but not limited to ISRS, ISO, OHSAS at CGGS Madhuban and FGS Chabua. All O&M Contractor's employees must, while at work, cooperate with OIL so far as is necessary to enable compliance with any requirement under the act or the regulations that is imposed in the interest of employee's health, safety and welfare.

Any of the employees of the O&M Contractor shall not refuse to follow any instruction given by OIL's Installation Manager or any competent person engaged by him for ensuring and monitoring safe operation.

xvi) The O&M Contractor must carry out all operation and maintenance of any new equipment/facilities/instruments installed for compliance of any recommendation(s) of any statutory bodies or audits etc. during the currency of the contract.
The new additional units/facilities will be part of existing system/process and will comprise minor changes only and there shall not be any additional or specialized man-power requirement. The O&M of such additional items shall have to be carried out by the O&M Contractor.

2.02 **DAY TO DAY OPERATION AND MAINTENANCE(O&M) JOBS**

The O&M Contractor must carry out all the processes which will be required for safe operation and maintenance jobs for smooth, trouble free, uninterrupted, full-capacity and safe operation of the plant.
The performances of the O&M Contractor shall be judged on the following specifications:

i) Plant performance as well as performance of the O&M Contractor in plant operation shall be firstly determined by "DESIRED PERFORMANCE LEVEL" of the PLANT which means trouble-free operation and maintenance of the PLANT with desired level of quality in dew point of gas & air, proper air pressure, water pressure in hydrant line, drinking water quality or clarified effluent water or quality of supplied gas to customers, power output, HSE records, O&M as per statutory acts/govt. acts/rules/regulations/guidelines, etc. including operation and maintenance of plant equipment with all fittings & accessories as per OEM recommended ratings/guidelines and schedules. Any deviation from OEM recommended procedures/methods will be considered as deviation from normal operation.

ii) Failure to achieve the above will be considered as departure from "DESIRED OPERATIONAL PERFORMANCE LEVEL" of the Plant.

iii) Failure of the O&M Contractor to do any sampling and testing activities like gas sampling, dew point measurement, drinking water and effluent water testing etc, will be considered as deviation from "DESIRED PERFORMANCE LEVEL".

iv) O&M Contractor must carry out all the jobs related to operation and maintenance of the installation. During execution of the jobs, the O&M Contractor shall carry out all routine and schedule/preventive/predictive maintenances including overhauling (MOH/TOH) of engines and servicing jobs on all the equipment and facilities as per OEM guidelines and as per requirement of OIL.

v) The contractor will develop required formats on the required activities of maintenance and/or servicing jobs along with their required frequencies as per OEM guidelines and need to be approved by OIL for all mechanical/electrical/instrumentation units/equipment etc. of the plant.

vi) All these activities shall be only a part of the total maintenance and servicing jobs and are not exhaustive. The O&M Contractor cannot and shall not decline to

do any other activities required for trouble free, smooth uninterrupted 24-hour operation of CGGS Madhuban and FGS Chabua as per safe & sound industry practice.

vii) OIL and/or the O&M Contractor - after consultation & consent from OIL - may include/change/modify any formats for maintenance and/or servicing jobs at any point in time during the currency of the contract.

viii) The scheduled/emergency breakdown maintenance services are specific in nature, and will have to be carried out by the O&M Contractor as required by OIL.

ix) Failure of the O&M Contractor to do any of the maintenance including overhauling (MOH/TOH) of engines and servicing jobs as above and fill up any of the formats as required by OIL, will be considered as deviation from "DESIRED PERFORMANCE LEVEL".

x) The bidders must note that Operation and maintenance of FGS Chabua has two options, Options-I and Options-II. Option-I is when the station is under full operational conditions. And Option-II is when the station is under minimum operational conditions. Under full operational conditions(Option-I), the O&M contractor will be required to carry out all the O&M jobs for FGS Chabua as per scope of works and as required at the station for smooth running of the station without any interruption of the intended purpose of the station. For option-II, the O&M contractor will be required to carry out the following jobs only:

a) Regular housekeeping jobs,
b) Operation& maintenance of power generating sources/sets
c) Maintenance of statutory records.
d) Periodic checking/calibration & testing of equipments & their fittings/accessories to check their working condition so that whenever required such equipment can be operated.

For O&M jobs of **FGS Chabua under option–II (for minimum operating conditions)**, the O&M Contractor shall have to deploy minimum manpower as per **PROFORMA-I (PART-III)** only. Payment to O&M contractor for **option-II** will be made as per deployment of minimum manpower as per **PROFORMA-I** (**PART** -III) only.

xi) O&M Contractor must carry out all the activities in clean, safe and environmentally friendly ways; must avoid all sorts of pollution & contamination of the surrounding areas & environment. O&M Contractor-performance in this regards will be judged on following specification:

1) Entire Oily (liquid hydrocarbon) Water Sewer (OWS) system and CRWS system must be in complete operational state on all days in a year. Presence of liquid hydrocarbon, oily water sludge & water in the system shall be at minimum level.

Noncompliance/non-performing of this job will be judged by fluid levels in all the OWS gravity separator pits available at different parts of the plant and in the final OWS separator sump available at the ETP.

Failure of the O&M Contractor to maintain the above specifications, will be considered as deviation from DESIRED PERFORMANCE LEVEL.

2) All surface drains surrounding the plant must be free of liquid hydrocarbon, oily water sludge, formation water and/ or any other ingredient, organism etc coming with the feedstock of CGGS Madhuban and FGS Chabua. Side walls and bottom of all surface drains shall be free from any deposition, stain / marks or smudges. This job is particularly for cleaning of oily dirt etc. and is separate from general drain cleaning activity.

3) All cleaning activities of equipment (e.g. pump-strainers etc.), facilities, infrastructure and their parts & components shall be done in a way that liquid hydrocarbon, dirt and any other residue are confined to the CRWS only and are not allowed to spill or spread to any other parts of the plant.

4) Any liquid hydrocarbon marks/smudges/liquid hydrocarbon sludge on ground or on any surfaces must immediately be cleaned/scrapped and disposed safely at OIL designated place(s).

The cost of collection and disposal of sludge, maintenance and up keepment of parks/flower garden, supply of cowdung, plantation of flower saplings, wild grass cutting, jungle cutting & disposal, cleaning surface drains and disposal at OIL's designated places will be a part of monthly O&M Bill and as per the rate quoted by the bidder.

NOTE:

a) Noncompliance/non-performing of the jobs under clauses mentioned above will be judged respectively by
   a-(1). Presence of liquid hydrocarbon or their deposition(s) on the surface drains of CGGS Madhuban and FGS Chabua during any time of a month for above clauses.
   a-(2). Presence of liquid hydrocarbon -spillage &/or spread into drains, equipment, facility, road, ground water reservoirs, vacant parts of plant during any time of a month for above clauses.
   a-(3). Presence of liquid hydrocarbon stain/marks/smudges etc. at any area of the plant during any time of a month for above clauses.

Non-completion of the O&M Contractor's any or all of these jobs shall be considered as deviation from the DESIRED PERFOMANCE LEVEL.

b) The O&M Contractor shall have to collect the liquid hydrocarbon -spillage /oily sludge/oily soil, sand and all other materials generated after execution of jobs under clauses above and transport the same in a safe manner to the sump near ETP.

xii) SOURCE, SUPPLY & FILTRATION OF PROCESS-WATER AND DRINKING-WATER

1) The O&M Contractor shall maintain quality of water used for process, service and drinking purposes. The quality of the water shall be as per BIS (IS-105000:1991) or any other applicable standards as and when advised by OIL. which defines the desirable limits of various parameters of water as below or any other applicable standards:

Sr. No.	Characteristic	Unit	Drinking Water	Process water Feed Water
1	Appearance	-	Clear	Clear
2	Turbidity	NTU	5.0 (max)	5.0 (max)
3	pH	-	6.5 to 8.5	6.5 to 8.5
4	Total Hardness	mg/l	300.0 (max)	5.0 (max)
5	Iron	mg/l	0.30 (max)	0.02 (max)
6	Chloride	mg/l	250.0 (max)	200.0 -220.0
7	Total dissolved solids	mg/l	500.0 (max)	300.0 (max)
8	Dissolved Oxygen	mg/l	-	0.5 (max)
9	Silica	mg/l	-	0.02 (max)
10	Arsenic	mg/l	0.01 (max)	-

The O&M Contractor must do the needful to eliminate heavy metal components (like Ca, Mg, Pb, Zn, Cr, Al, B, Cu etc) to minimum level as per BIS (IS-10500:2012) or any other applicable standards as and when advised by OIL.

However, if there is any requirement of change of above specifications for compliance of any statutory requirement, the same will have to be accepted by the O&M Contractor.

The O&M Contractor shall also be required to carry out periodic testing for Arsenic content of the drinking water and records of such testing should be made available to any inspecting agency as and when required.

Failures of the O&M contractor for the above will be considered as deviation/upset in the PLANT's DESIRED PERFORMANCE LEVEL.

2) The O&M Contractor shall do all required filtration jobs and chemical treatments of water for maintaining the quality. For that purpose, Oil will provide the required chemicals. Hardness testing to be done by pH tester on all days.

Noncompliance of the above will be judged by absence of testing records and stock records of chemicals.

3) OIL may install new water pumps and filters at CGGS Madhuban and FGS Chabua for filtration process. O&M Contractor has to do O&M jobs on such equipment.

4) (a) In case the discharge from the tube well is not adequate or the quality of the water drawn is not up the requisite standards the O&M contractor has to carry out servicing of the borewell(s) by employing suitable methods like Air

Lifting/Redevelopment by use of compressed air. Occurrence of such servicing of the bore well(s) may be considered to be twice in a year.

(b) In case the borewell(s) could not be rehabilitated by Air Lifting/Redevelopment or there is severe sand ingress into the borewell(s), there shall be a joint inspection by OIL and the O&M contractor to assess the future course of action like abandoning the subject borewell(s). If after joint inspection OIL decides to abandon the borewell(s), new borewell(s) shall be drilled, sunk and developed by OIL and shall be handed over to the O&M contractor for regular O&M.

(c) The O&M contractor has to carry out servicing/maintenance of borewell pump set(s) including recovery of fish, lifting and lowering of the pumpset(s) along with all the associated pipings. In case the borewell pump set(s) need to be replaced, the same has be carried out by the O&M contractor as stipulated in the Contract terms and conditions.

Failure of O&M Contractor to do the jobs and to maintain the specifications mentioned as above 2.03 (xii), will be considered as deviation/upset in the PLANT's DESIRED PERFORMANCE LEVEL.

Records of all the above mentioned activities shall be maintained by the O&M contractor in standard formats and make available whenever required for inspection/audit of such records/activities.

2.02 **ROUTINE, BREAKDOWN & SCHEDULE MAINTENANCE AND REPAIRING, SERVICING OF EQUIPMENT**

All routine checks and other activities as and when required to ensure for trouble-free operation as well as for safe operating practices as per OMR/ OISD and other statutory regulations/acts. This is applicable to all other materials handling also.

i) The O&M Contractor shall carry out regular maintenance, repair, servicing jobs and scope of such jobs shall extend to all equipment/facilities/infrastructure/units of the plant required for mechanical (pumps, engines etc.), instrumentation, electrical, firefighting, water supply systems and all other systems like Air conditioning systems etc. that are installed/available at the installation CGGS Madhuban and FGS Chabua, as stated above in clause no.1.02(this also includes any other machineries/equipments which is not covered in 1.02 but in actual is available at the plants CGGS Madhuban and FGS Chabua).

Change of lube oil of the prime movers is at O&M Contractor's scope and shall be as per OEM recommendations.

Civil maintenance required for structures, buildings, roofs, roads, drains etc. shall be carried out by OIL.

ii) O&M Contractor will have to follow OIL approved schedules of maintenances of units/facilities/equipment stated in clause no 2.04. The O&M Contractor can put forward additional/modified list of maintenance schedules of the above based on OEM recommendations or other technical justifications etc. along with items, quantities, source & values of spare-items required in regards to such additional/modified maintenance schedules within 60 days from LOA. Such additional/modified list of maintenance schedules shall be reviewed by OIL and incorporated if found justified.

O&M Contractor cannot and shall not claim any maintenance schedules given by OIL to be improper at any time during the period of the contract. Likewise the O&M Contractor cannot attribute any fault (malfunction/breakdown/under- performance etc.) of any unit of CGGS Madhuban and FGS Chabua that may take place at a later time than 90 days from LOA on the ground of OIL's any improper maintenance schedules.

iii) **SPARES PROVISIONING:**

DEFINITION OF SPARE: All constituent serviceable/replaceable parts and components of the equipment, facilities, units of the plant are the spares required for their maintenances (day-to-day routine, scheduled/preventive and break-down maintenances) as well as for keeping them operational so as to continue their safe, trouble free and uninterrupted operations. Any equipment/part/component without which and/or without the **replacement** of which for any fault, a larger equipment/facility may become inoperative are also termed spares as per this clause of the contract.

Scope of supply & provisioning of spares & consumables and execution of all types of maintenance jobs shall be as per clause no. 2.00 and its sub clauses.

A. **OIL'S SCOPE OF SUPPLY AND PROVISIONING OF SPARES AND REPLACEMENTS**

i) OIL shall bear the entire cost of all spares provided procurement is done by the O&M contractor with prior approval from OIL and as per terms and conditions given in this document.

Note: OIL reserves the right to take spares procurement action on its own to replenish its inventory of spares. OIL also shall not allow replacement of any parts/spares, if OIL finds that the defective spares/parts is/are repairable. O&M Contractor cannot refuse to repair such parts/spares if directed to do so by OIL.

B. O&M CONTRACTOR'S SCOPE OF DOING THE PURCHASING PROCESS ON BEHALF OF OIL FOR SUPPLY OF SPARES & REPLACEMENTS

The O&M Contractor- on behalf of OIL shall do all the necessary jobs for procurement of spares & Replacements.

i) A list of spares for CGGS-Madhuban and FGS Chabua is given in **Annexure D** for reference. However, this list is not exhaustive and the O&M contractor will have to procure any spare item for these two installations whether included in this or not. However, OIL already has a stock of spares available. Hence, if a spare item is already available with OIL, the same will be supplied to the O&M contractor. If the spare is not available with OIL, the O&M contractor will have to take action for procurement after approval from OIL. O&M contractor will also be required to maintain a stock of spares for use during emergency. For this the O&M contractor will be required to make a list of such emergency/insurance spares within 2 (two) months of receipt of LOA and submit it for approval of OIL. OIL will take necessary decision regarding procurement of these items after detail study of availability and requirement and will instruct the O&M contractor if any procurement action is to be taken, which the O&M contractor will do promptly.

The O&M Contractor shall be required to take prior approval from OIL for i) **replacements of spares at CGGS Madhuban and FGS Chabua**, ii) **for any procurement activities**.

Before procurement, the O&M contractor will be required to obtain minimum 3 (three) sets of quotations from proprietary source/OEM source etc. and submit those to OIL for approval of price of the item.

ii) For items which were earlier procured by OIL, the price of spares quoted by the O&M contractor (FOR Duliajan value, including Packing, Forwarding, Freight, Insurance, Taxes and Duties and 5% as Administrative & handling cost) will be compared with the last PO price as per OIL's record (FOR Duliajan value, including Packing, Forwarding, Freight, Insurance, Taxes and Duties) with 5% escalation per annum plus 5% as Administrative & handling cost and lowest price will be payable to the O&M contractor as price of the item

However, in case of non-availability of last order price with OIL, payment will be made at a rate of 5 % (as Administrative & handling cost) above the OEM/L1 quoted prices (Minimum of the Prices quoted in the 3 bids submitted).

iii) The O&M Contractor shall have to follow **OIL's prevailing set of rules for procurement** of the items viz. procurement from L1 bidder selected from multi quote bidding (minimum 3 quotes will be required) /from proprietary source/from OEM sources etc.

iv) The O&M Contractor shall have to take certification from the supplier/OEM on the quality of items purchased by the O&M Contractor prior to use/inventorisation.

v) The O&M Contractor shall initiate the procurement process by submitting to OIL about their intended purchase of items including

quantities, make/brand/manufacturer's name etc against each item. **The O&M Contractor shall take next steps in its procurement process only after taking approval/permission/certification from OIL.**

vi) For procurement of items coming under petty expenses/local purchases/multi-brand/emergency required items etc, OIL's prevailing procurement process may not be required to be followed and O&M Contractor can do off-the-shelf purchases. **But even in such cases also, prior approval/permission/certification as stated above for such type of off-the-shelf purchase must be taken from OIL.**

vii) O & M Contractor shall be solely responsible for forecasting the consumption of spares, preparation of specifications, collection of budgetary quotations, procurement actions to ensure timely availability of any spares and consumables whenever required and whether these spares are included in **Annexure D** or NOT.

vii) Penalty clauses in regards of the reason(s) of shut down of any unit or the entire plants due to lack of spares/non availability of spares shall remain applicable irrespective of scope of spare supply.

viii) O&M Contractor shall be required to submit vouchers/memos, quality certificate, inspection and suitability report etc. as required by OIL. Such vouchers/memos, quality certificate, and materials/items, inspection and suitability report etc. will be verified by OIL before releasing any payment against such expenses/claims by the O&M Contractor for spares whether included in Annexure D or Not.

ix) On emergency cases as per advice and permission from OIL, the O&M Contractor shall have to arrange special air-freight of items which shall be reimbursed to the O&M Contractor on actual after submission of supporting documents.

xi) The shortage or lack of the spares and consumables may lead to malfunction, underperformance & breakdown of any unit/facility/ equipment of the plant which in turn may affect/hamper the safe, trouble-free & uninterrupted operation of the plant.

xii) To eliminate any likelihood of such a situation, the following points are necessary:

a. Looking at the usage of spares, OIL and/or the O&M Contractor - after consultation & approval from OIL –the O&M Contractor may include any additional spares, consumables & replacement items under the scope the O&M Contractor to do the purchasing process thereof at any point of time during the currency of the contract.

b. The inventory of such items shall be at CGGS Madhuban and FGS Chabua. OIL will check the items to be replaced prior to its replacement on normal working hours &/or take-over the replaced item at an earliest working time after the replacement. The O&M Contractor shall keep daily record of consumption & stock position and report the same to OIL on a daily basis &/or as & when sought by OIL. OIL may however keep some of the critical spares &/or replacement-items under the custody of OIL.

c. Projection of replenishment-requirement of these spares & consumables and initiation of procurement process shall be the responsibility of the O&M Contractor. Shortage/lack of any such item(s) shall be on O&M Contractor's account and shall be considered as deviation/upset in the PLANT's DESIRED PERFORMANCE LEVEL.

xiii) On some special circumstances/emergency situations for the purpose of trouble free, uninterrupted, safe and sound-industry-standard of plant operation, OIL may advise the O&M Contractor to procure any of the items.

xiv) On some occasions, OIL may ask the O&M Contractor for providing quotations from OEMs/their franchisees/concerned vendors or any new vendors for items coming under OIL's scope of supply. O&M Contractor shall provide such quotation(s) or respond otherwise in writing within 7 days from OIL's written request for the same.

The O&M Contractor cannot and shall not decline to carry out the procurement process on behalf and on advice of OIL as per the clause no 2.0 and its sub clauses**.** Should the O&M Contractor fail to carry out the jobs under this clause and/or should there be any shortage/lack of spares, consumables and replacements etc. falling under the scope of the O&M Contractor to do the purchasing process and should there be any consequences thereof like shutdown/malfunctioning/ underperforming of CGGS Madhuban and FGS Chabua, **Penalty on the O&M Contractor will be imposed as Penalty Clauses.**

C. O&M CONTRACTOR'S SCOPE OF SUPPLY AND PROVISIONING OF CONSUMABLES & MATERIALS

The items under this clause are entirely under the scope of the O&M Contractor for carrying out the purchasing at their own cost, OIL will not reimburse for any such purchases. The bidders need to carefully incorporate in their bids the costs of consumables and other materials as described in this clause which will be a part of their monthly O&M bill-amount. But they cannot claim the cost of these consumables and materials from OIL.

Bidder's technical knowledge and experience in running engineering plants with pumps, motors, engines and other machinery need to be used meticulously for considering the consumption patterns and frequencies of procurements of items under this clause so that they can bid competitively.

i) The O&M Contractor shall bear the cost on PPE for all of their employees to be deployed at CGGS Madhuban and FGS Chabua. The list of PPE shall include following minimum types of items:

a) SAFETY SHOE
b) SAFETY HELMET
c) DUNGAREE (OVERALL)
d) GUM BOOT
e) EAR PLUG
f) HAND GLOVES (Normal operations)
g) HAND GLOVES (High Temperatures & chemical usage)
h) EYE GOGGLE
i) MASK
j) BREATHER
k) RAIN COAT
l) APRON
m) JACKET

OIL will check the brands/qualities of the PPE items at site prior to issue of the PPE items to the O&M Contractor's employees. The quality of the PPE shall have to be as per clause no 2.02 (x).

In case OIL finds any PPE items to be of inferior quality, torn &/or tattered the same shall not be allowed to be used by the O&M Contractor at CGGS Madhuban and FGS Chabua. As per man-power clause, persons without PPE shall not be allowed to work at CGGS Madhuban and FGS Chabua on any time of a day and corresponding shortage of man power shall be considered as deviation/upset in the PLANT's DESIRED PERFORMANCE LEVEL.

OIL will ensure PPE-wearing only at CGGS Madhuban and FGS, Chabua. PPE-wearing by O&M Contractor's employees is not required during entering (and exiting) the gate of CGGS Madhuban and FGS Chabua.

The O&M Contractor shall bear the cost on uniforms (two pairs for each employee) for all of their employees to be deployed at CGGS Madhuban and FGS Chabua.

ii) OIL will provide POL items viz. HSD, engine oil, gear oil, grease, coolants, bearing-lubricants, distilled water etc. for normal day to day operation and routine maintenance jobs. If OIL runs out of stock of such items, OIL may advice the O&M contractor to procure such items and procurement cost of which will be reimbursed by OIL.

iii) The O&M Contractor shall bear the cost on consumables required for general cleaning of the entire premises of the plant as per clause no 2.08 (vi) like phenyl, toilet cleaner, sanitizer, soap & powder, deodorants, naphthalene etc. and all cleaning tools like brushes, mops, broom, rakes, spades etc. and all tools like dao, kodali, spades etc. required for general housekeeping, cleaning the inside and outside of CGGS Madhuban and FGS Chabua & gardening of the entire premises of the plants CGGS Madhuban and FGS Chabua including the outside periphery road and outside areas in front of the plant .

A list of such consumables for CGGS Madhuban and FGS Chabua is given below:

Sr. No.	Material description
	Office building
1	Sanitizers
2	Towels
3	Toilet Brush
4	Harpic
5	Room Freshner
6	Naphthalene balls
7	Liquid Hand wash
8	Soap
9	Broom soft
10	Broom hard
11	Phenyl
12	Washing powder
13	Dish wash
14	Glass Cleaner
15	Water Purifier spares
16	Rubber
17	A-3 paper
18	A-4 paper
19	Whitener
20	Pen
21	Pencil
22	Eraser
23	Stapler
24	Stapler Pin
25	Register (200 pages)
26	File cover
27	Cello tape
28	Paper tape
29	Iron brush
30	Plastic brush
31	Painting brush
32	Paint spray gun
33	Cotton waste
34	Cotton hand gloves
35	Leather hand gloves
36	Dust masks
37	Ear plug
38	Diesel
39	Petrol
40	Bleaching Powder
41	Insecticidal Spray
42	Pencil cell (1.5 volts)

43	Insulation tape
44	Fuses (2.5A, 6A)
45	Silica Gel
46	Electric Wires
47	Cell (1.5)
48	Dao, kodali, spades
49	Brushes, soft and hard

D. EXECUTION OF DAY-TO-DAY ROUTINE/BREAK-DOWN AND SCHEDULE MAINTENANCE

i) The O&M Contractor shall do all types of maintenance jobs on any type of equipment/instrument/machine/unit/facility of the plant including that of Chemical laboratory, Air conditioning systems irrespective of scope of provisioning of the spares, consumables and other materials required thereon at CGGS Madhuban and FGS Chabua.

ii) The O&M contractor shall be required to carry out jobs as per predictive/preventive maintenance schedules (monthly/quarterly/yearly or based on running hours or as per OEM recommendation of equipment) for all equipment & instruments, machines etc.

iii) Accordingly, the O&M contractor shall be required to carry out jobs as per day to day & routine maintenance schedules (monthly/quarterly/yearly or based on running hours or as per OEM recommendation of equipment) for each and every item except buildings/walls/roofing sheets/road maintenance (Standard Schedules for each and every item to be provided along with the BID).

iv) Schedule of change of lube oil of the prime movers is at O&M Contractor's scope. Lube oil will be provided by OIL.

v) The O&M contractor shall be required to carry out jobs of painting as per schedules of all the items inside the stations viz. equipment, instruments, pipe/vessel support structures & foundation, except buildings/walls/roofing sheets/road. The O&M contractor shall be required to carry out any such painting jobs as per the schedule and as and when advised by OIL.

vi) Report on Backlog of corrective maintenance shall be generated by O&M Contractor as an indicator of workload issues and effectiveness of preventive/predictive maintenance programs.

vii) After initial communication and subsequent acknowledgement of the O&M Contractor in regards to maintenance as stated in the clause 2.0 and its sub clauses, in case of malfunctioning or under-performing or breakdown of any units of the plant that takes place at any time during the currency of this O&M contract, the O&M Contractor needs to immediately report to OIL. The timings and type of reporting shall be as per reporting Clause no 2.17-2(v) of this contract.

In case the O&M Contractor's claims any fault as above to happen at a time just prior to OIL's inspection of the plant on that day, OIL shall investigate the performance history of the unit and all related reports/records/documents as already furnished till that day by the O&M Contractor. No new reports etc shall be acceptable to OIL on that day. O&M Contractor's claim as above shall be judged as per findings based on already submitted reports etc by O&M Contractor.

viii) All day-to-day routine maintenance/servicing jobs and schedule/preventive maintenance jobs shall be carried out regularly by the O&M Contractor under this contract. The O&M Contractor shall carry out all operations and routine maintenance/servicing jobs and schedule/preventive maintenance jobs of the plant in the most regular, meticulous and diligent ways.

The O&M Contractor must be able to identify any problem, wear & tear in parts /components etc of a bigger unit/equipment etc. which if not replaced immediately is likely to cause trouble in the functioning. The O&M Contractor shall have to promptly replace such items and follow clause no 2.00 and its sub clauses in regards to items used/replaced. The O&M Contractor must eventually be able to avoid breakdown or malfunctioning of any equipment, facilities, and units of plant.

For all routine maintenances/servicing jobs, schedule/preventive maintenance jobs and also for forthcoming breakdown maintenances/major repairs etc., the O&M Contractor shall have to carry out all required workshop jobs like but not limited to jobs of various machining operations, milling, drilling, boring, reaming, grinding, lapping, press-fitting, assembling-disassembling etc. at their own costs. O&M Contractor may carry out these jobs in outside workshops also. Further the O&M Contractor shall have to be equipped with all required tools & tackles and other equipments. These include but not limited to items like wrenches, tongs, hammers, chisel, dies, all tools necessary for attending routine and breakdown maintenance of electrics, instrumentation and control system; temperature guns for engine-temperatures; hydraulic pullers of sufficient ratings, tripods & chain pulleys of required ratings.

All routine maintenance/servicing jobs and schedule/preventive maintenance jobs shall have to be properly documented/recorded and reported to OIL on real time basis. Absence of records &reporting to OIL, O&M Contractor's claim on doing the jobs will not hold good. Reports submitted at a later date shall not be accepted.

Should the O&M Contractor fail to start any jobs as above in professional manner and with full man-power strength as per man-power clause due to any reason including but not limited to the reason of shortage/lack of spares, consumables and replacements falling under the scope of the O&M Contractor to do the purchasing process, the O&M Contractor shall be fully responsible and accountable.

The O&M Contractor's performance or the lack of it in doing routine operations and routine & schedule maintenance jobs shall be determined from O&M

Contractor's already submitted reports/records/documents etc. and on the basis of quality of jobs done regarding all operation, servicing & maintenance jobs.

ix) In case of breakdown or malfunctioning or under-performing of any equipment, the O&M Contractor needs to immediately report the same to OIL as per **Reporting Clause no 2.17-2 (v)** of this contract.

Simultaneously, the O&M Contractor must immediately start break-down maintenance jobs for restoring the unit at their cost and/or must replace any such break-down unit(s) within the shortest time avoiding interruption or under-performance of the plant. If the O&M contractor fails to restore/repair the breakdown of any equipment within 24Hours, the O&M contractor shall have to call the service of that equipment's OEM/dealer (which are not under AMC) to attend any breakdown maintenance and repair of sub-assemblies at their own cost. The service engineer shall have to be deployed within next 24 Hrs and rectification by 48 hrs during normal working days or during weekly off days or during national holidays. Visit to attend any breakdown maintenance and repair of sub-assemblies shall have to be provided irrespective of weekly holidays or public holidays.

Breakdown maintenance job as above shall be done with professional workmanship and continuously in all the shifts in all days without gap with skilled and adequate man-power strength. For that, the O&M Contractor shall arrange its maintenance gang as per Man-power clause no 3.0. Presence of Key personnel during the maintenance job will be as per Man-power clause 3.0.

Should the O&M Contractor fail to start immediate, continuous and professional maintenance jobs with full man-power strength as per Man-power clause due to any reasons including but not limited to the reason of non-availability or shortage of spares, other critical items and consumables falling under the scope of the O&M Contractor to do the purchasing process as per **clause no 2.00 and its sub clauses**, the O&M Contractor shall be fully responsible and accountable.

x) In regards to carrying out immediate, continuous and full-strength professional O&M operations as stated in the clause no **2.00 and its sub clauses**, O&M Contractor shall be fully responsible. Man power of O&M Contractor should be competent & sufficient for carrying out such jobs.

For the following 5 (Five) specific Units of CGGS Madhuban & FGS Chabua respectively, the O&M Contractor shall have pre-set tie up with OEMs or their franchisees for **Annual Maintenance Contract**:

FOR CGGS MADHUBAN:

1) Emerson make DCS- Delta V system & ESD system with all auxiliary equipment.
2) Hirel UPS system (2 Nos. X 45 KVA) with all auxiliary equipment viz. Charger and bypass line equipment UPS system etc.
3) Daniel make: i) Gas Chromatograph Analyser(04Nos.),ii) Metering panel each with 6 Nos. Flow(S600+) Computers (03Nos.), iii) Electro Magnetic

Flowmeter(02Nos.), iv) Ultrasonic Flowmeter (34Nos.) v) Coriolis Flow Meter (02Nos.), vi) Sick make Ultrasonic Flowmeter (01No.)

4) Caterpillar make Gen Sets (906KVA-2 Nos.) with Gas Engines (including overhauling jobs) with all auxiliary equipment viz., synchronizing panel, MCC panels, NGRs etc.
5) Atlas Copco make Air Compressor ZT-45 (2 Nos.) with all auxiliary equipment viz. Dryer and other auxiliary equipment etc (including overhauling).

FOR FGS CHABUA:

1) Emerson make DCS- Delta V system & ESD system with all auxiliary equipment.
2) Hirel UPS system (2 Nos. X 40KVA) with all auxiliary equipment viz. Charger and bypass line equipment UPS system etc.
3) Daniel make i) Gas Chromatograph Analyser (01Nos.), ii) GCC &PLC panels, iii) Electro Magnetic Flowmeter (05Nos.), v) Coriolis Flow Meter(06Nos.), vi) Sick make Flowmeter (06Nos.)
4) Caterpillar make Gen Sets (619 KVA-2 Nos) with Gas Engines (including overhauling jobs) with all auxiliary equipment viz., synchronizing panel, MCC panels, NGRs etc.
5) Atlas Copco make Air Compressor ZT-37 (2 Nos.) with all auxiliary equipment viz. Dryer and other auxiliary equipment etc (including overhauling).

The cost of AMC jobs will be part of monthly O&M bill and as per the rate quoted by the bidder.

REPORT AND DOCUMENTATION:

i) For all the above AMC jobs, the OEM's service engineer shall have to submit report to OIL about all work performed by OEM including diagnostics and preventive/predictive/breakdown maintenance jobs and parts replaced (for replacement spares, OIL's prior approval will be required) for OIL's verification. Such reports will be part of AMC jobs and the O&M contractor shall have to ensure that such reports are submitted OIL.

ii) The OEM service engineer shall have to carry out calibration of any equipment like flowmeters, gas chromatograph etc. during each visit for the above AMC jobs wherever required. If any aberration or deviation is observed, then the same need to be rectified by the OEM service engineer. All such calibration repots shall have to be signed by the OEM service engineer, O&M contractor's plant manager, and OIL's representatives. In case of custody and check meters & gas chromatographs, such calibration jobs will be witnessed by the respective customer.

Following jobs are to be covered in AMCs for the above mentioned equipment for CGGS Madhuabn and FGS Chabua respectively. AMC for each of the above mentioned equipment will have to cover i) Preventive Maintenance jobs, ii) Predictive maintenance jobs, iii) Breakdown maintenance jobs, iv) Overhauling jobs and v) Any other supports needed by the O&M contractor for smooth

functioning of the above equipment to ensure overall safety and reliability of the system for 100% availability and to reduce unwanted failures of the system. During AMC, in case of breakdown of the above equipment, OEMs will have to deploy their service engineer at site (CGGS Madhuban or at FGS Chabua) within 24 Hrs and rectification by 48 hrs during normal working days or during weekly off days or during national holidays to carry out breakdown maintenance jobs. Visit shall have to be provided irrespective of weekly holidays or public holidays.

A minimum total of 4 (Four) visit per year/ 1(one) visit per quarter of 3 or 4 days' duration shall be required. All the jobs performed by OEMs and spares replaced for AMCs of the above mentioned equipment must be recorded and submitted to OIL during execution of any AMC jobs.

The above will be applicable in all respects whether mentioned or not mentioned for the AMC details for CGGS Madhuban and for FGS Chabua which are given below.

1. EMERSON MAKE DCS- DELTA V SYSTEM & ESD SYSTEM WITH ALL AUXILIARY EQUIPMENT

i) This AMC will cover a) Hardware, b) Software operation (configuration, system use...) and c) Diagnostics of Hardware and Software for DELTA V system for CGGS Madhuban and for FGS Chabua.

ii) Provide total of min. 4 visits per year to each installation for preventive maintenance (min. 1 preventive visit in a Quarter). Each visit will be of minimum 3 or 4 Days for DCS system, to ensure safe and trouble free operation of the system during the contract period.

iii) **PREVENTIVE AND RELIABILITY MAINTENANCE SERVICES:**

SERVICE DESCRIPTION

This Service need to be provided by a certified Emerson Specialist on-site to assess the system performance through various diagnostics and preventive maintenance routines in order to help maintain the process control system's operational reliability.

SERVICE LEVEL

All jobs are to be carried out only by Emerson Process Management service engineer.

DELIVERABLES

In general, following services to be performed during maintenance visit:

- Conduct general physical equipment inspection
- Check System Integrity
- Check communications highway integrity and performance
- Check power supplies
- System General Maintenance

- o Review onsite maintenance logs
- o Review alarm logs for problems
- o Verify AC and DC voltages, power distribution and grounding systems
- o Check System environment including temperature and dust.

Consoles and Operator Interfaces

- o Verify operation of all peripheral device
- o Check operator input/output devices including keyboard, track-ball, mouse and monitors
- o Record diagnostics

Controller

- o Verify status and operation of controller redundancy where applicable
- o Record diagnostics

Input / Output

- o Check and record all I/O diagnostic data
- o Verify operation of all I/O redundancy where applicable

Network System

- o Check network communications as necessary
- o Record network system diagnostics

Host Computers

- o Verify operation of host computers
- o Log diagnostic screens

Software Service Includes

- o Small modification in existing logic like implementation of additional interlock, permissive etc.
- o Additional Alarms for any existing equipment or any existing analog monitoring.
- o Range setting for any existing analog monitoring.
- o Small / minor changes of any existing Graphics.
- o Any small / minor modification of existing logic.

iv) **EMERGENCY ON SITE SERVICES/BREAKDOWN MAINTENANCE JOBS**:

Emergency visits will have to be provided on demand during the contract period as required. In the event of breakdown of the system, upon call Emerson Process Management engineer will have to reach OIL's site at the earliest, but not later than 24 hours to attend the problems and restore the system back to normalcy within 24 Hrs and rectification by 48 hrs during normal working days or during weekly off days or during national holidays. Visit will have to be provided irrespective of weekly holidays or public holidays.

EMERGENCY SITUATION IS DEFINED AS:

- Failure in which the operator is not able to control the plant through DCS, such as Monitor blanking, freezing, keyboards freezing etc.
- Failure of systems internal power source.
- Any kind of shutdown due to cause of DCS hardware failure comes in Emergency.
- For Any Logic implementation, addition of hardware and development of graphics are not defined as Emergency

The above may not be completely exhaustive, it shall also include any other problems leading to Malfunctioning of the DCS system.

SERVICE LEVEL

The Emergency On-Site Service program will have to provide access to an Emerson-certified Field Service Specialist. The service need to be structured based on the needs at site, local capabilities, and logistics conditions. This shall include guaranteed response time, type of coverage, and number of callouts.

DELIVERABLES

This service will have to commit availability of a technical specialist for on-site support within an agreed upon time period as specified in the service agreement.

v) **PREDICTIVE MAINTENANCE:**

It refers to the actions that are performed on a component when one or more conditions are met. These conditions indicate when a component is about to fail or deteriorate in performance. All jobs to be carried out in a manner to ensure overall safety and reliability of the system and reduces unwanted failures of the system.

vi) **ROLES AND RESPONSIBILITIES OF OEM:**

THE LOCAL EMERSON SERVICE ORGANIZATION WILL IN GENERAL:

 Provide an Emerson-certified Field Service Specialist for on-site service-related activities per agree-upon conditions.
 Perform troubleshooting and issue resolution in accordance with established product Guidelines
 Document all work performed and parts replaced in a Field Service Call Report for customer verification, invoicing when appropriate, and future reference.
 Acquire Safety Training as required by OIL.

vii) **AMC JOBS IN EACH VISIT IN EACH INSTALLATION**:

Planed AMC Service will have to cover the following jobs:

- Planned Maintenance services shall include following minimum checks and Necessary rectification actions if any errors/faults found.
- Audit Environmental conditions (Temperature, Humidity, and Exposure to contamination or corrosive atmosphere) in the control room and equipment areas.
- Conduct general physical equipment inspection
- Clean equipment consoles and cabinets.
- Perform system diagnostics.
- Check communication highway integrity and performance.
- Check power supplies.
- Perform device-level diagnostics by AMS software if required.

- o System earthing voltages will be checked.
- o Power supply faults.
- o Controller, I/O cards, Server/workstation and Network switches faults.
- o Interface errors; Third Party system communication faults at DCS and System Alarms
- o System earth voltage check.
- o Status of FAN's for cooling inside cabinet and Bad/loose connection of cables inside cabinets
- o Server, workstation & Historian disk space, clean temp files
- o Review antivirus software revision and load latest upgrade file if it was purchased from Emerson and the licenses are not expired.
- o Verify control processor load/idle time/overrun
- o Supervision on cleaning cabinets, workstations, peripheral, Devices, keyboards, printer etc.
- o Current and historical data collection status
- o Backup of historian, Alarm Summary, report configuration points, Checking of DOR.
- o Complete system backup of all nodes connected on delta v network.
- o Resolving of Problems by spare replacement (Spares shall be provided by customer), if required, minor loop addition and modification & minor software modification, if any.
- o Functional Test – Functionality check of system components shall be performed using Diagnostic software and maintenance menus. If required necessary maintenance to be carried out to ensure full functionality.
- o Review Delta V & Microsoft patches.
- o The scope covers the entire DCS (DELTAV) system. After the completion of each planned/shut down maintenance work, a report will be submitted which contains the details of work carried out and observations.
- o Travelling To and Fro, Boarding and Lodging is in Emerson Scope and to be included into offer.
- o Emerson shall submit the invoice after each visit (calculated by man-days) within 7 days with required document for processing of the bill.

2. HIREL UPS SYSTEM (2 NOS. X 45 KVA & 2 NOS.X40KVA) WITH ALL AUXILIARY EQUIPMENT VIZ.,CHARGER AND BYPASS LINE EQUIPMENT UPS SYSTEM ETC.

i) Minimum 04 (four) visits by HHPE (Hitachi Hi-Rel Power Electronics)in each quarter per year per Hirel UPS system in each installation CGGS Madhuban and FGS Chabua.

ii) AMC will have to cover the following jobs:

PREVENTIVE MAINTENANCE:

To perform specific maintenance activities as per OEM recommendations during the contract period by HHPE deputed qualified and trained service engineer once in three months to ensure overall safety and reliability of the system and reduce unwanted failures of the system.

BREAKDOWN MAINTENANCE:

To attend any breakdown maintenance and repair of sub-assemblies. Deployment of HHPE service engineer at site (CGGS Madhuban or at FGS Chabua). The service engineer shall have to be deployed within 24 Hrs and rectification by 48 hrs during normal working days or during weekly off days or during national holidays. Visit shall have to be provided irrespective of weekly holidays or public holidays.

PREDICTIVE MAINTENANCE:

It refers to the actions that are performed on a component when one or more conditions are met. These conditions indicate when a component is about to fail or deteriorate in performance. All jobs to be carried out in a manner to ensure overall safety and reliability of the system and reduces unwanted failures of the system.

BATTERY MAINTENANCE:

The battery maintenance shall be carried out by the O&M Contractor. However, if OIL finds that a battery is beyond working condition, OIL will provide replacement battery.

3. **DANIEL MAKE: I) GAS CHROMATOGRAPH ANALYSER, II) METERING PANEL EACH WITH FLOW(S600+) COMPUTERS, III) ELECTRO MAGNETIC FLOWMETER, IV) ULTRASONIC FLOWMETER, V) CORIOLIS FLOW METER, VI) SICK MAKE ULTRASONIC FLOWMETER**

AMC will cover broadly the following equipment in each installation:

Srl No	List of equipment
1	Gas Chromatograph Analyser
2	Metering panel each with Flow(S600+) Computers
3	Electro Magnetic Flowmeter
4	Ultrasonic Flowmeter
5	Coriolis Flow Meter
6	Sick make Ultrasonic Flowmeter

i) Provide total minimum 4 visits per year to each installation for preventive maintenance (min. 1 preventive visit in a Quarter). Each visit will be of min. 3 or 4 days (08 hours/day) depending of service engineers. For all the above equipment, preventive, predictive and breakdown maintenance along with diagnostic reports shall be carried out by the OEMs.

ii) Scope of works for AMC:

A. FLOW BOSS – S600 FLOW COMPUTER (DANIEL)

1. Checking the parameter setting / Configuration
2. Configuration download (if needed)

3. I/O's Check
4. Communication check
5. Report Printing / Printer Port
6. Audit/Event/Alarm logs

DELIVERABLES

a. Report print out
b. List of modified parameters
c. Backup of configuration (in case of correction)
d. Recommendations / Observations if any

B. ULTRASONIC GAS FLOW METER (DANIEL&SICK)

o Operational Parameters Check/Adjust

1. Physical Inspection (Wiring & Process Connections)
2. Communication with Laptop
3. Functionality of communication ports.
4. Checking the Parameter setting / Configuration.
5. Supply Voltage check
6. Communication between USM and flow computer.
7. Checking alarms
8. Collection & Analysis of logs and archives
9. Clean chords if required
10. Change the various performance related parameter if required to improve the performance of USM.

DELIVERABLES

a. List of modified parameters
b. Backup of configuration (in case of modification)
c. Backup of maintenance log
d. Recommendations / Observations if any

C. GAS CHROMATOGRAPH (DANIEL)

Operational Parameters Check

1. Carrier Gas Pressure
2. Calibration Gas Pressure
3. Sample Gas Pressure at Welker Probe
4. Flow Rates – Carrier, Sample gas, Cal Gas
5. Bridge Voltage

GC Parameters Check

1. Component data table of new calibration gas
2. Retention time

3. Response factor
4. Calculations
5. Reports
6. Historical logs

Chromatogram and results before and after the parameter checks and corrections if any are to be carried out.

DELIVERABLES

a. Calibration Report
b. Backup of application software
c. Analysis Report
d. Recommendations/Observations if any

D. MASS FLOW METER (MICRO MOTION)

a. Pulse Output checking
b. Interface between Sensor and Transmitter
c. Configuration/Range Setting in Flow Transmitter (If needed)

DELIVERABLES

a. Recommendations/Observations if any

PREVENTIVE MAINTENANCE PLAN

Preventive Maintenance jobs are to be carried out in a proactive manner with Certified and trained EMMERSON service personnel and as per OEM recommended schedules.

PREDICTIVE MAINTENANCE:

It refers to the actions that are performed on a component when one or more conditions are met. These conditions indicate when a component is about to fail or deteriorate in performance. All jobs to be carried out in a manner to ensure overall safety and reliability of the system or equipment given in i) to reduces unwanted failures.

BREAKDOWN MAINTENANCE

To attend any breakdown maintenance and repair of sub-assemblies. The service engineer shall have to be deployed within 24 Hrs and rectification by 48 hrs during normal working days or during weekly off days or during national holidays. Visit shall have to be provided irrespective of weekly holidays or public holidays.

DIAGNOSTICS REPORT

Comprehensive diagnostics report need to be generated.

The inspection of the equipment condition shall be carried out by EMERSON/SICK/DANIEL Service personnel in accordance with the instruction book.

4. **CATERPILLAR MAKE GEN SETS (906KVA-2 NOS. & 619 KVA-2 NOS) WITH GAS ENGINES (2 NOS, INCLUDING OVERHAULING JOBS) WITH ALL AUXILIARY EQUIPMENT VIZ., SYNCHRONIZING PANEL, MCC PANELS, NGRS ETC.**

Minimum 04 (four) visits of min. duration of 3 or 4 days in each quarter per year per unit (for each gas engine & generator set) in each installation.

PREVENTIVE MAINTENANCE PLAN

Preventive Maintenance of gas engines, generator sets and accessories/fittings are to be carried out in a proactive manner with Certified and trained CAT service personnel and as per OEM recommended schedules including that of gas engine overhauling jobs at each installation.

PREDICTIVE MAINTENANCE:

It refers to the actions that are performed on a component when one or more conditions are met. These conditions indicate when a component is about to fail or deteriorate in performance. All jobs to be carried out in a manner to ensure overall safety and reliability of the system Gas engine gen sets with auxiliary equipment viz., synchronizing panel, MCC panels, NGRs etc and reduces unwanted failures of the system.

Breakdown Maintenance

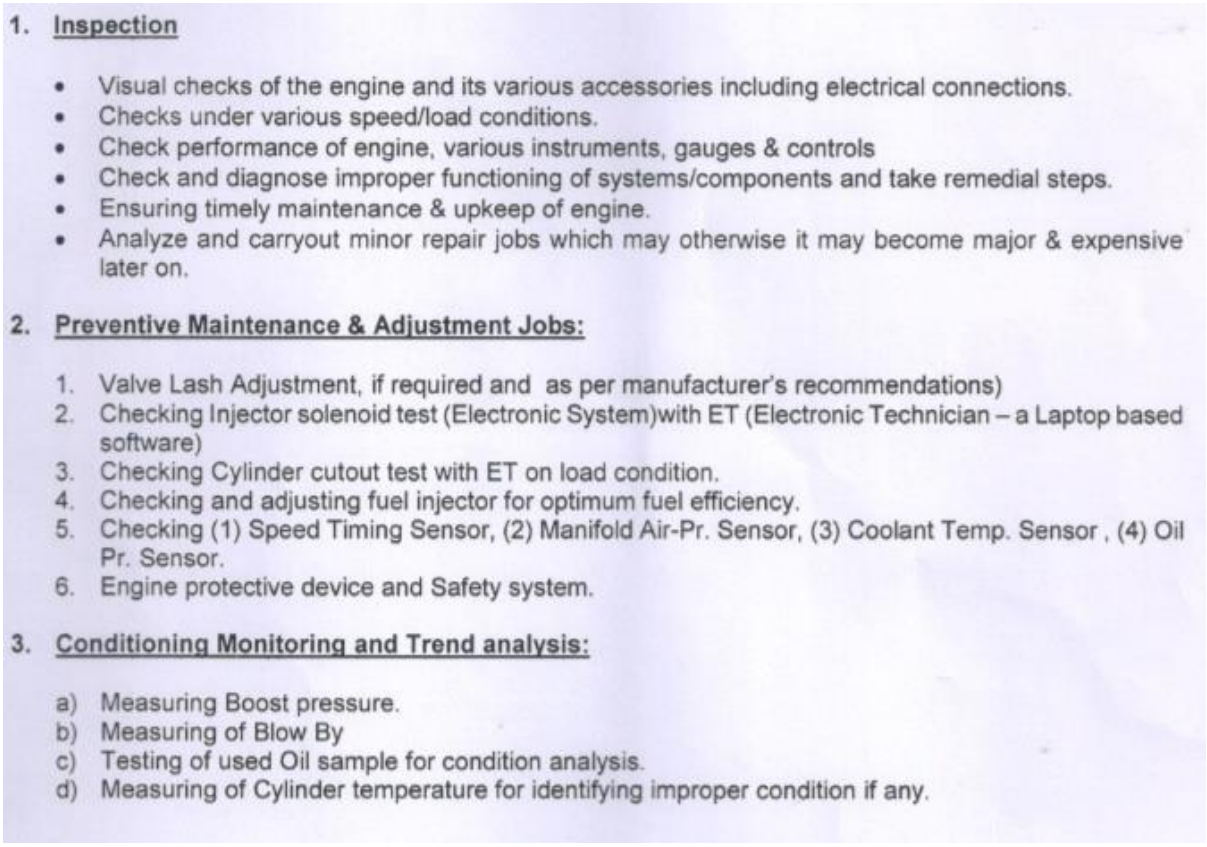
To attend any breakdown maintenance and repair of sub-assemblies. The service engineer shall have to be deployed within 24 Hrs and rectification by 48 hrs during normal working days or during weekly off days or during national holidays. Visit shall have to be provided irrespective of weekly holidays or public holidays.

DIAGNOSTICS REPORT

Comprehensive diagnostics report including vibrations, temperatures, bearing condition analysis via SPM monitoring and data analysis.

The inspection of the equipment condition shall be carried out by CAT Service personnel in accordance with the CAT service instruction book.

In general, the following shall also be accomplished during each AMC visits:



1. **Inspection**

- Visual checks of the engine and its various accessories including electrical connections.
- Checks under various speed/load conditions.
- Check performance of engine, various instruments, gauges & controls
- Check and diagnose improper functioning of systems/components and take remedial steps.
- Ensuring timely maintenance & upkeep of engine.
- Analyze and carryout minor repair jobs which may otherwise it may become major & expensive later on.

2. **Preventive Maintenance & Adjustment Jobs:**

1. Valve Lash Adjustment, if required and as per manufacturer's recommendations)
2. Checking Injector solenoid test (Electronic System)with ET (Electronic Technician – a Laptop based software)
3. Checking Cylinder cutout test with ET on load condition.
4. Checking and adjusting fuel injector for optimum fuel efficiency.
5. Checking (1) Speed Timing Sensor, (2) Manifold Air-Pr. Sensor, (3) Coolant Temp. Sensor , (4) Oil Pr. Sensor.
6. Engine protective device and Safety system.

3. **Conditioning Monitoring and Trend analysis:**

a) Measuring Boost pressure.
b) Measuring of Blow By
c) Testing of used Oil sample for condition analysis.
d) Measuring of Cylinder temperature for identifying improper condition if any.

OVERHAULING :

To be done by OEM only as per OEM recommendation and based on running hours. All the jobs that are included in OEM recommendations for overhauling shall need to be carried during the AMC period by OEM only.

5. **ATLAS COPCO MAKE AIR COMPRESSOR ZT-45 (2 NOS.) & ZT-37(2 NOS.) WITH ALL AUXILIARY EQUIPMENT VIZ. DRYER AND OTHER AUXILIARY EQUIPMENT ETC.**

i) Minimum 04 (four) visits in each quarter per year per Air Compressor in each installation.

ii) **PREVENTIVE MAINTENANCE PLAN**

Preventive Maintenance Plan of compressed air equipment and accessories/fittings in a proactive manner with Certified and trained Atlas Copco service technicians as per OEM recommended schedules.

iii) **BREAKDOWN MAINTENANCE**

To attend any breakdown maintenance and repair of sub-assemblies. The service engineer shall have to be deployed

within 24 Hrs and rectification by 48 hrs during normal working days or during weekly off days or during national holidays. Visit shall have to be provided irrespective of weekly holidays or public holidays.

iv) **DIAGNOSTICS REPORT**

Comprehensive diagnostics report including vibrations, temperatures, bearing condition analysis viaSPM monitoring and data analysis.

v) The inspection of the equipment condition shall be carried out by Atlas Copco in accordance with the Atlas Copco instruction book.

vi) **PREDICTIVE MAINTENANCE:**

It refers to the actions that are performed on a component when one or more conditions are met. These conditions indicate when a component is about to fail or deteriorate in performance. All jobs to be carried out in a manner to ensure overall safety and reliability of the continuous air supply system/Air compressors and reduces unwanted failures of the system.

The bidder shall give an undertaking as per **PROFORMA-II** along with the Technical bid that they shall arrange backup support for entire period/duration of contract, including **Annual Maintenance Contract (AMC**) with OEMs for CGGS Madhuban and FGS Chabua.

In these 5 (five) cases, the O&M Contractor must ensure the availability and ready supply of the service from the respective OEMs or their franchisees for each installation mentioned above. In case of any events of breakdown/ un-functionality of any unit of the above list, the service engineer shall have to be deployed within 24 Hrs and rectification by 48 hrs during normal working days or during weekly off days or during national holidays. Visit shall have to be provided irrespective of weekly holidays or public holidays.

The O&M Contractor must take all necessary arrangement to have pre-set tie-up with the above 5 (five) OEMs or their franchisees. These tie-ups and related services shall be part of the contract. The bidders need to carefully incorporate in their bids the costs of AMC as described above which will be a part of their monthly O&M bill-amount. But they cannot claim separately the cost of these AMC from OIL.

Other than the above 5 (five) OEMs for CGGS Madhuban and FGS Chabua, requirement of OEM or their franchisees for Annual Maintenance Contracts (AMCs)/Warranties of other equipment shall be an issue of the O&M Contractor of their own. Any issues including financial ones regarding other OEM services does not come under the terms/provisions of this contract. In case, the O&M Contractor decides for bringing OEM or their franchisees for any job at CGGS

Madhuban and FGS Chabua the same needs to be endorsed by OIL on back-to-back basis. But the primary responsibility for the O&M service shall entirely rest with the O&M Contractor and all penalties remain applicable on the O&M Contractor even if OIL endorses/permits the O&M Contractor's request for bringing services of the OEMs. Attributing any failure of the O&M Contractor on the OEM/franchisees or their service(s) shall not be acceptable. OIL's endorsement is only for allowing the O&M Contractor to employ the OEMs/ franchisees on their behalf.

Contrarily if the O&M Contractor decides to send any equipment/unit etc to OEM's workshop for maintenance, same needs to be endorsed by OIL. In such cases stand-by arrangement shall have to be provided by the O&M Contractor without extra charge.

In case O&M Contractor fails to start immediate, continuous & full-strength professional O&M operations and should the corresponding delayed, discontinuous & poor execution of maintenance jobs results in shutdown of some operation, malfunctioning/under-performance of the plant, corresponding financial losses to OIL shall be considered as deviation/upset in the PLANT's DESIRED PERFORMANCE LEVEL.

xi) If OIL finds the O&M Contractor's delay in starting required maintenance job detrimental to the plant or its operation, OIL may carry out the job on its own but the financial implications in regards to cost of OIL's repair-activities will be recovered from monthly O&M bills.

xii) In case of breakdown of equipment and after its immediate reporting to OIL, if the O&M Contractor reports that the equipment - is beyond economic repair/lasted its expected self-life period/does not have any constituent serviceable spares to be changed &/or any scope of repairing/servicing etc. and so there is no scope of the O&M Contractor for maintenance of the item and OIL needs to replace the item as a whole, the O&M Contractor will submit the equipment to OIL.

OIL will investigate the O&M Contractor's claims and if these claims are found to be correct, OIL will purchase the replacement item(s) as a whole as per clause no 2.04A.

Otherwise, if the O&M Contractor's claims are found to be incorrect, as per OEM or standard technical literatures etc. the O&M contractor shall have to repair the same.

xiii) After the O&M Contractor's communication as in clause nos 2.04D (xii), OIL shall decide and communicate the O&M Contractor about further running of those equipment/facilities.

E. STATUTORY ASPECTS IN REGARDS TO PROCUREMENT OF ITEMS & SERVICES

i) All O&M jobs and related purchase of spares, consumables & materials (as per clause 2.00 and its sub clauses) and services etc. from third parties or directly or indirectly through a tie-up or otherwise by the O&M Contractor shall be in strict

accordance of relevant stipulations of Oil Mines Regulations and other safety norms in force as well as Oil Industry Safety Directorate (OISD) standards in vogue. The most stringent of provisions stipulated in latest editions/ amendments of Oil Mines Regulations & OISD shall be followed.

ii) All spares, consumables and materials procured by the O&M Contractor as above (as per clause 2.00) for O&M of the plant shall have necessary certification of Govt. approved agencies and approval of such statutory bodies as stipulated vide provisions of Oil Mines Regulations, Indian Explosives Act, Central Electricity Authority regulations 2010, Petroleum Rules, etc. in force or byelaws/ directives promulgated by Govt. circulars.

iii) If electrical spare items (including, among others, those of Instrumentation & Control System) are required to be purchased by O&M Contractor (as per clause 2.00), these must have CMRI certification and DGMS approval obtained/ arranged by the O&M Contractor or as per provisions stipulated in latest editions/ amendments of Oil Mines Regulations & OISD.

2.02- **DAY TO DAY ROUTINE OPERATION AND MAINTENANCE JOB FOR ELECTRICS OF THE PLANT**

The scope of work of electrics under this contract starts from outgoing terminals of the generator synchronizing panel in its power plant shed and covers all that are required for operation and maintenance of all electrical drives / items & illumination of the plant as described under Description of Electrics at CGGS Madhuban and FGS Chabua(As the auxiliary MCC panels of GG sets and DG set are associated with respective gensets and supplied by the OEMs of gensets, these are kept under the purview of the OEMs/vendors of OEM. Spares and maintenance of these panels namely, synchronizing panel, MCC panels, DG control panel, NGR & NGR monitoring panel shall be clubbed with the AMC to be carried out with respective genset OEM/vendor.).

Spare supply, repair and maintenance jobs of all electrical equipments shall be governed by the forgoing clause no 2.00 and its sub clauses. All terms and conditions stated in clause no 2.00 and its sub clauses are applicable for all electrical equipment, machinery and facilities of the plant.

General guidelines on the required activities under the electrical maintenance and/or servicing jobs along with their required frequencies shall be as per OEM recommended maintenance schedules. All these activities shall be part of the routine electrical maintenance and servicing and are not exhaustive. The O&M Contractor cannot and shall not decline to do any other activities required for trouble free, smooth uninterrupted 24-hour operation of the plant as per safe and sound industry practice.

OIL and/or the O&M Contractor - after consultation & consent from OIL - may include / change / modify any formats for electrical maintenance jobs at any point in time during the currency of the contract.

In case of failure of the O&M Contractor to do any of the electrical maintenance and servicing jobs shall be considered as deviation/upset in the PLANT's DESIRED PERFORMANCE LEVEL.

2.03- **DAY TO DAY ROUTINE OPERATION AND MAINTENANCE JOB FOR INSTRUMENTATION OF THE PLANT**

i) Spare supply and repair, maintenance of all instrumentation equipment shall be governed by the same clause no 2.00 and its sub clauses. All terms and conditions stated in clause no 2.00 and its sub clauses are applicable for all instrumentation equipment and facilities of the plant.

ii) It shall be responsibility of the O&M Contractor to make all instruments and control system of the plant work satisfactory throughout the contract period and also handover the systems to OIL in working condition at the expiry of the contract.

iii) The O&M Contractor shall maintain the equipment as per manufactures' guidelines. System back-up of each workstation at control room including backup of DCS, processors, PLCs shall be maintained by the O&M Contractor on regular basis.

iv) The contractor must prepare and submit preventive/scheduled/ breakdown maintenance schedule formats as well as routine and daily Instrumentation Check report formats for OIL's approval within 30 days from the LOA. The contractor has to follow the approved schedules for operation and maintenance of the instrumentation system and field instruments and a copy of all reports must be submitted to IM for record-keeping.

v) The contractor must also prepare Calibration Report formats and a schedule for calibration of all instruments such as gauges, transmitters, flow meters, Fire and Gas Detectors based on OEM recommendations and the same must be submitted for OIL's approval within 30 days from the LOA. The contractor has to strictly adhere to these Calibration Schedules and Formats and a copy of all reports must be submitted to IM for record-keeping.

vi) The Contractor must have minimum tools and tackles, test equipment such as Multimeter, Portable Pressure Calibrator, Temperature Bath, mA & mV source, HART and FF Hand held Calibrator etc for calibration and maintenance of all instruments and the same are to be kept available in the CGGS Madhuban and FGS Chabua premises. In addition to the above mentioned minimum tools and test equipment, any other test and measuring equipment which may be required at any point of time during the contract period for maintenance of any instruments under the CGGS Madhuban and FGS Chabua Instrumentation system, must be arranged by the Contractor of their own accord and kept in CGGS Madhuban and FGS Chabua.

vii) For any instrument found faulty/non-functional by the Contractor during maintenance jobs performed, the Contractor must provide a

thorough analysis mentioning the particular fault(s) due to which the instrument is not functioning and the analysis report must be submitted to M/s OIL.

viii) General guidelines on the required activities under the instrumentation maintenance and/or servicing jobs along with their required frequencies shall be as per OEM maintenance schedules. All these activities shall be part of the routine instrumentation maintenance and servicing and are not exhaustive. The O&M Contractor cannot and shall not decline to do any other activities required for trouble free, smooth uninterrupted 24-hour operation of CGGS Madhuban and FGS Chabua as per safe & sound industry practice.

ix) OIL and/or the O&M Contractor - after consultation & consent from OIL - may include/change/modify any formats for instrumentation maintenance jobs at any point in time during the currency of the contract.

x) In case of failure of the O&M Contractor to do any of the instrumentation maintenance and servicing jobs as above and fill up any of the formats as per schedule, shall be considered as deviation/upset in the PLANT's DESIRED PERFORMANCE LEVEL.

2.04- **CALIBRATION AND CROSS-CHECKING OF FIELD INSTRUMENTS**

Calibration of following instruments and cross checking of instruments must be carried out regularly and as per requirements at CGGS Madhuban and FGS Chabua by the O&M Contractor.

i)	Pressure transmitters & gauges	:	Regularly and as per requirement.
ii)	Temperature transmitters & gauges	:	Regularly and as per requirement.
iii)	Portable gas detector	:	Daily cross-checking.
iv)	Online Fire and Gas Detectors	:	As per approved schedule by M/s OIL.
v)	Dew point meter	:	As per approved schedule by M/s OIL.
vi)	Gas chromatograph	:	As per approved schedule by M/s OIL.
vii)	Flow meters like Electro Magnetic Flowmeter, Ultrasonic Flowmeter, Coriolis Flow Meter etc.	:	As per approved schedule by M/s OIL.
viii)	Level transmitters & indicators	:	As per approved schedule by M/s OIL.
ix)	Any other instruments:	:	As and when required.

NOTE:

OIL shall provide basic civil infrastructure for Instrumentation Laboratory inside CGGS Madhuban and FGS Chabua premises with a pilot airline in the Laboratory. All other test and measuring equipments, tools and tackles as mentioned in point 2.06 (vi) will be under the scope of Contractor.

2.05- GENERAL HOUSEKEEPING AND UPKEEPMENT OF THE PLANT

Housekeeping of the entire installation (including Scrapper Trap Areas, Security barrack, flare pit etc. for CGGS Madhuban and FGS Chabua) in totality including External Housekeeping, cleaning of internal and externals including Civil structures, grass cutting, gardening, watering the pots, vests and gardens, all type of house cleaning viz. carpet cleaning, window & door cleaning, floor cleaning including toilet & kitchen cleaning, etc. etc. shall be the responsibility of the O&M Contractor to keep it in the tip top environmentally safe and clean condition.

External Housekeeping shall also cover the following:

i. Cleaning & sweeping of external areas of plant site, outside periphery road, flare pit road and flare pit at FGS Chabua (which is located outside FGS Chabua) and collection of garbage/waste including disposing it to the designated locations inside/outside the plant premises.

ii. Miscellaneous works like cleaning of storm water drains, tunnels &trenches etc. as and when required.

iii. Deployment of dumpers/trucks for handling/disposal of the garbage, debris, trimming branches of trees etc.

iv. Cleaning of entire inside surface of fresh and fire water reservoirs manually by providing labour, tools and tackles, ladder/scaffolding, other devices etc. required to remove completely the algae growth, silt deposits and greasy substances and dispose of the same to a designated location.

v. Other labour oriented jobs on exigency to meet O&M requirement.

The O&M Contractor must always keep the entire plant; it's all equipment, facilities, buildings and sheds, premises and roads, footpaths, walkways etc in highest level of cleanliness and aesthetic look. In this respect the O&M Contractor shall take up all necessary jobs including but not limited to the following:

i) Cutting of grass / jungle / reeds / creepers (on all vertical parts of all structures) etc. & removal and disposal of the same at OIL's designated places at distances of around a 10.0 km from CGGS Madhuban and FGS Chabua.
Grass height at all around the plant must be maintained at maximum level (2 inches from ground).

ii) Cleaning of top part/inside vertical parts/bottom part of all surface drains and the drains surrounding all building, shed barrack etc. and disposal of the debris

/sludge etc. at OIL's designated places at distances of around a 10 km from CGGS Madhuban and FGS Chabua.

All the drains need to be clean, devoid of any litter, trash, clogging etc. This job is in addition to cleaning of oily dirt etc. as per clause no. 2.03x (2).

iii) O&M Contractor shall have to maintain all footpaths, CC mattress area, brick-soled area walking path around tanks in the tank dyke area etc in completely clean condition. These areas shall have to devoid any growth like algae or any other slippery organic, non-organic formation on them at all time during a year.

O&M Contractor shall have to carry out cleaning of road side-burns and sides of all surface drains of the entire plant. All road sides and drain sides shall have to be clean and free of any grass.

iv) The O&M Contractor needs to maintain garden areas in the CGGS Madhuban and FGS Chabua entrance area, around administrative building, front areas of the control room, around vacant areas and along all the internal roads of CGGS Madhuban and FGS Chabua, outside front areas of the CGGS Madhuban and FGS Chabua.

The O&M Contractor shall have to plant adequate number of flower-plants and/or decorative plants with flowers in each month in the garden area of CGGS Madhuban & FGS Chabua. The varieties of flowers shall be Dahlia/Salvia/Marigold/Aster/Pansy/Petunia /Chrysanthemum/Dianthus / Gladioli/Phlox/Cosmos etc. Preferably around equal numbers of the variety of the flowers are expected. All these activities shall be part of the routine plant maintenance jobs and are not exhaustive. The costs for flower plantation and grass cutting & cleaning jobs will be reimbursed to the O&M contractor as per the rate quoted by the contractor in the bid.

The O&M Contractor must engage person(s) for day time upkeepment and attending to the garden. This job of the O&M Contractor shall also include arranging of required amount of cow-dung which is available within a radius of 1.0 to 2.0 Km from CGGS Madhuban and FGS Chabua.

v) There shall not be any dry grass, shoots, tinder etc inside any part of the plant. There shall not be any garbage, dumping, trash in any part of the plant (both inside and outside of the plant). O&M Contractor shall keep the plant without littering in any part of the plant.

vi) The O&M Contractor shall have to keep the two ground water reservoirs, other water storage facilities completely clean without any sorts of foreign materials on the water of the reservoirs/storage facilities. O&M Contractor should be able to keep the water in a very clean state so that the reservoir-bottoms are visible from surface for enhancing their aesthetic look.

vii) All bathrooms, toilets, urinals etc must be maintained at highest level of cleanliness. The O&M Contractor must deploy sweepers regularly in that respect.

There must be all time availability of all types of sanitary fittings, essentials and sanitary consumables at all these places.

In respect to above, jobs shall be deemed to be incomplete in a month if deviation(s) from the specifications is/are observed at any part of the plant during any time of a month and shall be considered as deviation/upset in the PLANT's DESIRED PERFORMANCE LEVEL.

The deviation(s) from the specifications as above, if observed, shall be communicated immediately to the O&M Contractor by OIL. On prompt rectifications by the O&M Contractor within specific time period, penalty on the O&M Contractor shall NOT be levied. OIL expects good relationship with the O&M Contractor and also expects highly professional and positive attitudinal approach of the O&M Contractor for prompt response in rectifications of any faults / deviation from specs.

2.06- **OTHER JOBS AND SERVICES**

i) Dispatch of liquid hydrocarbon to nearby OCS/Tank Firm(OIL) condensate dispatch pumps.

The O&M Contractor shall have to keep the condensate DP units always in functional / operational state.

The O&M Contractor shall have to do all maintenances of the condensate DP units in safe ways following SOPs.

The O&M Contractor's failure to do O&M of the condensate DPs and/or put the condensate DPs in service as and when required, shall be considered as deviation/upset in the PLANT's DESIRED PERFORMANCE LEVEL.

2.07- **NEW ADDITIONAL EQUIPMENT, INSTRUMENT, FACILITY AT CGGS/FGS DURING THE PERIOD OF CONTRACT**

i) OIL may decide to incorporate new equipment, facilities, and instruments etc. at CGGS Madhuban and FGS Chabua for the sole purpose of better performance of the plant, for compliance of recommendations of any statutory bodies or audits etc. and for subsequent operational requirements with augmentation of existing capacity.

The O&M Contractor must carry out all operation and maintenance of any new equipment/facilities/instruments installed for compliance of any recommendation(s) of any statutory bodies or audits etc. during the currency of the contract. The new additional units/facilities will be part of existing system / process and will comprise minor changes only and there shall not be any additional or specialized man power requirement. The O&M of such additional items shall have to be carried out by the O&M Contractor.

Any new equipment / facility / instrument commissioned as replacements in place of already existing ones shall NOT fall under this category. All such

new items commissioned as replacements shall be part of the contract and all terms and conditions of this contract agreement shall remain applicable for the items newly commissioned as replacements. The old replaced items shall be out of the terms of the contract.

In addition, OIL may also supply electrical power to nearby OIL's installations from the existing power generating units available at CGGS Madhuban and FGS Chabua. Since there will not be any extra costs to the contractor, the Contractor shall not refuse to operate & maintain the power generating units.

ii) Responsibility of maintenance of any new items referred as above shall be on the O&M Contractor and they cannot decline to take up maintenance jobs on any of such new items. Spares-supply for any new items – irrespective of their costs will be under OIL's scope. Clause no 2.00 for OIL to advice the O&M Contractor to buy items on behalf of OIL will be applicable after 6(six) months from installation of the new items.

iii) Should the O&M Contractor hold that the new items as referred in clauses 2.10 (i) & (ii) above have no connection to operation of CGGS Madhuban and FGS Chabua and they decline to carry out both Operation and maintenance or any one of them, matter will be resolved by the managements of both the companies. But in that case also the O&M Contractor must start doing its O&M jobs on the new items and in NO case shall wait for settlement of the matter. If the decision of the managements goes in favour of the O&M Contractor, OIL will reimburse for their O&M jobs.

Further, failure to carry out operation and maintenance on the new items shall be considered as deviation/upset in the PLANT's DESIRED PERFORMANCE LEVEL.

2.08- **PLANT PAINTING**

Painting of all the items inside the boundary walls of the two installations (CGGS-Madhuban and FGS-Chabua) except the buildings, sheds, boundary walls, dyke walls and watch towers will have to be carried out by the O&M contractor. In general painting of the following items will be under the scope of the O&M contractor - Equipments, Instruments, Separators, Vessels, Heat Exchangers, Drums, Storage Tanks, Pipings, Pipe Fittings, Valves, Steel Structures, Pipe Trestles, Supports, Steel Columns, Canopies, Walkways, Handrails, Platforms, Sign Boards, Road markers etc. Painting of Buildings, Sheds, Boundary Walls, Dyke Walls and Watch Towers will be under the scope of OIL.

Paints for the painting jobs will be supplied by OIL or will be procured by Contractor on behalf of OIL in line with spares procurement with prior approval from OIL. However, contractor will be required to calculate the requirement of paints and submit their estimate to OIL within 3 (three) months of receipt of work order for the O&M job. The actual quantity will be

decided by OIL after internal assessment and discussion with the O&M contractor's representative.

Colour for painting will be as per OIL's standard practice which is based on IS:2379.

The O&M Contractor shall do painting of the entire existing plant of CGGS-Madhuban and FGS-Chabua (excluding items which are under OIL's scope) once during the contract period of 4 (Four) years. Also, Painting of the entire plant (excluding items which are under OIL's scope) should be completed within a period of 2 (two) years from issue of work order for the O&M contract. However, the contractor will be required to carry out minor patch-up painting jobs as and when necessary as per advice of OIL's representative. Any new addition to the existing plant shall NOT be under the scope of painting.

Application of paints and surface preparation prior to that for all steel structure of CGGS Madhuban and FGS Chabua shall be as per ISO-12944 standard or any other applicable latest standards or any other applicable statutory acts/regulations. Application of paints should be made with the help of spray-machines. OIL's representative will check and verify about the quality of the painting job at various stages.

The O&M Contractor shall have to do all that is necessary for safe execution of the painting job and will be guided by the terms and conditions as stipulated in HSE clause 2.02 of SCC.

All tools and tackles, spray guns, brushes, protective shield etc. required for the painting job will have to be arranged by the O&M contractor.
The O&M contractor may engage a subcontractor to carry out the painting job with prior approval from OIL.

2.09- **PUBLIC RELATION JOBS**

i) The O&M Contractor shall establish and maintain such relationship with Government, local authorities and with the public as shall be necessary or appropriate to assure that the Operations are conducted and carried out in the most effective way and to the best advantages of OIL.

ii) O&M Contractor shall resolve issues related to the operations of CGGS Madhuban and FGS Chabua(excluding the force majeure conditions) which otherwise may significantly affect the operations of the plant; and perform all other acts of similar nature necessary or in proper connection herewith; and any court appearance pertaining to matters relating to the Contract.

iii) The O&M Contractor will have to do everything that is necessary including but not limited to jobs like liaising with all concerned government departments, civil administration, law-enforcing agencies etc. for keeping all O&M operations of CGGS Madhuban and FGS Chabua normal during any public protest, picketing, "bandh" call etc. such public protest, picketing,

"bandh"call etc. may be in general or specifically against M/s OIL. In any case, the O&M Contractor shall be responsible and accountable for smooth, uninterrupted and trouble-free O&M jobs of CGGS Madhuban and FGS Chabua. The O&M Contractor cannot and shall not attribute any disruption of normal O&M jobs of CGGS Madhuban and FGS Chabua on account of the above reasons to Force Majeure or to OIL. However, OIL will extend all possible assistance to mitigate any unforseen events of Bandhs against OIL.

2.10- O&M JOBS NOT SPECIFICALLY MENTIONED IN FOREGOING CLAUSES

WORKMANSHIP: The workmanship shall be one of best class achievable in the industry and acceptable to the OIL Engineer–in–Charge. Rectification on account of poor workmanship shall be done by the O&M Contractor to the satisfaction of Engineer. During inspection, because of poor workmanship, if an area is not found to the satisfaction of the OIL Engineer–in–Charge, he may deduct a suitable amount from the bill of the O&M Contractor.

INSPECTION & CHECK: All the works is subject to the inspection of the OIL Engineer–in –Charge. The work shall be carried out in a manner, acceptable to the Engineer. The O&M Contractor shall rectify any shortcoming pointed out by the Engineer or his authorized representative.

HSE: All HSE matters as per standard practice and regulations/acts during operation and maintenance of the plant shall be of O&M Contractor's responsibility. The bidder should be well aware of the Environmental Regulation Acts and comply to the requirement fully.

2.11- GENERAL GUIDELINES TO THE O&M CONTRACTOR FOR CARRYING OUT O&M JOBS

i) After completion of the period of currency of O&M, the plant shall be handed over to OIL in sound health & good maintainable order. OIL at its discretion may consider extension/renewal of the Operation & Maintenance arrangement, thereafter, with the same party or otherwise, as deemed fit. At the end of the contract or any extended contract period, OIL shall decide on independent inventory audit of the entire plant.

ii) O&M Contractor shall not, without prior written consent of OIL, disclose the Contract, or any provision thereof, or any specification, plan, drawing pattern, sample or information about the plant or in connection therewith, to any person, organization or agency. This obligation of the O&M Contractor shall be in force even after termination of the Contract.

iii) O&M Contractor shall not, without prior written consent of OIL, make use of any document or information except for purposes of performing O&M. This obligation of the O&M Contractor shall be in force even after termination of the Contract.

2.12- POWER AND DUTIES OF OIL

For smooth and trouble free operation and maintenance of CGGS Madhuban and FGS Chabua, OIL will have some administrative and operational power. Further, OIL will have some duties to perform and assistance to provide to the O&M Contractor.

2.13- **REPORTS/RECORDS/DOCUMENTS/WRITE-UPS TO BE SUBMITTED TO OIL**

i) The O&M Contractor - within 30 days of LOA of the contract - must develop a Safe Operating Procedure (SOP) including reporting formats and such on-line and off-line records as may be generated by Plant Instrumentation & Control system as well as checklists & schedule of routine and periodic activities for operation and maintenance of the plant as per sound practices adopted in upstream hydrocarbon industries. Such SOP shall be duly approved by the Company and be strictly adhered to by the O&M Contractor for operation & maintenance of the plant.

ii) The Company shall also reserve the right to inspect/review the Plant as well as its SOP by itself or its representatives or audit/statutory bodies and demand compliance of recommendations thereof in a particular timeframe. Such compliance jobs from the O&M Contractor as above may entail changes in the SOPs already approved by OIL and these changes will be incorporated in a revised SOP which needs to be adhered to thereafter. In general OIL is not likely to revise once-approved SOPs but there is no limit to number of revisions/amendments to any SOPs.

The O&M Contractor has to update and timely submit all HSE related reports / records etc. to OIL. The report-formats will be as per prevalent ones in OIL and/or as suggested by statutory bodies and as per prevailing laws.

iii) In case of conflict /contradiction arising out of SOPs, contract clauses will prevail. SOPs are made within the purview and after the commencement of the contract.

iv) The O&M Contractor shall establish & maintain such books, records and accounts as are required by the contract like but not limited to reports of laboratory tests for gas samples, water samples etc. In addition to the reporting formats as in the SOPs, the O&M Contractor shall have to furnish all such additional books, records, accounts, data & information pertaining to the operation & maintenance of the plant as may be required and specified by OIL from time to time.

v) The O&M Contractor shall maintain and submit reports, log sheets, checklists etc. of all routine and all periodic maintenance and operational activities including those of statutory nature. The O&M Contractor shall have to report to OIL immediately about any fault / disorder / abnormality found / identified / anticipated on any unit of the plant.

O&M Contractor shall also submit all testing report of equipment / machinery / unit etc. of the plant and also submit observations of the tests

and any corrective actions required / taken in a separate hard bound book meant for these test reports.

vi) The O&M Contractor shall generate reports for day-to-day operation and maintenance in the prescribed formats, report of cleaning and up-keepment of the entire plant, operational problems and their handling without disturbing general operation of CGGS Madhuban and FGS Chabua.

vii) The O&M Contractor shall carry out all safety audits at required frequency and duration and generate reports including but not limited to Tool Box Meeting, Fortnightly Pit Level Safety Meeting, Monthly Safety Meeting, Monthly Fire Drill, Near Miss Incident etc.

The O&M Contractor shall have to promptly report to OIL about likelihood of any unsafe working environment / condition at CGGS Madhuban and FGS Chabuaas identified by them anytime or under Plant General Inspection.

viii) The O&M Contractor shall also furnish all monthly reports including that of inventory or stock position of all spares & consumables stocked by the O&M Contractor, usage of spare items from inventory on real time basis, monthly consumption report of lube oil, HSD, chemicals, electricity, steam etc. A list of such stock will be submitted to OIL in the monthly statement to be submitted by the third day of each month.

ix) The O&M Contractor shall furnish all other reports at different intervals like half yearly reports, quarterly report on status of various equipment and facilities including civil infrastructure, sheds & buildings, roads and yards, landscaping and green belts, electric and illumination and the maintenance thereof.

x) Report on Backlog of corrective maintenance shall be generated by O&M O&M Contractor as an indicator of workload issues and effectiveness of preventive/predictive maintenance programs.

xi) Safety record generation by O&M Contractor. Commonly tracked either by number of loss-of-time incidents or total number of reportable incidents.

xii) Energy use reports as a key indicator of equipment performance, level of efficiency achieved, and possible degradation.

2.14- DAILY INFORMATION AND REPORTS

2.14-1. **O&M Contractor – in conjunction with and as mentioned in some of the foregoing clauses - shall maintain and furnish the following data, information and reports on a daily basis**

i) Daily report which shall cover all activities during the period starting from 6AM of the day to 6AM of the consecutive day in OIL's format. The daily report for a particular day should be ready by 7AM of the consecutive day

and will be communicated to OIL's office over telephone every morning before 7:30 AM by the Chief Plant Manager or his authorized representative.

ii) All routine & schedule/ preventive maintenance jobs carried out at different intervals.

iii) Any deviations / abnormalities in any aspects of O&M matter need to be documented separately and reported in writing to IM or his representative at the earliest.

iv) Daily reports of all maintenance works carried out on a day must be given in a consolidated single report.

v) Daily electrical consumption report as per format to be provided by OIL.

vi) Daily attendance sheet of all O&M Contractor's employees in Form-E

2.14-2. **The O&M Contractor shall generate and submit the following reports as and when required**

i) Reports on any emergency shutdown of operation including the details of failure, action taken and remedial action to prevent repetition of similar shut down in future and the effect of such shut down in overall Plant operation. A chronology of such operation should be maintained. A report shall also be provided when the normal operation is resumed.

ii) All accident reports as per statutory guidelines including but not limited to leakage or failure, oil spills, fire, structural failures, explosion, sabotage, accident reports involving loss of property or life, strikes or O&M Contractors affecting operations. These accident reports shall be complete with detail of accident investigation, reasons leading to accidents, other related findings, and shortcomings on any quarter, remedial steps necessary to avoid recurrence of such accidents etc.

iii) Accident reports must be generated within 6.0 (six) hours or as per statutory provisions from such occurrence which will be sent to the statutory bodies like Director General of Mines Safety, Oil Industry Safety Directorate, as the case may be by OIL. If accidents occur after working-hours of a day, report must be ready by 7:00 am of the next day. In all cases of accidents, the O&M Contractor must report verbally (over phone as the case may be) to the Installation Manager immediately after the occurrence of the accidents.

iv) Immediate reports on any emergency situations as per Disaster Management Plan.

v) Report of malfunctioning or under-performing or breakdown of any units of the plant that takes place at any time during the currency of this O&M contract. All complaints / reports of malfunctioning or under-performing or breakdown of any units of the plant will be entered in a log book with date and time of lodging of complaint / report and thereafter the date and time of

attending the complaint with details of repairs done to restore the unit / equipment / instrument / machine etc.

In case of any incident as above occurs during normal working hours **(**of a working day, same needs to be communicated immediately verbally (in person or over phone) and in writing to IM, OIL**.**

In case the incident occurs beyond normal working hours or in days OIL's officers are unavailable at the plant, verbal reporting needs to be immediately given to IM, OIL by phone and its written report needs to be given **by 8:00am of the next working day.**

2.14-3. **REPORT SUBMISSION / REPORTING WAYS**

All requirements (procedures, monitoring, analysis and record keeping etc.) for an ISO/ISRS installation will be maintained and carried out by the O&M Contractor.

a) All report generation and reporting shall be in specified OIL approved Performa. Reports shall be inclusive of Environmental record – Tracking/Monitoring of discharge levels (air and water) and noncompliance situations. Reports shall include Quarterly Reports to DGMS also or any other essential report not spelt out here.

b) The O&M Contractor shall maintain all necessary documentation and records such as log sheets, charts, performance registers, inventory registers, equipment history, laboratory test reports, daily, weekly, monthly, performance reports, chemicals and reagents consumption reports. These documents shall be developed in consultation with OIL. Relevant important data shall be computerized for easy scrutiny of various parameters as well as given in graphical form wherever possible to facilitate monitoring of the performance on a monthly basis by first week of every month.

c) The daily report, weekly report, monthly report & annual reports in triplicate are to be issued. Clearly showing the daily consumption 1 rate, cumulative consumption/spares details with tabular & graphical representation, preventive maintenance & breakdown maintenance details, deviations from the design value, online instrument status etc. as decided by the Engineer-In-charge.

d) The O&M Contractor shall maintain accounts for receipt, consumption and inventory of all chemicals, spares and consumables.

VARIOUS ASPECTS IN SUBMITTING REPORTS / RECORDS ETC. TO OIL BY THE O&M CONTRACTOR ARE:

a) All records / reports are to be submitted to OIL at stipulated frequencies in both hard copies and in soft format vide electronic mails with OIL's confirmation of mail-receipt. List of email ids shall be provided to the O&M Contractor.

b) All hard copies of reports / records etc. must be countersigned by all concerned persons of the O&M Contractor. O&M Contractor shall have to submit some of the soft copies of reports / records etc. as would be advised by OIL in editable format (for OIL's requirement of using the data) with OIL acknowledging the receipt of corresponding hard copies.

c) Reports / records etc. in both forms are to be submitted during normal working hours **(07:00am to 03:00pm)** of a working day**.**

d) In case OIL's officers are unavailable at the plant, reports / records etc. in both forms need to be submitted **by 8:00am of the next working day.**

e) Hard copies of reports/records etc. must be well maintained / stored by O&M Contractor.

OIL will have separate storing facilities for all hard copies of reports / records etc to be submitted by the O&M Contractor at Administrative office under Installation Manager.

2.14-4. **ACCESS TO OPERATIONS AND RIGHTS TO INSPECTION & INFORMATION FROM THE O&M CONTRACTOR.**

OIL in consultation with authorized representative of the O&M Contractor shall at any point of time of the operations may:

i) Inspect all records, data generated from studies, files and other information kept by the O&M Contractor.

ii) Have copies made of all data or information including lab analysis & charts.

iii) Request and receive from the O&M Contractor statements or status where reasonable as desired by OIL for any job pertaining to operation and maintenance.

2.14-5. **REPORTS TO STATUTORY BODIES AND APPROVALS**

The O&M Contractor will prepare and submit all HSE related reports / records etc. to the statutory bodies and also to OIL required under various Acts, Regulations and guidelines issued by such bodies as and when required.

2.0- MAN POWER CLAUSE

i) The total man power required for complete operation and maintenance of the stations should be provided by the O&M Contractor for which separate organization charts (function wise) showing qualifications of the persons to be provided along with the BID as per **PROFORMA-I**. **PROFORMA-I (PART-I,II,III)** shows the minimum numbers of personnel to be deployed at all the time but not limited to. The O&M Contractor shall have to provide adequate

skilled and experienced staff capable for operation and maintenance of the stations. This shall include experienced staff under a chief plant manager. If the employees of the previous O&M Contractor are engaged under this contract, than the valid list of employees (engaged by the previous O&M Contractor) is/are to be considered as per OIL approved statutory register of employees. However, the designations of the previous employees under the current contract will be as per guidelines detailed in this contract only, notwithstanding the earlier designation assigned to them.

During the period of the contract, the O&M contractor shall have to take the ownership of the manpower deployed at CGGS Madhuban and FGS Chabua. Company (OIL) shall have no responsibility or liability in this regard. Managing the manpower through third party or subcontracting will not be allowed. All the persons deployed by O&M Contractor have to be as per agreed organization chart. The experience of the persons has to be certified by the Engineer-In-Charge.

Qualification and experience criteria required for each Position / Post are detailed in clause no. 3.01. However, in case of engagement of employees of the previous O&M Contractor, OIL may relax the desired criteria for qualification and experience span of these employees at its discretion considering their past performance / working experience in the plants and familiarities with the relevant applicable laws/regulations/statutes etc.

ii) The O&M Contractor shall guarantee that minimum number of personnel per shift shall be deployed strictly as per the agreed organization chart as per **PROFORMA-I (PART-I, PART-II and PART-III)** and there shall not be any deviation from that under any circumstances. OIL may terminate the contract in case the O&M Contractor deviates from above.

For O&M of **FGS Chabua under option–I (for full operating conditions),** the O&M Contractor shall have to deploy minimum manpower as per **PROFORMA-I (PART-II)** only.

For O&M of **FGS Chabua under option–II (for minimum operating conditions)**, the O&M Contractor shall have to deploy minimum manpower as per **PROFORMA-I (PART-III)** only.

PROFORMA-I (PART-I, PART-II and PART-III) shows the minimum number of personnel to be deployed by the O&M Contractor, but this is not limited; the O&M Contractor shall have to deploy additional number of manpower depending on the job requirement to carry out day to day O&M activities.

Failure to engage minimum manpower as per **PROFORMA-I (PART-I, PART-II and PART-III)** after intimation from OIL will attract penalty as per penalty clauses.

iii) All personnel to be deployed in different streams of work must have sound health, requisite qualifications, adequate experience in their respective fields

as well as requisite competency as stipulated vide Indian Mines Act, Oil Mines Regulations & other by-laws, statutes, regulations & norms in force. The O&M Contractor must warrant that all their employees shall perform the work correctly and efficiently and must ensure that such personnel observe all applicable statutory norms and safety requirement of OIL. All the personnel selected by the O&M Contractor must meet/fulfill the requisite qualifications and experiences given in this "Manpower Clause 3.0".

iv) O&M Contractor shall submit all documents, Bio-data / Qualification / Experience-details / Credential/ Competence Level / Eligibility Certificates / Police Verifications / IME reports etc. and other relevant data of any prospective appointments to be deployed at CGGS Madhuban and FGS Chabua. Such personnel must not have any pending case against them in court of law / any pending police case or FIR against them. Any of the employees – officers or work staff – can work at CGGS Madhuban and FGS Chabua only after approval of OIL for such employees. If not approved by OIL, O&M Contractor cannot employ any of its employees at CGGS Madhuban and FGS Chabua. In regards to selection process of the O&M Contractor for their potential employees to be deployed at CGGS Madhuban and FGS Chabua, OIL shall not have any role or say. However, for approval of personnel selected by the O&M Contractor, OIL may conduct interview to assess suitability.

The initial documents to be provided to OIL shall be applicable for any new/ fresh employee to be deployed or any earlier CGGS Madhuban and FGS Chabua employee to be re-deployed at CGGS Madhuban and FGS Chabua at any time during the currency of the contract.

Further, the O&M Contractor shall be responsible for carrying out Periodic Medical Examination (PME) and providing OIL with PME reports and other statutory reports of the employees at CGGS Madhuban and FGS Chabua as and when required as per statutory/regulatory acts and guidelines.

v) Even after initial deployment, if at a later stage OIL finds any personnel of the O&M Contractor to be unsuitable / undesirable to OIL and communicates to the O&M Contractor in writing, the O&M Contractor shall remove such personnel immediately from working at CGGS Madhuban and FGS Chabua. In this case, the O&M Contractor - entirely on their expense - shall promptly replace such personnel with alternative personnel acceptable to OIL.

vi) If O&M Contractor wants to change any of their personnel deployed at CGGS Madhuban and FGS Chabua at any time, replacement for such employee(s) will be required in advance and prior approval from OIL for such replacement will be required. New recruitment shall take over the responsibility after adequate training and familiarization prior to release of concerned persons. For new recruits, clauses 3.0 (i), (ii) & (iii) will be applicable.

vii) O&M Contractor shall be solely responsible throughout the period of the Contract for ensuring that all the O&M Contractor's employees have requisite statutory trainings like but not limited to Fire Fighting Training as per OMR

/OISD-116, MVT, First Aid, Gas Testing etc. This is in conjunction with the clause no 2.02 (ix) about safety rules & regulations.

The O&M Contractor must maintain its training-matrix records of its all employees and keep it updated at all times.

Absence of any requisite statutory trainings including but not limited to the above for any employee shall render that employee un-employable at CGGS Madhuban and FGS Chabua and clause no 3.0 (iii) above will be applicable.

OIL will provide the above mentioned trainings to all employees of the O&M Contractor free of cost. But such training can be imparted to O&M Contractor's personnel at OIL only during periods when OIL conducts these trainings and subject to availability of seats.

viii) The Chief Plant Manager of CGGS Madhuban and FGS Chabua appointed by the O&M Contractor shall be fluent in English and local Language (both writing and speaking).

ix) O&M Contractor shall engage Manpower required for the Operations and maintenance and determine their numbers (minimum number must be as per PROFORMA-I) in all concerned categories of employees (Shift engineers, maintenance engineers, shift supervisors, maintenance gang supervisors, competent and/or skilled work personnel and workers). Selection, hours of labour and compensation shall be as per the provisions of Mines act and other applicable laws, by-laws, regulations, Acts etc. O&M Contractor can and shall obtain when appropriate occasional or part time service of experts, seconded employees for operational requirement or for having some operational advantage in O&M Contractor's performance. But OIL's approval for such employee's deployment at CGGS Madhuban and FGS Chabua needs to be taken beforehand.

x) A general guideline about deployment of **minimum number of employees** under different category / shifts is given below:

a) There must be minimum 3(three) shifts of 8 hours each with one reliever shift as per **PROFORMA-I**.

b) In each shift **minimum number of persons** as per **PROFORMA-I** shall have to be deployed.

c) General shift and other shifts shall comprise the minimum **numbers of Key Personnel as per PROFORMA-I**.

Normal duration of General shift as well as shift duty duration will be same as OIL's timings. But all engineers shall be available for 24 hours and all or anyone of them must be available at worksite as per requirement &/or as per advice of OIL in regards to any O&M work. If OIL decides that presence of all or anyone of them is necessary for safe, uninterrupted and full-capacity performances of all O&M jobs of the plant at any time beyond general shift

on any days, person(s) must attend duty at site. Here decision of the necessity of the person's presence is solely OIL's and O&M Contractor has to abide by that decision.

xi) The **minimum number of persons** - as in clause no 3.0 (x) above - shall not decrease on any reason. Shift to shift change over needs to be maintained and any person working on preceding shift cannot leave the plant unless his corresponding reliever of the next shift relieves him of his duty. This is applicable to officers and workmen alike and applicable in case of maintenance gang shift change-over between morning and second shifts. **For breakdown maintenance** the O&M Contractor shall arrange its maintenance gang during night shifts also. However, in all cases, O&M Contractor needs to plan their work personnel in such a way that no employee must work more than 1 shift at any point of time except under emergency situations and with prior approval from the Installation Manager.

The O&M Contractor will submit a list of engaged manpower and their deployment pattern including any change in the manpower/ deployment pattern during the tenure of contract period. The deployment pattern should meet the statutory requirement as per Mines act and other Government Laws, statutory by-laws and Acts etc. O&M Contractor shall provide the Installation Manager, OIL with roster/ deployment pattern of all its employees on a monthly basis before the start of the month. O&M Contractor shall furnish actual attendance of a day to the Installation Manager or to his representative on the next working day. Failure to provide daily attendance sheet to OIL shall be considered as deviation/upset in the PLANT's DESIRED PERFORMANCE LEVEL.

xii) O&M Contractor will intimate the Installation Manager, in writing, if any deviation particularly in the numbers of respective category of employees (Shift engineers, maintenance gang engineers, shift supervisors, maintenance gang supervisor, competent and/or skilled work personnel and workers) takes place in any shift on a day on the next working day. O&M Contractor will highlight on their daily attendance given to the IM, if any employee had to work for 2 shifts consecutively as per the clause no 3.0 (xi) above. All applicable benefits like OT, rest/off Day(s) etc. need to be granted to such employees.

xiii) The O&M Contractor, before starting the work shall obtain a license from concerned authorities under the Contract Labour (Abolition and Regulation) Act 1970, and furnish a copy of the same to the Company. O&M Contractor shall also be responsible for its validity and renewal and for complying with provisions of all applicable Act, Rules and Regulation in force at the locations of the site.

xiv) The O&M Contractor shall be solely responsible throughout the period of the Contract for providing all requirements of their personnel, including but not limited to their insurance, housing, medical services, messing, transportation (both air and land transportation), vacation, salaries and all amenities, termination payment and taxes etc. as per best industry practice and in

accordance with accepted International oilfield practices. There must not be any violation of applicable acts/laws/regulations like payment of wages act, payment of bonus act, contract labour act pension scheme, employees provident fund, minimum wages act etc. etc. or any act/rules/regulations framed thereafter of these acts/rules/regulations etc. All these benefits are at no charge to OIL.

xv) OIL will not provide any canteen service other than the place / structure / shed / change-room etc. only for the purpose of eating meal &/or changing stained clothes etc.

xvi) For all employees of the O&M Contractor in any shifts, meal time shall be of half an hour included within 8(eight) hours of shifts. Normally, extended hours of shift duty pattern will not be allowed considering safety hazards in the plant. However, under special circumstances or emergency requirement, OIL may allow extension of shift duty hours for temporary period without violation of statutory requirements. Other than general shift employees, all other employees shall avail this half-hour break in staggered manner. In no case, the O&M Contractor can claim shortage of man power at any time of a day by more than 1 person on account of lunch / Tiffin break etc.

Any shortage of man-power below the minimum number of employees as stated in above clauses due to any reason(s) under any clauses as above or any other reasons of the O&M Contractor shall be considered as deviation/upset in the PLANT's DESIRED PERFORMANCE LEVEL.

Daily attendance of general shift employees of the Contractor (including shift duty rosters) will have to be countersigned by OIL's representative/ Installation Manager. Also, all shift duty roasters will have to be countersigned by the OIL's representative/ Installation Manager.

The cost of manpower will be part of monthly O&M bill and will be as per the rate quoted by the bidder.

3.01- **JOB REQUIREMENT AND QUALIFICATION OF THE KEY PERSONNEL FOR NEW RECRUITS**

i) **CHIEF PLANT MANAGER:**

a) **FOR CGGS MADHUBAN**

The incumbent shall be an Engineering Graduate in Mechanical / Instrumentation/Electrical/Chemical discipline from a Govt. recognized institute with minimum 8 (eight) years of experience in the operation and maintenance of crude oil & natural gas Production installations / natural gas gathering installations / crude oil or natural gas processing installations. The person shall have overall responsibilities for safe & environmentally friendly operation & maintenance and administrative activities of the plants and establishment. The person shall be fully conversant with all the operation and maintenance activities of the installations including hazardous oil and gas processing, different pumps/ motors, water treatment plant,

electrical systems, various control loops of the processing, experience in execution of Control & Instrumentation and in the operation and maintenance of SCADA/ DCS system etc. He should also be familiar with calibration and servicing of various electronics and pneumatic instruments, analyzing of P & I diagrams, control loop checking, and instrumentation standards V- SAT communication system etc. and computer operation. He should be confident in independently carrying out fault finding analysis, rectification of fault, operation and routine / planned / breakdown maintenance of all the electrical equipment / items of the plant including the air conditioners etc. Additionally, he must have adequate experience and managerial skill to lead a multidisciplinary team to carry out day to day jobs. The person shall also be conversant with Oil & Gas Mines Safety Rules & Regulations and shall be in constant touch with Company representative.

The Chief Plant Manager shall normally attend general shift duty but shall be available for 24 hours. The Chief Plant Manager will be overall in charge for safe O&M activities (including submission of all kinds of reports to IM) of the plant under the installation manager (IM). Though the O&M Contractor-company is accountable for any shortcoming in safe O&M operations, the shift-in-charge will also be individually answerable to OIL. The Chief Plant Manager shall report to Installation Manager, CGGS Madhuban.

b) **FOR FGS CHABUA**

The incumbent shall be an Engineering Graduate in Mechanical / Instrumentation / Electrical / Chemical discipline from a Govt. recognized institute with minimum 8 (eight) years of experience in crude oil & natural gas Production installations / natural gas gathering installations / crude oil or natural gas processing installations. Alternately the person may be a Jr. Engineer (Mechanical/Electrical/Instrumentation) certificate holder / science graduate with P-C-M from Govt. recognized institutes and having at least 10 (ten) years' experience in above installations. The person shall have overall responsibilities for safe & environmentally friendly operation & maintenance and administrative activities of the plants and establishment. The person shall be fully conversant with all the operation and maintenance activities of Gas Gathering installations including hazardous oil and gas processing, different pumps/ motors, water treatment plant, electrical systems, various control loops of the processing, experience in execution of Control & Instrumentation and in the operation and maintenance of SCADA/ DCS system in a continuous process plant, preferably in operation and maintenance of Oil & Gas Production installations. He should also be familiar with calibration and servicing of various electronics and pneumatic instruments, analyzing of P & I diagrams, control loop checking, and instrumentation standards V- SAT communication system etc. and computer operation. He should be confident in independently carrying out fault finding analysis, rectification of fault, operation and routine / planned / breakdown maintenance of all the electrical equipment / items of the plant including the air conditioners etc. Additionally, he must have adequate experience and managerial skill to lead a multidisciplinary team to carry out day to day jobs.

The person shall also be conversant with Oil & Gas Mines Safety Rules & Regulations and shall be in constant touch with Company representative.

The Chief Plant Manager shall normally attend general shift duty but shall be available for 24 hours. The Chief Plant Manager will be overall in charge for safe O&M activities (including submission of all kinds of reports to IM) of the plant under the installation manager. Though the O&M Contractor-company is accountable for any shortcoming in safe O&M operations, the shift-in-charge will also be individually answerable to OIL. The Chief Plant Manager shall report to Installation Manager, FGS Chabua.

ii) **MECHANICAL O&M MANAGER**

Mechanical O&M Manager must have Degree in Mechanical Engineering from a Govt. recognized institute with minimum 6 years' working experience in upstream E&P company. Alternately the person may be a Jr. Engineer (Mechanical) certificate holder from Govt. recognized institutes and having at least 10 (ten) years' working experience in upstream E&P company. The incumbent should be dynamic and have managerial skill to plan ahead and lead a team of experienced persons for carrying out day to day jobs operation and maintenance. The person shall have overall responsibilities for safe & environment friendly operation & maintenance of all Mechanical equipment / items of the plant. He should be confident in independently carrying out fault finding analysis, rectification of fault, operation and routine / planned / breakdown maintenance of all the Mechanical equipment / items of the plant.

The Mechanical Manger should be conversant with all statutory rules and regulations such as Indian Oil Mines Regulations (2017), Mines Act, Mines Rules, and various directives, rules and regulations of Statutory bodies like DGMS (India), OISD etc. He shall, with the help of his team, shall keep and maintain all statutory Mechanical records of the plant.

The Mechanical manager shall be the overall in-charge and coordinator of all maintenance activities and shall be responsible for overall plant mechanical units including record keeping. He shall, with the help of his team, shall keep and maintain all statutory mechanical records of the plant. Apart from the usual mechanical units like pumps / engines / compressor etc, the person shall be conversant with all the operation and maintenance activities of CGGS Madhuban and FGS Chabua related to hazardous hydrocarbon liquid and gas processing, water treatment plant, firefighting system etc. The person shall be in constant touch with Company representative.

The Mechanical manager shall normally attend general shift duty but shall be available for 24 hours. Additionally, he must assist the Plant Manager in every possible way to run the plant smoothly, including the administrative, HSE (including records & reports) activities of the plants and establishment. This person shall report to respective Plant Manager of the Installation CGGS Madhuban or FGS Chabua.

iii) **INSTRUMENTATION O&M MANAGER**

The Instrumentation manager shall be the overall in-charge and coordinator of all maintenance activities of the control and instrumentation systems and DCS/ SCADA jobs of CGGS/FGS. The person shall have to take the responsibility of planning and execution of Routine, Scheduled/Preventive and Breakdown maintenance and inventory of spares and consumables.

He shall be Engineering degree holder in Instrumentation or Electronics or Electronics & Telecommunication from a Govt. recognized institute and must have a minimum of 6 years' working experience in execution of Control & Instrumentation and in the operation and maintenance of SCADA/ DCS system in a continuous process plant, preferably in operation and maintenance of Oil & Gas Production / processing / gathering installations. Alternately the person may be a Jr. Engineer (Instrumentation or Electronics or Electronics & Telecommunication) certificate holder from Govt. recognized institutes and having at least 10 (ten) years' working experience in above mentioned areas. He should also be familiar with calibration and servicing of various electronics and pneumatic instruments, analyzing of P & I diagrams, control loop checking, and instrumentation standards V- SAT communication system etc. He shall, with the help of his team, shall keep and maintain all statutory Instrumentation records of the plant.

The Instrumentation Manager shall normally attend general shift duty but shall be available for 24 hours. Additionally, he must assist the Plant Manager in every possible way to run the plant smoothly, including the administrative, HSE (including records & reports) activities of the plants and establishment. This person shall report to respective Plant Manager of the Installation at CGGS Madhuabn and FGS Chabua.

iv) **ELECTRICAL O&M MANAGER**

Electrical Manager must have Degree in Electrical Engineering from a Govt. recognized institute with minimum 6 years working experience in upstream E&P company. Alternately the person may be a Jr. Engineer (Electrical) certificate holder from Govt. recognized institutes and having at least 10 (ten) years' working experience in upstream E&P company. The incumbent should be dynamic and have managerial skill to plan ahead and lead a team of experienced persons for carrying out day to day jobs operation and maintenance. The person shall be the overall in charge and co-coordinator for safe & environment friendly operation & maintenance of all electrical equipment / items of the plant. He should be confident in independently carrying out fault finding analysis, rectification of fault, operation and routine / planned / breakdown maintenance of all the electrical equipment / items of the plant including the air conditioners.

He must possess valid Electrical Supervisor's Certificate of Competency [minimum parts I, II, III, IV & VI and preferably Part VIII-Mining Installations] issued by State Licensing Board, Assam or equivalent authority. The Electrical Engineer should be conversant with all statutory rules and regulations such as Indian Oil Mines Regulations (1984), Central Electricity

Authority Regulations (2010), Mines Act, Mines Rules, Indian Electricity Act and various directives, rules and regulations of Statutory bodies like DGMS (India), OISD etc.

The electrical manager shall be responsible for overall plant electrical including record keeping and submission of report to IM. He shall, with the help of his team, shall keep and maintain all statutory electrical records of the plant.

Apart from the electricals of the plant, the person shall be conversant with all the operation and maintenance activities of CGGS Madhuban and FGS Chabua related to hazardous hydrocarbon liquid and gas processing, water treatment plant etc. The person shall be in constant touch with Company electrical engineer/representative.

The Electrical Manager shall normally attend general shift duty but shall be available for 24 hours. Additionally, he must assist the Plant Manager in every possible way to run the plant smoothly, including administrative, HSE (including records & reports) activities of the plant & establishment. This person shall report to respective Plant Manager of the Installation CGGS Madhuban and FGS Chabua.

v) **HEALTH SAFETY ENVIRONMENT (HSE) MANAGER**

The HSE Manager must be a Graduate Engineer in any discipline from a Govt. recognized institute with 3 years' work experience in upstream E&P company. Alternately the person may be a Diploma holder in any discipline from Govt. recognized institutes and having at least 5 (five) years' working experience in upstream E&P company. Any additional qualification on HSE will be an added advantage in both the cases.

The HSE manager shall be the overall in-charge and coordinator of all HSE activities including records & reports. The person shall be able to initiate execution of all the activities stated in clause no 2.0 and other clauses above. The person shall by oneself or with the league of Plant manager / other managers/Engineers/other safety supervisors must carry out all S&E related jobs on priority basis so that the O&M Contractor's all personnel are sensitized / aligned to carry out the jobs as primary O&M jobs. This officer shall ensure that all routine S&E related jobs coming at definite frequencies must be known to all in the morning rake-up / tool-box meeting/jobs safety analysis etc. The person must be able to develop good file management / record keeping system and will be required to generate and maintain all statutory records/reports.

The HSE manager shall normally attend general shift duty but shall be available for 24 hours. Additionally, he/she must assist the Chief Plant Manager in every possible way to run the plant smoothly, including administrative, HSE activities of the plant &establishment. This person shall report to Chief Plant Manager and Installation Manager at CGGS Madhuabn.

vi) **HR/ADMINISTRATIVE/PUBLIC RELATION OFFICER/RECORD KEEPER/ACCOUNT MANAGER**

This Manager shall carry out all the administrative, HR, Public Relation and Account related jobs of the O&M Contractor for both CGGS Madhuban and FGS Chabua. In addition, this person will also be required to carry out record keeping jobs of both the O&M Contractor and OIL at CGGS Madhuban. However, for FGS Chabua, Plant manager, FGS Chabua shall be responsible for record keeping. This person shall report to Chief Plant Manager and Installation Manager at CGGS Madhuban. The person for this position must be a Graduate in any discipline from a Govt. recognized institute with 8-year work experience in upstream E&P company. This person will also be accountable along with HSE officer for keeping records as given below. As stated in reporting **clause no 2.16 to 2.17-3**, all records / reports are to be submitted to OIL at stipulated frequencies. This manager shall be responsible for storing the hard copies of reports / records etc. on behalf of OIL in presence of Installation Manager by engaging their office/HSE staff for CGGS Madhuban. The documents / papers are only the ones submitted by the O&M Contractor, few of which are as hereunder:

a) All record / report etc. as stated vide reporting **clause no 2.16 to 2.17**
b) All statutory records / report.
c) All records of maintenance jobs / log-sheets / check list / history card etc
d) Daily operational reports
e) Consumption / stock position report.
f) Daily attendance and other administrative reports.
g) Test reports.
h) Monthly information system

However, all reports will be generated by the respective domain manager and will provide copies to this manager for purpose of documentation at CGGS Madhuban and to Plant Manager, FGS Chabua.

This person shall report to Chief Plant Manager and Installation Manager at CGGS Madhuabn.

vii) **MATERIALS MANAGER**

The person for this position must be a Graduate in commerce /science or Diploma holder in any engineering discipline from a Govt. recognized institute with 8-year work experience in E&P company. The person in this position must be able to carry out inventory management/materials management activities for CGGS Madhuban and for FGS Chabua. He/She must be able to maintain inventory of all the consumables and spares, preparation of specifications, and to take procurement actions. This person shall report to Chief Plant Manager at CGGS Madhuban & FGS Chabua and respective installation managers.

viii) **CONTROL ROOM ENGINEER (IN SHIFT)**

The Control Room Engineer shall operate the control room and shall report to the Chief Plant manager and installation manager of respective installation for operation and maintenance related activities of the plant. The person shall have to take the responsibility of monitoring and control of day to day operation related activities of the installations. In addition, the control room engineer shall have to generate and submit different reports of the plant as directed by the installation manager and chief plant manager.

The person shall be Engineering degree holder in Instrumentation or Electronics or Electronics & Telecommunication or Electrical or Mechanical or Chemical discipline from a Govt. recognized institute and must have a minimum of 6 years' working experience in execution of Control & Instrumentation and in the operation and maintenance of SCADA/ DCS system in a continuous process plant, preferably in operation and maintenance of Oil & Gas Production / processing / gathering installations. Alternately the person may be a Jr. Engineer (Instrumentation or Electronics or Electronics & Telecommunication) certificate holder from Govt. recognized institutes and having at least 10 (ten) years' working experience in above mentioned areas. The person should also be familiar with execution of Control & Instrumentation, calibration and servicing of various electronics and pneumatic instruments, analyzing of P & I diagrams, control loop checking, and instrumentation standards, V- SAT communication system, operation and maintenance of gas engines, plant electrical systems, etc.

The Control Room Engineers will be working in shifts (morning, evening and night). Three (3) engineers will be in rotating shifts and the reliever shall be in general shift for assisting the Plant Managers for rest of the days in a week. This person shall report to respective Plant Manager of CGGS Madhuaban or FGS Chabua.

ix) **SUPERVISORS/FITTERS**

a) Supervisors/Fitters, Electrical

The person must be Diploma holder in electrical discipline from a Govt. recognized institute having minimum 6 yrs. Experience or ITI certificate holder in electrical discipline with minimum 10 yrs. experience in upstream E&P Company. The person must possess valid Electrical Supervisor's Certificate of Competency [minimum parts I, II, III, IV & VI and preferably Part VIII-Mining Installations] issued by State Licensing Board, Assam or equivalent authority.
The person shall have to be able to read electrical circuit diagram, attend and rectify electrical reports/problems independently. The person shall also have hands-on experience with all types of electrical equipment/items and if required, will have to work with own hands.

The Supervisors/Fitters will be in rotating shifts. The reliever/additional shall be in general shift for assisting Electrical Manager for rest of the days per week. They shall report to Electrical Manager and Plant Manager of CGGS Madhuabn or FGS Chabua.

b) Supervisors/Fitters, Instrumentation

The person must be Diploma holder in Instrumentation or Electronics with specialization in Instrumentation from a Govt. recognized institute having adequate knowledge in computer application and with a minimum 6 years of experience or ITI certificate holder in instrumentation/electronics with specialization in Instrumentation discipline with minimum 10 yrs. experience in execution of Control & Instrumentation and in the operation and maintenance of SCADA/ DCS system in a continuous process plant, preferably in operation and maintenance of Oil & Gas Production installations. He must also be experienced in use of various test equipment, calibration and servicing of electronic (including SMART) and pneumatic instruments in continuous process plant etc. The person shall report to Instrumentation Manager.

The Supervisors / Fitters will be in rotating shifts and the reliever/additional shall be in general shift for assisting instrumentation manager for the rest of the days per week. The person shall report to Electrical Manager and Plant Manager of CGGS Madhuabn or FGS Chabua.

c) Supervisors/Fitters, Mechanical

The person must be Diploma holder in Mechanical discipline from a Govt. recognized institute having minimum 6 yrs. experience or ITI certificate holder in Fitter/DM with minimum 10 yrs. experience in the operation and maintenance of mechanical equipment in upstream E&P company.

The Supervisors / Fitters will be in rotating shifts and the reliever/additional shall be in general shift for assisting Mechanical Manager for the rest of the days per week. The person shall report to mechanical manager and Plant Managerof CGGS Madhuabn or FGS Chabua

x) **TECHNICIANS**

a) Electrical Technicians

Electrical shift Technicians will be deployed for assisting the shift engineers in carrying out shift maintenance/operation of the electricals of the plant. Shift technicians will be in rotating shifts and the reliever/additional shall be in general shift for assisting the Electrical Supervisors and Electrical Manager for the rest of the days in a week.

The shift technician shall be an ITI certificate holder in electrical discipline having minimum 5 years' experience in the operation and maintenance of electrical equipment, preferably in upstream E&P company. The shift technician must possess valid Electrical Workman's Permit [minimum parts: 1 (Wiring), 2 (Motor-generator) issued by State Licensing Board or equivalent authority.

The shift technician shall have good hands-on skill and experience with all kinds of electrical equipment/items and if required, shall be able to attend and rectify electrical reports/problems independently. The shift technicians shall report to Electrical Supervisor/Electrical Manager of CGGS Madhuabn or FGS Chabua.

b) Instrumentation Technician

Instrumentation Technicians will be deployed for assisting the shift engineers in carrying out shift maintenance/operation of the instrumentations of the plant. Shift technicians will be in rotating shifts and the reliever/additional shall be in general shift for assisting the Instrumentation Supervisors and Instrumentation Manager for the rest of the days in a week

Instrumentation Technician must be ITI certificate holder in Instrumentation or Electronics with specialization in Instrumentation having adequate knowledge in computer application and with a minimum experience of 5 years' experience in execution of Control & Instrumentation and in the operation and maintenance of DCS system in a continuous process plant, preferably in operation and maintenance of Oil & Gas Production installations. The person must also be experienced in use of various test equipment, calibration and servicing of electronic (including SMART) and pneumatic instruments in continuous process plant etc. The shift technicians shall report to Instrumentation Manager of CGGS Madhuabn or FGS Chabua.

c) MECHANICAL TECHNICIAN

Mechanical Technicians will be deployed for assisting the shift engineers in carrying out shift maintenance/operation of the mechanical systems of the plant. The Technicians will be in rotating shifts and the reliever/additional shall be in general shift for assisting the Mechanical Supervisors and Mechanical Manager for the rest of the days in a week

Mechanical Technician must be ITI certificate holder in Fitter, DM (Diesel Mechanics) or other relevant trade with a minimum of 5 years' experience in the operation and maintenance of mechanical equipment like pumps / engines / compressor etc., in upstream E&P company. The shift Technicians shall report to Mechanical Supervisor / Mechanical Manager of CGGS Madhuabn or FGS Chabua.

xi) **CHEMIST (LABORATORY IN-CHARGE) & LABORATORY ASSISTANT**

The laboratory In-Charge must be minimum B.Sc. (Chemistry Major) or M.Sc. (Chemistry) from Govt. recognized Board / Institute / University with a minimum experience of 6 years in any chemical laboratory, preferably in upstream E&P company. The person must be knowledgeable to handle different chemicals and to carry out sample testing at CGGS Madhuban and FGS Chabua laboratory.

The person shall report to Plant Manager as well as Installation manager of CGGS Madhuabn or FGS Chabua.

For Laboratory Assistant the persons must be minimum 10+2-pass in HS (Science) Stream, from Govt. recognized board institute / University with a minimum experience of 3 years in any chemical laboratory preferably in upstream E&P company. The person must be knowledgeable to handle different chemicals and to carry out sample testing at CGGS Madhuban and FGS Chabua laboratory. The person shall report to Laboratory In-Charge of CGGS Madhuabn and FGS Chabua.

xii) **SAFETY SUPERVISOR**

The Safety Supervisor must be a Diploma Engineer in any discipline from a Govt. recognized institute with 3 years' work experience in upstream E&P company. Alternately the person may be a ITI certificate holder in any discipline from Govt. recognized institutes and having at least 5 (five) years' working experience in upstream E&P company. Any additional qualification on HSE will be an added advantage in both the cases.

The person shall be able to initiate execution of all the activities stated in clause no 2.0 and other clauses above. The person shall by oneself or with the league of Plant Manager / other Managers/Engineers/HSE Manager must carry out all S&E related jobs on priority basis so that the O&M Contractor's all personnel are sensitized / aligned to carry out the jobs as primary O&M jobs. This officer shall ensure that all routine S&E related jobs coming at definite frequencies must be known to all in the morning rake-up / tool-box meeting/jobs safety analysis etc. The person must be able to develop good file management / record keeping system and will be required to generate and maintain all statutory records/reports.

Safety Supervisors will be in rotating shifts and will assist the HSE Manager in every possible way to run the plant smoothly, including administrative, HSE activities of the plant &establishment. This person shall report to HSE manager/Plant Manager/IM of CGGS Madhuabn or FGS Chabua.

xiii) **OPERATOR (GEN SET, FW PUMP, ETP, AIR COMPRESSOR ETC.)**

The Operators will be deployed for operating various equipment / items of the installations under the guidance and assistance of Mechanical or Electrical Manager / Supervisor / Technician The Operators will be in rotating shifts and the reliever/additional shall be in general shift for assisting in general shift work.
The Operators must be ITI certificate holder in Electrical, Fitter, DM (Diesel Mechanics) or other relevant trade with a minimum of 5 years' experience in the operation and maintenance of mechanical/electrical equipment like pumps / engines / compressor/ Gen Sets etc., in upstream E&P company.

xiv) **SEMI-SKILLED AND UNSKILLED HELPER/WORKERS**

All the persons under this category must be competent and intelligent enough to understand work advice of their seniors and to carry out such advices.

Qualifications of these personnel shall be as per prevailing ALC circulars and must be able to carry out day to day office jobs, gardening, grass cutting, cleaning the office building-toilets or any other jobs assigned by the Plant Managers etc. These persons shall report to respective supervisor/fitter/engineer/Plant Manager of CGGS Madhuabn or FGS Chabua.

NOTE : Deployment pattern of the employees as stated above in rotating shifts and in general shifts is subjected to change at the discretion of OIL for operational convenience.

3.0- DEVELOPING THE O&M STRUCTURE

The O&M Contractor should agree to the following while discharging their duties.
Operations:
• Administration – To ensure effective implementation and control of operation activities.

• Conduct of Operations – To ensure efficient, safe, and reliable process operations.

• Equipment Status Control – To be cognizant of status of all equipment.

• O&M Contractor Knowledge and Performance – To ensure that O&M Contractor knowledge and performance will support safe and reliable plant operation.

Maintenance:

• Administration – To ensure effective implementation and control of maintenance activities.

• Work Control System – To control the performance of maintenance in an efficient and safe manner such that economical, safe, and reliable plant operation is optimized.

• Conduct of Maintenance – To conduct maintenance in a safe and efficient manner.
• Preventive Maintenance – To contribute to optimum performance and reliability of plant system and equipment.
• Maintenance Procedures and Documentation – To provide directions, when appropriate, for the performance of work and to ensure that maintenance is performed safely and efficiently.

Engineering Support:

• Engineering Support Organization and Administration – To ensure effective implementation and control of technical support.

• Equipment Modifications – To ensure proper design, review, control,

implementation, and documentation of equipment design changes in a timely manner.

• Equipment Performance Monitoring – To perform monitoring activities that optimize equipment reliability and efficiency.

• Engineering Support Procedures and Documentation – To ensure that engineer support procedures and documents provide appropriate direction and that they support the efficiency and safe operations of the equipment.

Training:
• Administration – To ensure effective implementation and control of training activities.

• General Employee Training – To ensure that plant personnel have a basic understanding of their responsibilities and safe work practices and have the knowledge and practical abilities necessary to operate the plant safely and reliably.

• Training Facilities and Equipment – To ensure the training facilities, equipment, and materials effectively support training activities.

• O&M Contractor Training – To develop and improve the knowledge and skills necessary to perform assigned job functions.

• Maintenance Training – To develop and improve the knowledge and skills necessary to perform assigned job functions.

Administration:

• Organization and Administration – To establish and ensure effective implementation of policies and the planning and control of equipment activities.

• Management Objectives – To formulate and utilize formal management objectives to improve equipment performance.

• Management Assessment – To monitor and assess station activities to improve all aspects of equipment performance.
• Personnel Planning and Qualification – To ensure that positions are filled with individuals with required qualifications described in this document.

• Industrial Safety – To achieve a high degree of personnel and public safety.

Plant Operation:-

- The O&M Contractor shall collect and analyze all out going streams (including effluent) samples including composition of gas in a shift as per agreed periodicity and record the online instrument readings for the same time. This analysis can be carried out at the laboratory inside Control Room

Building. This shall also include air quality monitoring as per agreed periodicity.

- The O&M Contractor shall identify the process variables that need to be adjusted on a day to day basis for optimum plant operation based on inlet stream parameters in consultation with engineer-in-charge.

Maintenance:

- The O&M Contractor shall carryout all on line maintenance / repair jobs required to keep the plant at maximum productivity level, along with the equipment condition monitoring of all such electrical and related instrumentation. These shall include maintenance of all equipment and other facilities within the PLANT as per the maintenance schedule approved by OIL (Pl. refer to Instrumentation Equipments, Mechanical Equipments, Electrical Equipments and the report has to be submitted as per the report format of the plant).
- The maintenance of all the mechanical, electrical equipments and related instrumentation is in the scope of the O&M Contractor. Equipments beyond repair will be replaced by OIL.
- The O&M Contractor shall carry out corrective maintenance job as and when problems / defects are noticed.
- The O&M Contractor shall periodically check / calibrate the various instruments and equipment like overhead crane, pressure and temperature gauges etc. and ensure their proper working. Master calibration instruments have to be maintained by the O&M Contractor.
- The O&M Contractor shall periodically check equipment, lubrication, adjustments etc. to ensure proper performance.
- The O&M Contractor should maintain its own tools & tackles for carrying out all maintenance jobs.
- Spares & consumables required for operation and maintenance of Plant will have to be maintained by the O&M Contractor. The quantities and list of items shall be agreed to by both OIL and O&M Contractor
- The house keeping (including AC maintenance), gardening, cleaning of drains, ground water reservoirs, maintenance of green belts and keeping the Plant in good condition shall be the responsibility of the O&M Contractor. All the consumables for housekeeping of Plant have to be supplied &arranged by the O&M Contractor.
- All the maintenance has to be carried out with the help of duly approved procedure of OIL and after obtaining necessary work permit as per OIL procedure.

Exclusions:

OIL shall provide the following:

a) Provide the O&M Contractor to use intercom phone as per OIL centralized infrastructure.

b) To give access to the areas of the plant as per functional requirement.

However, use of OIL's premise (CGGS Madhuban & FGS Chabua) will not be allowed for any other activities other than plant O&M activities.

c) Necessary work permits as required for the staff, and visiting experts for carrying out work over the system.

Guarantee Parameters:

The O&M Contractor shall operate and maintain the installation as per the required specification on at least 365/366 days in a year. Maintenance schedules shall be mutually worked out stream-wise so as to ensure availability

The O&M Contractor shall guarantee to achieve the following:

a) Quality and Quantity: The O&M contractor shall be responsible towards operation & maintenance of the system to achieve the specified quality as per the design standards and quantity as per requirement of the Plant.

b) Compliance to Maintenance Schedule: The O&M contractor shall offer services to achieve the overall maintenance schedules.

4.0- IMPOSITION OF PENALTY

A) Malfunctioning/ defect(s) / non-working of the PLANT and also other factors attributable to the O&M contractor which causes complete failure and shutdown of the plant (on everyday basis) leading to disruption of gas supply to consumers, shall warrant levy of penalty to the Contractor, which shall be deductible/ realized by the Company from the monthly O&M charges in the following manner:

Sr. No	Days of occurrence of complete failure and shut down of the Plant	Amount deductible (beyond 6 hours of occurrence of failure)	Remark
i)	For every such occurrence up to 1 day (24 hours)	20% of the daily O&M charge or part thereof on pro-rata basis	Daily O&M charge = Monthly O&M charge / number of days in the month
ii)	More than 24 hours up to a maximum of 7 days in a calendar month	Daily O&M charge or part thereof for the entire shutdown period.	In such cases serial no. i) will not be applicable but entire shut down period will applicable under this clause.
iii)	More than 7 days in a calendar month	Daily O&M charge or part thereof for the entire shutdown period PLUS a penalty of 15 % of Daily O&M charge for the shutdown period will be levied.	The Company reserves the right to terminate the contract if period of shutdown extends beyond 30 days.

B) Any action/penalty by Environment and Pollution board/any Statutory authorities in matters related to HSE at CGGS Madhuban and at FGS Chabua will be sole responsibility of the O&M Contractor and they shall bear the penalty and take appropriate remedial actions. If the penalty is imposed on OIL, the same shall be recovered from the O&M Contractor.

C) In addition to above, the following penalty shall be imposed on the O&M Contractor for failure of the O&M Contractor to do any job as per detailed scope of work stated in different clauses of the tender.

Sr No	Description	Details of Penalty
1	Inadequate manpower deployment not in conformity with tender requirement on daily basis	Daily wages / Salary of the person(s) for the absent days
2	Non availability of PPE or employees not using PPE at worksite	Employees will be marked absent and recovery of wages / salary for absence days.
3	Any breakdown maintenance job carried out by OIL due to failure of O&M contractor to carry out the same.	Total cost incurred by OIL at actuals, which will be determined by OIL's Internal Committee
4.	Failure to manage / plan / procurement of spare parts on behalf of OIL to maintain minimum inventory, leading to equipment downtime.	i) Penalty equal to price of the item(s). ii) Subsequent loss to OIL due the shortage / lack of items. Price of item and loss to OIL to be determined by OIL Internal Committee.
5	Failure to supply required consumable under operator's scope of O&M	Penalty equal to the cost of the consumables not supplied
6	Shutdown of equipment /item beyond reasonable permissible period (as decided by OIL) due to failure to carry out breakdown maintenance in time.	Penalty equal to a day's salary of concerned persons responsible for the job for the shutdown period on prorate basis.
7	Failure to carry out general upkeepment and maintenance of cleanliness of the Plant area including drains, Flare pit area, peripheral road, Flower garden, Front lobby etc.	1.Cost likely to be incurred to carry out the entire job or part of job as per assessment by OIL's internal team. 2. If the job / part of job carried out by OIL, total cost incurred by OIL as assessed by OIL's internal team.
8	If the O&M Contractor does not complete the painting job before the end of 3rd (third) year of O&M contract from the date of issue of LOA	1.5% (one and half percent) from monthly bills will be recovered from the O&M Contractor's next monthly O&M bills for the already elapsed 36(thirty six) months. The subsequent monthly O&M bills shall be released by deducting 1.5% (one and half percent) from the total amount of monthly O&M bills.
9	Failure to keep entire Fire Fighting system in full operational condition including failure to maintain Ring main line pressure (min of 7 Kg/ cm^2).	Penalty equal to a day's salary of concerned persons responsible for the job for the failure period on prorate basis.

10	Failure to carry out all types of maintenance work (Mechanical, Electrical, Instrumentation) as per Check list / log-sheet / maintenance schedules of OM/OEM and / or to be provided by OIL	Penalty equal to a day's salary of concerned persons responsible for the job for elapsed days, beyond minimum grace period (as decided by OIL)

Note:

The above mentioned scope of work shall also include any other item/work required to complete the work in all respects as per specifications, drawings and instructions of OIL whether specifically mentioned here in or not, but required to fulfil the intended purpose of this tender.

OTHERE SPECIALS TERMS AND CONDITIONS OF THE CONTRACT

1.0 DEFINITIONS AND INTERPRETATION:

1.01 "Major Accident" means an occurrence including but not limited to, a major emission of fire or explosion from uncontrolled developments in the course of drilling and for production, storage, handling or transportation, processing of petroleum or machinery or owing to natural events leading to serious effects (both immediate and delayed as well as inside or outside the installation) causing or likely to cause substantial loss of life and property.

1.02 CUSTODY TRANSFER means handing over of gas to customer with stipulated C2 + 7% plus with dew point temperature -80 deg. C to 20 deg. C for their onward consumption and receiving of return gas from customer.

2.0 EFFECTIVE DATE, DURATION OF CONTRACT, MOBILISATION TIME, DATE OF COMMENCEMENT OF THE CONTRACT:

2.1 This Agreement shall be effective from the Effective Date (being the date on which LOA is issued) and unless terminated earlier pursuant to the provisions of this Agreement or the contract, shall continue in effect for the term of contract.

The duration of the contract shall be initially for a period of **04(Four) Year** from the commencement date mentioned in the work order/LOA. Depending on the performance of the Contractor, the Company reserves the right to extend the contract for **01(one) year** under the same terms and conditions. The O&M Contractor must complete the work as mentioned/described in **this SPECIAL CONDITIONS OF CONTRACT(SCC**). within the contract period. In the event of there being undue delay in execution of the Contract, the Company reserves the right to cancel the Contract and/or levy such additional damages as it deems fit based on the actual loss suffered by the company attributable to such delay. The company's decision in this regard shall be final.

2.2 Mobilisation shall be completed within 30 (Thirty) days from the Date of issue of LOA. Mobilisation notice shall be issued separately for CGGS Madhuban and for FGS Chabua.

2.3 The Contractor will intimate the Company in writing of their readiness for commencement of mobilisation / shipment to company, at least 3 days before actual mobilisation / shipment commences.

2.4 Mobilisation and demobilisation charge is one time only. **Mobilisation charge** is limited to max. **2.5%**of the O&M service charge quoted by the bidder and **Demobilisation charges** is limited to max. **2.5%** of the O&M service charge quoted by the bidder for CGGS Madhuban and FGS Chabua respectively. Any quote more than **2.5% Mobilisation charge and 2.5% Demobilisation charge** of the above will be limited to 2.5 % only for bid evaluation and payment purpose.

3.0 GENERAL OBLIGATIONS OF CONTRACTOR:

Contractor shall, in accordance with and subject to the terms and conditions of this Contract shall have following obligations:

3.1 Perform the O&M work as described in the Technical-Scope of Work, SPECIAL CONDITIONS OF CONTRACT(SCC)of the tender document.

3.2 Except as otherwise provided in the Technical-Scope of Work and the Special Conditions of the Contract, provide all labour as required to perform the work.

3.3 Perform all other obligations, work and services which are required by the terms of this contract or which reasonably can be implied from such terms as being necessary for the successful and timely completion of all the work of operation and maintenance contract as per best industry practice requirement for operation and maintenance of the plant CGGS Madhuban and FGS Chabua.

3.4 Provide and make regular payments to all labour & sub-vendors as required to perform the work.

3.5 Contractor shall be deemed to have satisfied themselves before submitting their offer as to the correctness and sufficiency of their offer for the services required and of the rates and prices quoted, which rates and prices shall, except insofar as otherwise provided, cover all its obligations under the contract.

3.6 Contractor shall give or provide all necessary supervision during the performance of the services and as long thereafter as Company may consider necessary for the proper fulfilling of Contractor's obligations under the Contract.

4.0 CONTRACTOR'S PERSONNEL:

4.1 Contractor warrants that they will provide competent, qualified and sufficiently experienced personnel to perform the work correctly and efficiently and shall ensure that such personnel observe all applicable statutory norms and safety requirement of the Company. Upon the Company's written request, the Contractor, entirely at their own expense, shall remove immediately, from assignment to the work, any personnel of the Contractor determined by the Company to be unsuitable or due to reasons mentioned in the HSE clauses and shall promptly replace such personnel with alternative personnel acceptable to the Company without affecting Company's work.

4.2 O&M Contractor shall be solely responsible throughout the period of the Contract for providing all requirements of their personnel, including but not limited to their insurance, housing, medical services, messing, transportation (both air and land transportation), enroute expenses, vacation, salaries and all amenities, termination payment and taxes etc. as per best industry practice. There must not be any violation of applicable acts/laws/regulations like payment of wages act, payment of bonus act, working hours, contract labour act, pension scheme, employees provident fund, minimum wages act etc. etc. or any act/rules/regulations framed thereafter of these acts/rules/regulations etc. All these benefits are at no charge to the Company (OIL)&Company (OIL) shall have no responsibility or liability in this regard.

4.3 Contractor's key personnel shall be fluent in English language (both writing and speaking).

4.4 The contractor shall provide details of experience, qualification and other relevant data of the personnel to be deployed for scrutiny and clearance by the company before the actual deployment. However, if the employees engaged by the previous contractor are engaged by the new contractor, the names of such employees are to be considered as per OIL approved record (Register of employees) only. However, OIL may relax the desired criteria for qualification and experience span of these employees at its discretion considering their past performance / working experience in the plants and familiarities with the relevant applicable laws/regulations/statutes etc**.** However, the designations of the previous employees will be as per guidelines detailed in this contract only, notwithstanding the earlier designation assigned to them.

The contractor shall not deploy its personnel unless cleared by OIL.

4.5 Contractor shall provide all manpower for necessary supervision and execution of all work under this contract to company's satisfaction except where otherwise stated and as per SPECIAL CONDITIONS OF CONTRACT(SCC). The minimum number of key personnel to be deployed is mentioned in PROFORMA-I (PART-I, PART-II and PART-III).

4.6 Contractor shall deploy on regular basis, all category of their employee required for economic and efficient work servicing operations.

4.7 OTHER SPECIAL CONDITIONS:

A) The contractor shall not engage a person for OIL's job
- if declared medically unfit, and
- if found guilty on account of misconduct.

B) Smoking, bringing of naked lights or carrying matches are strictly prohibited within the work premises as per safety regulations.

C) No contract worker will be allowed to enter the work premises if he wears loose dress/clothing or comes barefoot or without proper safety shoe. Contractor should ensure that his worker comes to duty with proper, safe,

industrial safety shoe. Supervisor or Engineer-in-charge will be at liberty to return a worker for not wearing safety shoe.

D) Observance of safety regulations by contract workers deployed in the work premises is mandatory. Any contract worker, if found violating the safety regulation or otherwise found unsuitable for working in a hazardous area, shall be removed immediately and replaced by a suitable worker by the contractor.

E) In case of operational urgency the labourers may have to carry out their jobs in Over Time for which OT will be paid by the Contractor at no cost to OIL & compensatory off to be granted as per applicable laws/acts like OMR/Mines Act/or any other labour laws.

F) Shift duty pattern will be of 8(eight)hour duration only. Contractor shall not engage his person for more than 8 hours of duty due to safety considerations except in case of operational urgency as mentioned in E) above.

G) The contractor will have to bear responsibility for any untoward incident, such as theft/pilferage etc. of Company materials by his personnel.

H) During the period of the Contract, the contractor will have to take the ownership of all the personnel required to be engaged to carry out the O&M contract at CGGS Madhuban and at FGS Chabua. The Contractor will have to submit a written declaration of ownership of manpower to OIL. OIL shall have no responsibility or liability in this regard.

I) The contractor will be required to submit monthly PF statements of all the personnel engaged for O&M of the installations, quarterly/annual return of the contractor along with the monthly bill, otherwise monthly bill will not be processed.

5.0 FOOD, ACCOMMODATION, TRANSPORTATION AND MEDICAL FACILITY AT FIELD INSTALLATIONS:

5.1 Contractor shall provide quality food & services for the personnel deployed by the contractor at his own costs.

5.2 Transportation of Contractor's personnel from base camp to work place and back will be arranged by Contractor at his cost.

5.3 Medical Facilities: The Contractor shall arrange for medical facilities for their personnel. However, OIL may provide services of OIL Hospital as far as possible in emergency on payment basis.

6.0 CONTRACTOR'S ITEMS:

6.1 Contractor shall provide equipment and personnel to perform the services under the contract as specified in this document and as per terms of the contracts.

6.2 Contractor shall provide all the tools and tackles including all types of required calibration gauges/tools etc. required for operation and maintenance of the plants. A list of such tools and tackles need to be submitted along with the bid.

6.3 Contractor will have to surrender all materials/spares and tools and tackles including all types of required calibration gauges/tools etc. to OIL after completion of the O&M contract at respective sites CGGS Madhuban and at FGS Chabua.

7.0 CONDUCTING FIELD & OFFICE WORKS:

7.1 The Contractor shall carry out all operations mentioned hereunder with due diligence in a safe and workmanlike manner and in accordance with accepted International oilfield practices.

7.2 All the equipment and materials required for execution of the works under this bid shall be in good working condition. OIL reserves the right to check the relevant certificates of the equipments, certifying the conditions of the equipment. Contractor will have to carry out all the calibration jobs for such the tools and tackles/equipment, which are required as per statutory requirements and records must be maintained as per the formats advised by OIL.

7.3 Contractor shall be solely responsible for the operation and maintenance of their equipment. A standby vehicle shall be made available by the bidder/Contractor at work site CGGS Madhuban and at FGS Chabua for emergency mobilization of personnel to hospital in case of injury/accident. That vehicle (pick up/utility type) will also be used for collecting materials from OIL designated places/stores as and when required.

8.0 PROTECTION OF PROPERTY AND EXISTING FACILITIES:

8.1 The Contractor shall perform each work in such a manner as will prevent damage to the Company's property and conform to and are consistent with, operational practices of hydrocarbon industries. Any permanent damage /loss to the Company's pipeline, assets and plants due to actions undertaken by the Contractor in order to provide the services envisaged under this Contract shall have to be remedied by the Contractor, entirely at their own cost. This cost shall include and not be limited to actual replacement of such damaged pipeline, assets or plants, or payment of actual replacement cost in relation thereto as may be incurred by the Company.

8.2 The CONTRACTOR shall take sufficient care in moving his plants, equipment and materials from one place to another so that they do not cause any damage to any person or to the property of COMPANY or any third party including overhead and underground cables and in the event of any damage resulting to the property of COMPANY or of a third party during the movement of the aforesaid plant, equipment or materials, the cost of such damages including eventual loss of production, operation or services in any plant or establishment as estimated by COMPANY or ascertained or demanded by the third party shall be borne by the CONTRACTOR.

8.3 OIL has also an HSE policy in place covering different applicable industry standards and regulations. Moreover the policy is guided by the statutory and Government directives.

i) **FIRE OR EXPLOSION**: In the event of any fire or explosion, Service Provider shall use all reasonable measures at his disposal to protect the aforesaid installations and to bring the said fire or explosions under control.

ii) **HSE Drills, meeting etc**: The Contractor shall observe such HSE regulations in accordance with acceptable oilfield practice and applicable Indian Laws. The Contractor shall take all measures reasonably necessary to provide safe & pollution free working conditions and shall exercise due care and caution in preventing fire, explosion or pollution. Contractor shall conduct such safety drills, Tool box meetings, etc. as may be required by company at prescribed intervals.

iii) **Record Keeping, Documentation in connection with HSE** : Documentation, record keeping of all safety practices should be conducted as per international/Indian applicable laws, act, regulations etc, as per standard Oilfield practice and these records should be made available for inspection at any point of time. The H.S.E policy as well as emergency procedure manual / contingency plans for pollution control should be kept at site. Compliance of these shall be the sole responsibility of the Contractor.

iv) **First Aid Kit:** An adequate and approved first aid kit shall be provided at work site with all medicines as per Rule 44(1) of Mines Rules 1955.

v) **CAMP AND OTHER ESTABLISHMENT**: Suitable camp facilities for Contractor's personnel including catering services shall be Contractor's responsibility.

Other general HSE notes:

1. It will be solely the Contractor's responsibility to fulfil all the legal formalities with respect to the Health, Safety and Environmental aspects of the entire job (namely; the person employed by him/her, the environment, etc.) under the jurisdiction of the district of that state where it is operating.

   No sub-contracting/subcontractors (except AMC by OEMs) will be allowed for operation and maintenance of the plants CGGS Madhuban and FGS Chabua.

2. The Contractor shall prepare/update written Safe Operating Procedure (SOP) for the work to be carried out, including an assessment of risk, wherever possible and safe methods to deal with it/ them. The SOP should clearly state the risk arising to men, machineries & material from the mining operation/ operations to be done by the contractor and how it is to be managed.

3. The contractor shall provide a copy of the SOP to the person designated by the mine owner who shall be supervising the contractor's work.

4. Keep an up to date SOP and provide a copy of changes to a person designated by the Mine Owner/ Agent/ Manager. For many of the activities SOPs are already available. The Contractor will have to update them.

5. Contractor has to ensure that all work is carried out in accordance with the Statutes and SOP and for the purpose he may deploy adequate qualified and competent personnel for the purpose of carrying out the job in a safe manner. For work of a specified scope/ nature, he should develop and provide to the mine owner a site specific code of practice in line.

6. All persons deployed by the contractor for working in a mine must undergo Mines Vocational Training, initial medical examination (IME), PME. They should be issued cards stating the name of the contractor and the work and its validity period, indicating status of MVT, IME & PME.

7. The contractor shall submit to DGMS returns indicating - Name of his firm, Registration number, Name and address of person heading the firm, Nature of work, type of deployment of work persons, Number of work persons deployed, how many work persons hold MVT Certificate, how many work persons undergone IME and type of medical coverage given to the work persons as per requirement of Oil Mines Regulations.

8. The return shall be submitted quarterly (by 10th of April, July, October & January).

9. It will be entirely the responsibility of the Contractor/ his/her Supervisor/ representative to ensure strict adherence to all HSE measures and statutory rules during operation in OIL's installations and safety of workers engaged by him/her. The crew members will not refuse to follow any instruction given by company's Installation Manager/ Safety Officer/ Engineer/ Official/ Supervisor/ Junior Engineer for safe operation.

10. Any compensation arising out of the job carried out by the Contractor whether related to pollution, Safety or Health will be paid by the contractor only.

11. Any compensation arising due to accident of the Contractor's personnel while carrying out the job, will be payable by the contractor.

12. The contractor shall have to report all incidents including near miss to Installation Manager/ departmental representative of the concerned department of OIL.

13. The contractor has to keep a register of the persons employed by him/ her. The contractor's supervisor shall take and maintain attendance of his men every day for the work, punctually as per formats of Oil Mines Regulations such attendance need to be countersigned by the Company’s representative.

14. If the company arranges any safety class / training for the working personnel at site (company employee, contractor worker, etc.) the contractor will not have any objection to any such training.

15. The initial health check up of contractor's personnel is to be done by the contractor in authorized/approved Health Centres as per OIL's requirement & proof of such test(s)/ reports is to be submitted to OIL before start of the job as per statutory formats. The frequency of periodic medical examination should be every 05 years for the employees below 45 years of age and every 03 years for employees of 45 years of above or as per statutory requirement. The cost of PME will be a part of monthly O&M bill and will be as per the rate quoted by the bidder.

16. The contractor shall arrange daily tool box meeting and regular site safety meetings and maintain records. The contractor will also carry out job safety analysis for all the jobs in the plant.

17. Records of daily attendance, accident report etc. are to be maintained in Form B, E, J etc.as per Mines Rules 1955 or any regulations amended thereafter by the contractor.

18. A contractor employee must, while at work, take reasonable care for the health and safety of people who are at the employee's place of work and who may be affected by the employee's act or omissions at work. No employees of the contractor will be allowed to leave work during working hours unless approved by the Company's representative.

19. A contractor employee must, while at work, cooperate with his or her employer or other persons as far as is necessary to enable compliance with any requirement under the act or the regulations that is imposed in the interest of health, safety and welfare of the employee or any other person.

20. Contractor's arrangements for health and safety management shall be consistent with those for the mine owner.

21. In case Contractor is found non-compliant of HSE laws as required, OIL will have the right for directing the contractor to take action to comply with the requirements, and for further non-compliance, the contractor will be penalized under prevailing relevant Acts/ Rules/ Regulations and OIL also reserves the right to terminate the contract

22. When there is a significant risk to health, environment or safety of a person or place arising because of a non-compliance of HSE measures, company will have the right to direct the contractor to cease work until the non-compliance is corrected.

23. The contractor should prevent the frequent change of his/her contractual employees as far as practicable. However for any such change, prior written permission from OIL will be required.

24. The contractor should frame a mutually agreed bridging document between OIL & the contractor with roles and responsibilities clearly defined.

25. For any HSE matters not specified in the contract document, the contractor will abide by the relevant and prevailing Acts/ rules/ regulations/ pertaining to Health, Safety and Environment.

9.0 POLLUTION AND CONTAMINATION:

Contractor shall be responsible for loss or damage from pollution or contamination arising out of or resulting from any of the Contractor's services/operation unless such pollution or contamination is for reasons beyond the control of the Contractor.

Notwithstanding anything to the contrary contained herein, it is agreed that the responsibility and liability for pollution or contamination shall be as follows:

Contractor shall have to take all responsibility and liability for cleaning up and removal of pollution or contamination which originates above the surface.

10 GUARANTEE, WARRANTY, RIGHTS AND REMEDY DEFECTS:

10.1 Contractor must warrant that they shall perform the work in a first class, workman-like, and professional manner and in accordance with the highest degree of quality, efficiency, and with the state of the art technology and in conformity with all specifications, standards and drawings set forth or referred to in the Technical Scope of Work of tender document and with instructions and guidance which the Company may, from time to time, furnish to the Contractor.

10.2 Should the Company discover at any time during the tenure of the Contract or within the Performance Liability Period of the Contract that the work carried out by the contractor does not conform to and perform as per terms and conditions of the Contract, Contractor shall after receipt of notice from Company, promptly perform all corrective work required to make the services conform to the Warranty. Such corrective work shall be performed entirely at Contractor's own expenses. If such corrective work is not performed within a reasonable time, the Company, at its option, may have such remedial work carried out by others and charge the cost thereof to Contractor, which the Contractor must pay promptly. In case Contractor fails to perform remedial work, the performance security shall be forfeited.

10.3 All Goods or Materials shall be supplied strictly in accordance with the specifications, drawings, data sheets, other attachments and conditions stated in the Contracts or as per the OEMs specifications and in conformity of equipment/accessories/fittings available at Plants CGGS Madhuban and at FGS Chabua.

10.4 The Contractor guarantees that the Goods or Materials supplied under the Contract are new, unused. The Contractor further warrants that the goods supplied under this Contract shall have no defect arising from design, materials or workmanship.

10.5 No deviation from such specifications or alterations of these conditions shall be made without agreement with the COMPANY in writing. All materials supplied by the CONTRACTOR pursuant to the Contract (irrespective of whether engineering, design data or other information has been furnished, reviewed or approved by Company) are guaranteed to be of the best quality of their respective kinds, (unless otherwise specifically authorized in writing by Company) and shall be free from faulty design, workmanship and materials, and to be of sufficient size and capacity and of proper materials so as to fulfil in all respects operating conditions, if any, specified in the Contract.

10.6 The Guarantee period for the materials and goods supplied under the contract shall be as per warrantee and guarantee policy of the OM / OEM.

10.7 The Company may, at its option, remove such defective materials, at CONTRACTOR'S expense in which event CONTRACTOR shall, without cost to Company and as promptly as possible, furnish and install proper materials. Replacement materials shall be similarly guaranteed by the CONTRACTOR as per warranty and guarantee policy of the OM / OEM.

10.8 The O&M Contractor warrants that it shall perform the work in a first class, workmanlike and professional manner and that all work shall be performed in accordance with the highest quality, efficiency and current state of the art oilfield practices and in conformity with all specifications, standards and drawings set forth or referred to in the Scope of Work and with instructions and guidance which the Company may from time to time furnish to the Service Provider.

10.9 Should the Company at any time during the terms of this Agreement or within three (03) months after termination of this agreement that the work does not conform to the foregoing warranty, the O&M Contractor shall, after receipt of notice from the Company, promptly perform any and all corrective work required to make the services conform to the warranty. Such corrective work shall be performed at the O&M Contractor's expenses. The Company, at its option, may have such remedial work performed by others and charge the cost thereof to the O&M Contractor.

10.10 If the O&M Contractor fails to perform any part of O&M jobs at CGGS Madhuban and at FGS Chabua as described in SPECIAL CONDITIONS OF CONTRACT(SCC), the Company reserves the right to carry out such jobs on its own. The costs of

carrying out such jobs will be recovered from the O&M Contractor's monthly bills at actual basis.

10.11 The rights and remedies of the Company provided by this Clause 10.0 are in addition to any other rights and remedies provided by law or in equity or otherwise.

11.0 CONFIDENTIALITY, USE OF CONTRACT DOCUMENTS AND INFORMATION:

11.1 Contractor shall not, without Company's prior written consent, disclose the contract, or any provision thereof, or any specification, plan, drawing pattern, sample or information furnished by or on behalf of Company in connection therewith, to any person other than a person employed by Contractor in the performance of the contract. Disclosure to any such employed person shall be made in confidence and shall extend only so far, as may be necessary for purposes of such performance.

11.2 Contractor shall not, without Company's prior written consent, make use of any document or information except for purposes of performing the contract.

Any document supplied to the Contractor in relation to the contract other than the Contract itself remain the property of Company and shall be returned (in all copies) to Company on completion of Contractor's performance under the Contract if so required by Company.

10.10 The above obligations of the Contractor shall be in force even after termination of the Contract.

10.11 All information obtained by Service Provider in the conduct of operations shall be considered confidential and shall not be divulged by Service Provider or its employees to anyone other than Company's representative. The Service Provider to sign a Confidentiality Agreement with OIL. This obligation of Service Provider shall be in force even-after termination of the Agreement.

11.0 PERFORMANCE OF WORK:

The Contractor shall submit daily reports to Company’s representative detailing progress of different operations as per the scope of the work. The Company, at its option may change the periodicity of such reports. In addition, they shall submit the complete job report (with all pertinent details to serve permanent record) within 15 (Fifteen) days from the date of completion of each individual job. The manner and the speed of execution and maintenance of the operations are to be conducted in a manner to the satisfaction of the Company’s representative. Should the rate of progress of the operations or any part of them is at any time too slow in the opinion of the Company’s representative, (to ensure completion of the operations within schedule) the Company’s representative may so notify the Contractor in writing. The Contractor shall reply to the written notice giving details of the measures, which he proposes to take to expedite the operations. If no satisfactory reply to the Company’s notice is received in seven days, the Company shall be free to take necessary actions as deem to be fit.

PERMITS & CERTIFICATES:
The Contractor shall procure, at his expense, all necessary permits, certificates and licenses required by virtue of all applicable laws, regulations, ordinances and other rules in effect at the place where any of the works is to be performed, and Contractor further agrees to hold COMPANY harmless from liability or penalty which might be imposed by reason of any asserted or established violation of such laws, regulations, ordinances or other rules. COMPANY will provide necessary permits for Contractor's personnel to undertake any work in India in connection with Contract.

PAYMENT FOR OPTION-II (FGS CHABUA):

Payment for O&M service of **FGS Chabua under option–II (for minimum operating conditions)** will be made based on the deployment of minimum manpower as per **PROFORMA-I (PART-III).**

INSURANCE:

15.1 The contractor shall arrange insurance to cover all risks in respect of their personnel, materials and equipment belonging to the contractor or its subcontractor during the currency of the contract.

15.2 Contractor shall at all time during the currency of the contract provide, pay for and maintain the following insurances amongst others:

i) Workmen compensation insurance as required by the laws of the country of origin of the employee.

ii) Employer's Liability Insurance as required by law in the country of origin of employee.

iii) General Public Liability Insurance covering liabilities including contractual liability for bodily injury, including death of persons, and liabilities for damage of property. This insurance must cover all operations of Contractor required to fulfil the provisions under this contract.

iv) Contractor's equipment provided by the Contractor for performance of the work shall have an insurance cover with a suitable limit (as per international standards).

v) Automobile Public Liability Insurance covering owned, non-owned and hired automobiles used in the performance of the work hereunder, with bodily injury limits and property damage limits shall be governed by Indian Insurance regulations.

vi) Public Liability Insurance as required under Public Liability Insurance Act 1991.

vii) The Contractor shall obtain additional insurance or revise the limits of existing insurance as per the Company's request, if any, in which case additional cost shall be to Contractor's account.

15.3 Any deductible set forth in any of the above insurance shall be borne by Contractor.

15.4 Contractor shall furnish to Company prior to commencement date, certificates of all its insurance policies covering the risks mentioned above.

15.5 All insurance taken out by Contractor shall be endorsed to provide that the underwriters waive their rights of recourse on the Company.

15.6 i) All goods/equipment to be supplied under this contract shall be under Contractor's custody until such goods/equipment are installed and commissioned. The Contractor shall at his own expense, secure and maintain insurance covering the full value of all such goods/ equipment for the period up to commissioning of such goods/equipment.

ii) Such insurance shall cover any loss or damage of supplied goods/equipment during transit from Contractor's source of dispatch to plant sites, storage at other sites. The beneficiary of all such insurance policies shall be OIL. Unless insurance document in this regard are furnished to the Company no payment will be made for such supplies.

15.7 All cost on account of insurance liabilities covered under Contract will be to Contractor's account and will be included in Contract Price. However, the Company may from time to time, during the currency of the Contract, ask the Contractor in writing to limit the insurance coverage risk and in such settlement, for reduction in Contract Price to the extent of reduced premium amounts.

15.8 If any of the above policies expire or are cancelled during the term of the Contract and the Contractor fails for any reason to renew such policies, then the Company will renew/replace same and charge the cost thereof to the Contractor. Should there be a lapse in any insurance required to be carried by the Contractor for any reason whatsoever, loss/damage claims resulting there from shall be to the sole account of the Contractor.

The above clause (i.e. Clause No. 15.0) with all its sub-clauses shall be referred to as Insurance Clause of this tender document.

16 ALTERATION / VARIATION / CHANGE ORDER:

16.1 During the performance of the work, Company may make a change in the work within the general scope of this Contract including, but not limited to, changes in methodology, and minor additions to or deletions from the work to be performed.

Contractor shall perform the work as changed. Changes of this nature will be affected by written order by the Company.

16.2 If any change result in an increase in compensation due to Contractor or in a credit due to Company, Contractor shall submit to Company an estimate of the amount of such compensation or credit in a form prescribed by Company. Such estimates shall be based on the rates shown in the Schedule of Rates. Upon review of Contractor's estimate, Company shall establish and set forth in the Change Order the amount of the compensation or credit for the change or a basis for determining a reasonable compensation or credit for the change. If Contractor disagrees with compensation or credit set forth in the Change Order, Contractor shall nevertheless perform the work as changed, and the parties will resolve the dispute in accordance with Clause 17.0 hereunder. Contractor's performance of the work as changed will not prejudice Contractor's request for additional compensation for work performed under the Change Order.

17.0 NOTICES:

Any notice given by one party to other, pursuant to this Contract shall be sent in confirmed in writing to the applicable address specified below:

Company

For contractual matter	For Technical matter
CGM (Contracts)	CGM (GMS)
OIL INDIA LIMITED	OIL INDIA LIMITED
DULIAJAN – 786602	DULIAJAN – 786602
ASSAM, INDIA	ASSAM, INDIA
Fax No. 0374- 2803549	Fax No. 0374- 2800450

CONTRACTOR

----------,

----------,

A notice shall be effective when delivered or on the notice's effective date, whichever is later.

18.0 **SUBCONTRACTING:**

Contractor shall not subcontract or assign, in whole or in part, its obligations to perform under this contract, except AMC from 5(Five) OEMs as mentioned in this Special Conditions of Contract (SCC). Manpower management through third party shall not be allowed. Further subcontracting is also allowed for jobs like grass/jungle cutting, drain cleaning, flower plantation / gardening jobs, sanitation work etc. which involves unskilled workers.

19.0 **PATENT INFRINGEMENT:**

19.1 The Service Provider shall defend and hold the Company harmless against any and all claims, actions and liabilities for violation of any patent or patents brought against the Company and/or the Service Provider by any third party as a result of the Service Provider 's use of any patented process, compositions, machines or articles of manufacture. The Company shall at all times have the right to be represented by its own counsel and participate in the defence of any action in which the Company is a party defendant.

20.0 **EMPLOYMENT OF OFFICIAL OF THE COMPANY:**

Firms/ Service Provider who have or had business relations with the Company are advised not to employ serving Company employees without its prior permission. It is also advised not to employ ex-personnel of the Company within the initial two years period after their retirement / resignation/severance from service without specific permission of the Company. The Company may decide not to deal with such firm(s)/ Service Provider who fail to comply with the advice.

21.0 POWERS AND DUTIES OF OIL

In no other circumstances, OIL's obligations cover any other matter(s) not stated below:

i) OIL shall appoint, as per provisions of the Oil Mines Regulations 1984 (OMR), a Mines Manager, an Installation Manager or his representative, Competent Person(s) for safe operation and maintenance of the plant as per sound industry practice.

ii) The Installation Manager, Mines Manager or his representative will be solely responsible for all decisions regarding safe operation and up to date maintenance of the installation. Installation Manger, Mines Manager or his representative will also be responsible for maintenance of water disposal wells connected to the installation.

iii) Subject to the provisions of the contract, OIL promptly pay and discharge the costs arising out of operation & maintenance of the plant, reimbursement of other jobs as per this contract as per provisions of the payment terms of the contract.

iv) OIL shall deduct such amount of money from monthly O&M bills of the contractor in case the contractor fails to carry out any job as mentioned in the tender document. A written notice stating the partial fulfilment of O&M jobs and corresponding shortfalls as per terms of contract will be given to the contractor.

v) The Contractor will be following all the operational instructions as decided by the Installation Manager, Mines Manger or his representative for safe operation and maintenance of the plant, as per the scope of work covered under clause no 2.0 of **SPECIAL CONDITIONS OF CONTRACT(SCC)**. For any

decision regarding safe operation and maintenance of the plant, the decision of Installation Manger, Mines Manager or his representative will be final & binding which must be strictly complied with by the contractor unless such decisions are contrary to the provisions of the contract.

vi) OIL will have to finally give consent to appointment of any work personnel in the capacity of officers or work-staff for working at CGGS/FGS under the contract. Contractor must hand over all documents about their potential employees to be deployed at CGGS/FGS regarding personal details, educational background, other credentials etc before actual appointment. OIL does not have any part or say on the selection procedures of employees of the contractor. However, on receipt of all documents as above OIL has the right to reject / disallow any such employees to work at CGGS/FGS. This clause is applicable in conjunction with Man power **clause no 3.0 of SPECIAL CONDITIONS OF CONTRACT(SCC).**

vii) The Installation Manger, Mines Manager or his representative shall have the authority to promptly take action regarding removal of any person working inside the plant from his workplace for negligence of duty, violation of safety norms as per Mines Act or OMR, HSE policy of OIL and wilful insubordination of any legitimate order of the Installation Manger, Mines Manager or his representative regarding operation and maintenance of the plant. Such decisions will be in consultation with representative(s) of the contractor and are applicable in conjunction with Man power clause no. **3.0 of SPECIAL CONDITIONS OF CONTRACT(SCC).**

viii) The Installation Manager, as per provisions of the OMR, will visit the installation once in every working day and the authorised representative of the contractor will be physically present during the regular visit of the Installation Manager to the Installation. In case of any operational emergency when the authorised representative of the contractor leaves the installation during the visit of the Installation Manager, the prior intimation for the same should be made in advance to the Installation Manger and the name of the authorised in-charge representative(s) shall be made known to the Installation Manager in writing.

ix) OIL shall make available Electricity free of cost for O&M of the plant from OIL's gas engine driven power plant which is also a part of the plant and machinery at CGGS Madhuban and at FGS Chabua.

x) Natural gas required for operation of the plant will be supplied free of cost.

22.0 ADDITIONAL EXPENSES DUE TO FAULT OF THE CONTRACTOR:

In case additional expenses are incurred due to failure of system / process/ equipment / general infrastructure of the plant/ facilities, pipeline network and disposal wells on account of wrong operation / wrong maintenance / wrong handling/ poor workmanship / use of incompetent manpower/ lack of supervision/ lack of co-ordination/ wilful insubordination of Operating instruction by the person or group of persons engaged by the contractor, the

contractor will bear all such expenses. The contractor will commence necessary rectification/ modification required to rectify such failures.

23.0 ADDITIONAL EXPENSES ON OIL FOR DESIGN MODIFICATION REQUIRED AT THE PLANTS:

For any modification in design or addition of new equipment or infrastructure which is required for some additional requirements felt by OIL during the currency of the O&M contract, the cost will be borne by OIL, unless otherwise the modification/ addition is required to rectify poor workmanship of the contractor during operation and maintenance.

24.0 INGRESS AND EGRESS AT INSTALLATIONS:

Company shall provide Service Provider requisite certificate for obtaining rights of ingress and egress from the installations. Should such certificate be delayed because of objections of appropriate authorities in respect of specific Service Provider's persons, such persons should be promptly removed from the list by the Service Provider and replaced by acceptable persons.

25.0 PROTECTION OF PROPERTY AND EXISTING FACILITIES:

The Service Provider shall perform each work in such a manner that will prevent damage/loss to the Company's property and shall carry on the works in such a manner as to conform to and consistent with and not to interfere in any way with continuous and safe operation of the installations. Any permanent damage/loss to the Company's assets, plants, wells due to the operation of the service engaged under this Agreement shall have to be remedied by the Service Provider entirely at its own cost, which shall include and not limited to actual replacement of such damaged assets, plants, wells or payment of actual replacement cost in relation there to as may be incurred by the Company.

26.0 COMPLIANCE WITH COMPANY'S INSTRUCTIONS:

Service Provider shall comply with all instructions of Company consistent with the provision of this Agreement, including but not limited to aforesaid installations, operations, safety instructions, confidential nature of information etc. such instructions shall if Service Provider request be confirmed in writing by Company's representative.

27.0 It is expressly understood that Service Provider is an independent Service Provider and that neither it nor its employees and its sub-contractors and employees or agents of Company provided, however, Company is authorized to designate its representative who shall at all time have access to the aforesaid installations, related equipment and materials and all records, for the purposes of observing, inspecting and designating the work to be performed hereunder by Service Provider. The Service Provider shall treat Company's Representative at site as the in charge of all Company's and Company designated personnel at site. The Company's representative may, amongst

other duties, observe, test, check and control works performed by Service Provider or examine records kept at installations by Service Provider.

Note:

The interested bidders are also advised to visit the plants (CGGS Madhuban and FGS Chabua) if required for more clarity about O&M jobs at the installations and for the detailed list of equipment/machineries before submitting the bid.

28.0 PAYMENT & INVOICING PROCEDURE:

Payment for O&M of the plant, shall be released monthly upon successful Operation & Maintenance of the plant in strict accordance with Special Conditions of the Contract and as per the quoted price of SoR. All payments will be made in accordance with the terms hereinafter described.

28.1 The Company shall pay to the Contractor, during the term of the Contract, the amount due from time to time calculated according to the rates of price schedule, less deduction if any and in accordance with other provisions hereof. No other payments shall be due from the Company unless specifically provided for in this Contract.

28.2 All payments due by the Company to the Contractor shall be made at the Company's designated Bank through electronic mode. All Bank charges will be on Contractor's account.

28.3 Payment of any invoices shall not prejudice the right of the Company to question the validity of any charges therein, provided the Company within one year after the date of receipt of any such invoices, shall make and deliver to the Contractor written notice of objection to any item or items the validity of which the Company questions.

28.4 The Contractor will submit three sets of all invoices (all invoices duly super-scribed "Original" and "Copy") for all the services and dues at the end of each month, duly certified by Engineer-In-Charge along with duly filled up activity completion sheet to OIL, Duliajan for processing of payment. One set of all invoices with measurement sheet to be submitted to Engineer-In-Charge for his record.

28.5 Invoices shall be raised by the Contractor as per the Payment Schedules only.

28.6 Invoices for reimbursable will have to be accompanied by documents supporting the cost incurred. Payment against invoices for reimbursable will be made within 45 days after receipt of such invoices by the Company.

28.7 The Company shall within 20 (Twenty) days of receipt of the invoice notify the Contractor of any item under dispute, specifying the reasons thereof, in which event, payment of the disputed amount may be withheld until

settlement of the dispute, but payment shall be made of any undisputed portion within 30 (Thirty) days from the date of receipt of the invoices at OIL, Duliajan. This will not prejudice the Company's right to question the validity of the payment at a later date as envisaged in Sub-Clauses of 28.0 above. No interest shall be payable by the Company on any delayed / disputed amount.

28.8 The acceptance by the Contractor of part payment on any billing not paid on or before the due date shall not deemed to be a waiver of the Contractor's rights in respect of any other billing, the payment of which may then or thereafter be due.

28.9 The Contractor shall maintain complete and correct records of all information on which the Contractor's invoices are based up to 2 (two) years from the date of last invoice. Such records shall be required for making appropriate adjustments or payments by either party in case of subsequent audit query /objection.

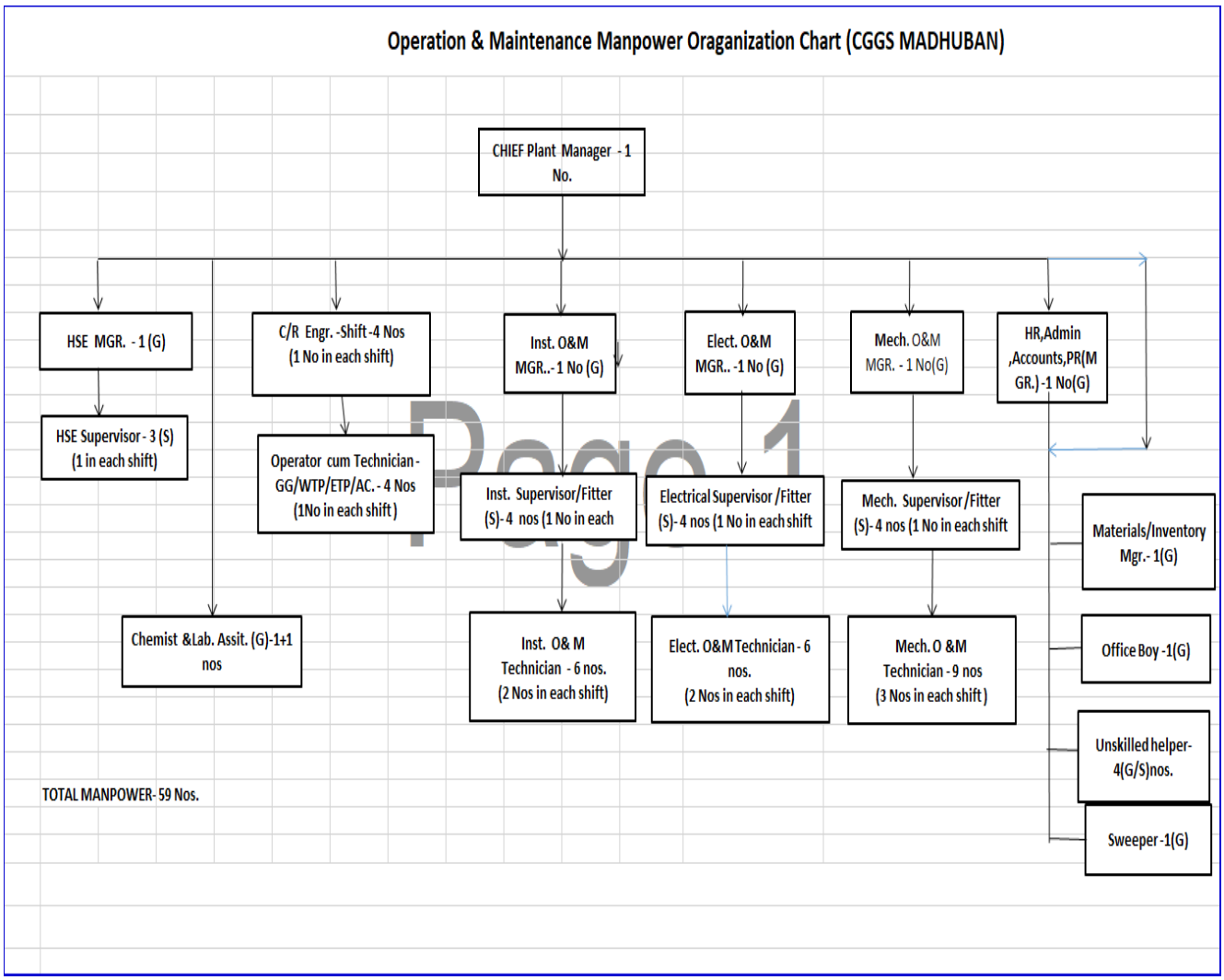
28.10 Any audit conducted by the Company of the Contractor's records, as provided herein, shall be limited to the Company's verification (i) of the accuracy of all charges made by the Contractor to the Company and (ii) that the Contractor is otherwise in compliance with the terms and conditions of this Agreement.

PROFORMA-I

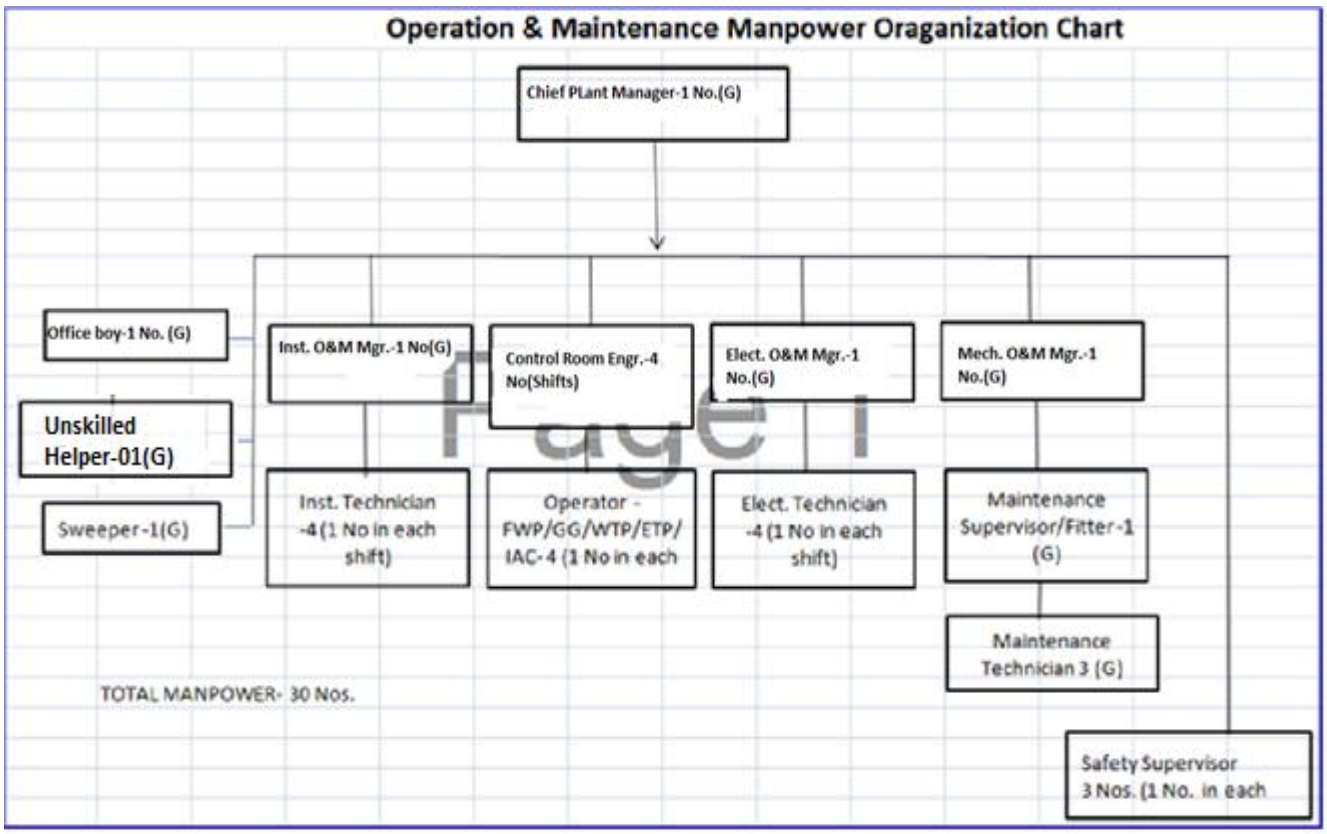
Organization chart with designation and qualification of the manpower to be deployed has to be submitted, (a skeleton organization chart is shown below). The O&M Contractor has to deploy minimum number of manpower as per the organization chart described here in **PROFORMA-I (PART-I, PART-II and PART-III)**

The **PROFORMA-I (PART-I, PART-II and PART-III)** indicates the minimum manpower only. The O&M contractor shall have to provide additional manpower whenever required for smooth operation and maintenance of CGGS MADHUBAN & FGS CHABUA.

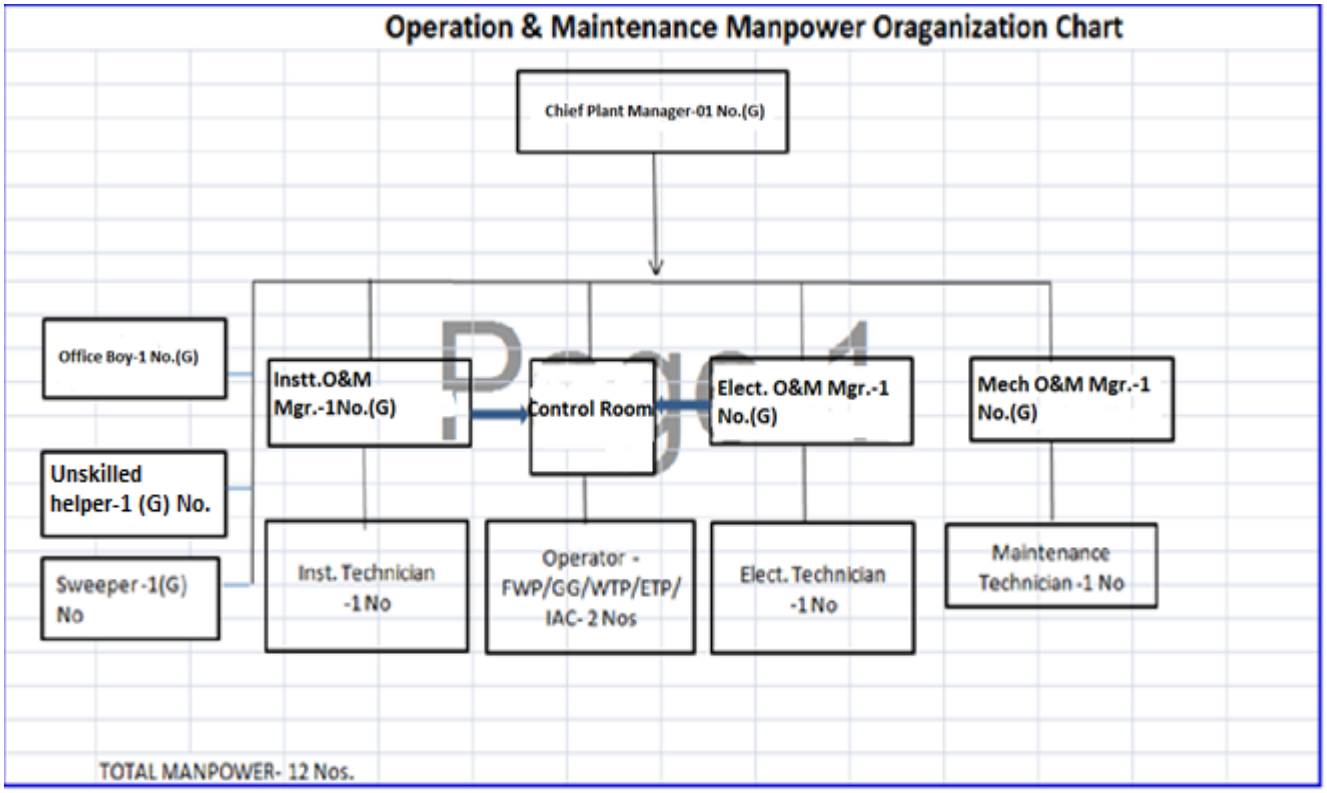
PROFORMA-I (PART-I : CGGS Madhuban)



PROFORMA - I (PART-II : FGS Chabua under Full Operating Condition – Option -I)



PROFORMA - I (PART-III : FGS Chabua under Minimum Operating Condition – Option - II)



PROFORMA-II

UNDERTAKING FOR Annual Maintenance Contract (AMC) Service

(On Non-Judicial Stamp Paper of Rs. 100/-)

TO BE NOTARISED

To

CHIEF GENERAL MANAGER(CONTRACTS)

OIL INDIA LIMITED

DULIAJAN

Dear Sirs,

UNDERTAKING/DECLARATION BY THE BIDDER IN RESPECT OF TENDER NO .....

This is in connection with the Bid submitted by me/us, ... (**Name of Bidder**) against Tender No. ..... for O&M services at CGGS Madhuban & FGS Chabua.

I/We, the aforementioned Bidder against the subject tender, hereby declare that I/We will make arrangements with OEMs for Annual Maintenance Contract (AMC) Services as per terms and conditions and details mentioned / described in **SPECIAL CONDITIONS OF CONTRACT(SCC)** of the Tender for the following:

For CGGS Madhuban:

1. Emerson make DCS- Delta V system & ESD system with all auxiliary equipment.
2. Hirel UPS system (2 Nos. X 45 KVA) with all auxiliary equipment viz., Charger and bypass line equipment UPS system etc.
3. Daniel make: i) Gas Chromatograph Analyser (04Nos.), ii) Metering panel each with 6 Nos. Flow (S600+) Computers (03Nos.), iii) Electro Magnetic Flowmeter(02Nos.), iv) Ultrasonic Flowmeter(34Nos.) v) Coriolis Flow Meter (02Nos.), vi) Sick make Ultrasonic Flowmeter (01No.)
4. Caterpillar make Gen Sets (906KVA-2 Nos.) with Gas Engines with all auxiliary equipment viz., synchronizing panel, MCC panels, NGRs etc. including overhauling job.
5. Atlas Copco make Air Compressor ZT-45 (2 Nos.) with all auxiliary equipment viz. Dryer and other auxiliary equipment etc. including overhauling job.

For FGS Chabua:

1. Emerson make DCS- Delta V system & ESD system with all auxiliary equipment.
2. Hirel UPS system (2 Nos. X 40KVA) with all auxiliary equipment viz. Charger and bypass line equipment UPS system etc.
3. Daniel make i) Gas Chromatograph Analyser (01Nos.), ii) GCC &PLC panels, iii) Electro Magnetic Flowmeter (05Nos.), v) Coriolis Flow Meter (06Nos.), vi) Sick make Flowmeter (06Nos.)

4. Caterpillar make Gen Sets (619 KVA-2 Nos) with Gas Engines (with all auxiliary equipment viz., synchronizing panel, MCC panels, NGRs etc. including overhauling job.
5. Atlas Copco make Air Compressor ZT-37 (2 Nos.) with all auxiliary equipment viz. Dryer and other auxiliary equipment etc. including overhauling job.

I/We, the aforementioned Bidder against the subject tender undertake that I/We have pre-set tie-up (which will include both the installations CGGS Madhuban and FGS Chabua with the list of equipment mentioned above) with the above 5 (Five) OEMs or their franchisees (for each installation mentioned above) and these tie-ups and related services shall be part of the contract.

I/We, the aforementioned Bidder against the subject tender take note that we will do all endeavours to ensure the availability and ready supply of the services from the respective OEMs or their franchisees and undertake that I/We shall not make Company (i.e. OIL) liable to reimburse me/us for such AMC Service arranged by me/us during the entire period of the contract, including extension period if any. I/We have bid after considering this AMC Service of the above OEMs for each installation mentioned above for the entire period of Contract including extension provision.

I/We, the aforementioned Bidder against the subject tender, further undertake that in case of any events of breakdown/ un-functionality of any unit of the above list, I/We will make the AMC service available within 24(twenty four) hours from such an event without any cost implication whatsoever upon the Company (OIL).

I/We further agree and undertake that in case of any violation of the above undertaking, Oil India Limited (OIL) shall be at liberty to take appropriate action against me/us in terms of the Tender/Contract including but not limited to termination of contract and debarment from future business with OIL.

I further authorize the Company (OIL), in the event of my default or non-compliance of AMC Service provisions from above mentioned OEMs in making AMC service available within 24 (twenty four) hours, to deduct/recover such AMC cost amount incurred by OIL or claim for services by the above mentioned OEMS which is/are caused by the non-availability of the above mentioned equipment in addition to the penalties as per the conditions of the Contract from my Bills due under the Contract or against any other existing or future Contracts with the Company.

I/We declare that the information given above is true and any misstatement, misrepresentation, or suppression of facts in connection with the above undertaking may entail rejection of the bid and cancellation of contract, if awarded.

Yours faithfully,

Authorized Signatory with Seal _____

(Bidder)

Place:-

Date:-

ANNEXURE-D

Annexure D (Spares List for CGGS Madhuban & FGS Chabua)	
Srl. No.	**Item description**
	MD Plus controller; Model no: VE:3006
	2 wide power/controller carrier; Model no: VE3051C0
	Enhance system power supply 12/24 VDC i/p, Model no: VE5009
	Analog input card 8 channel, 4-20ma HART, fused to i/o terminator; Model no: VE4003S2B2
	Discrete input card, 8 channel, 24VDC, Dry contact I/o terminator block, Model no: VE4001S2T2B1
	Discrete output cards 8 channel, 24VDC, Highside I/O termination block, Model no: VE4002S1T2B1
	Simplex H1 fieldbus I/O interface cards & termination block; Model no: VE4017P0
	Redundant H1 fieldbus interface card, two wide termination block with two ports
	Redundant serial interface card with two ports and termination block, Model no: VE4036P2
	Bulk power supply 12 VDC, 20A; Model no: Quint-PS/1AC/12DC/20
	Bulk power supply 24 VDC, 40A; Model no: Quint-PS/1AC/24DC/40
	Bulk power supply 12 VDC, 15 A; Model no: Quint-PS/1AC/12DC/15
1	Bulk power supply 24 VDC, 20 A; Model no: Quint-PS/1AC/24DC/20

Bulk power supply 24VDC, 10A; Model no: QUINT-PS/1AC/24DC/10
Quint diode; Model no: QUINT DIODE/40
FISCO Power supply; Model 9122
Surge protector for trunk protection; Model FP-32
Redundant logic solver for for Delta V (SIS); Model: VS3202
SIS Net terminator assembly
Redundant SIS net repeater; Model: VS6002
Interposing relays for DI 2 no/nc interposing relays for digital input
Interposing relays for DO 2 no/nc interposing relays for digital output
SIS relays for DI/DO; Model:VS6907
Analog input barrier; Model 9160/13-10-11
Digital input barrier; Model: 9170/10-40-12
Gas chromatograph spares, Make: Emerson, Model no: GC 500
Pre-Amplifier board for model 500GC; P/N: 2-3-0500-201
Temperature controller and valve driver board
Motherboard for model 500 GC; P/N: 2-3-0500200

	PCA valve drive for 500 GC; P/N:2-3-0500178
	Kit 9k thermistor seal; P/N: 2-6-1611-083
	Accopian power supply assembly; P/N: 2-49500230
	6 port GC Valve repair kit; P/N: 2-3-9300-108
2	Filter element (2 micron), swagelok SS-2F-k4-2; P/N: 2-4-5000-113
	Filter inline (1/8",SS-2F-2)
	Membrane kit model 120 filter/bypass/LSO
	4 way solenoid valve; P/N 2-4-5000-075
	Membrane kit; P/N: 2-4-5000-394
	3 way solenoid valve; P/N: 2-4-5000-075
	Ferrule 1/16" RER; P/N: 2-4-9500-005
	Ferrule 1/16" FNT; P/N: 2-4-9500-006
	Tubing nut 1/16"; P/N: 2-4-9500-001
	Pressure and Temperature transmitters, Make:Rosemount
	Pressure transmitter; Range: 0 to 15kg/cm2 (HART), Model: 3051S2CG5A2F12A1AB3D1I1L4M5Q4T1QT
	Pressure transmitter; Range: 0t o 50kg/cm2 (FF), Model: 3051S2TG3A2E11F1AB4I1M5Q4T1

ANNEXURE-D

3	Pressure transmitter; Range: 0 to14kg/cm2 (FF), Model: 3051S2TG3A2E11F1AB4I1M5Q4T1
	Pressure transmitter; Range: 0 to5kg/cm2 (FF) Model: 3051S2TG2A2E11F1AB4I1M5Q4T1
	Differential pressure transmitter; Range: 0 to 1kg/cm2 (FF), Model: 3051S2CD3A2E12F1AB4I1L4M5Q4T1
	Temperature transmitter; Range: 0 to 100 C (FF), Model: 3144PD1F1I1B4M5Q4T1
	Temperature transmitter; Range: 0 to 100 C (HART), Model: 3144PD1A1I1B4M5Q4T1QT
	Pressure transmitter; Range: 0 to 50kg/cm2 (HART), Model: 3051S2CG5A2F12A1AB3D1I1L4M5Q4T1QT
4	**Air filter, Make:Shavo Norgren**
	Air filter regulator; P/N: SB20K-3N-MID-RGMB, Model : SB20K-3N-M1D-RGMB
	Air filter regulator; P/N: 11-4SN, MODEL : 11-4SN-201M-M1KN-NB
5	**Air filter regulator (Make: IMI Norgren); P/N: B74G-4AT-QD1-RMG, Model: B74G-4AT-QD1-RMG**
6	**Standard particulate filter, (Make-Parker) Model : P33FA96EGAN**
	Control valve Instrumentation spares , Make: M/s Emerson Process Management
	Air filter regulator, 67CFR ASSY 60PSI W/5MIC POLY ETH FILTER Part No : FS67CFR-237
	Air filter regulator, 67DFR-25 ASSY, C/W GAUGE, 5MIC Part No. FS67DFSR-25-C7
	Pressure reducing regulator, NPS 3/4 MR95H REGULATOR Part No : M95H-3063-2291065

7	Positioner (HART) for control valve, FISHER DVC6200 POSITIONER ALONGWITH SUITABLE MOUNTING KIT Part No : VALVEKIT FISHER DVC6200 POSITIONER ASSEMBLY Part No : FSDVC6200-101-HC-G60B-ATEXIS POSITIONER MOUNTING KIT Part No : FSMTGDVCNC
	Positioner (FF) for control valve, FISHER DVC6200F POSITIONER ALONGWITH SUITABLE MOUNTING KIT Part No : VALVEKIT FISHER DVC6200F POSITIONER ASSEMBLY Part No : FSDVC6200F-101-SCAD-G60B-ATEXIS POSITIONER MOUNTING KIT Part No : FSMTGDVCNC
	Air filter regulator for control valve, 67CFSR REG. ASSY. NPT, SST Part No : FS67CFSR-237
8	**Air filter regulator with gauge, Make: Shavo Norgren** **Model No.: 11-4SN-401M-M7KA-NN**
9	**Megablock for FF junction box, Make: MTL** **Part No.: F 253** **8 way with internal terminator**
10	**Cartridge for canon printer in control room, Printer model: Canon LBP9100cdn**
	Yellow cartridge, Cartridge part No,: MU1-8 332
	Magneta, Model no: 322-MAGNETA,
	Cyan, Cartridge part No,: MU1-8 334

	Black, Cartridge part No. : MU1-8 335
11	**Fan failure detection unit, Make: Nandi Powertronics, Model: NA-FFDUN-42**
12	**HDD for DCS workstations, Model: HD, 250G, S3, 7.2K, 512E**
13	**RAM for workstations, Model no: DIMM,1G,1333,1RX8X72,8,240,UBE**
14	**Limit Switch, Make : P & F** **Model : NJ2-V3-N** **Type : Inductive Proximity Switches as per NAMUR (DIN 19324)**
15	**Solenoid valve , Make: ROTEX**
	Solenoid valve (2 way 2 position), Model:24103-12-4R-B12-SO+24VDC-37-MN
	Solenoid valve (3/2 way direct acting), Model: 30308-5-2R-B2+24VDC-37-H-MN
	Solenoid valve (3/2 way direct NC type), Model: 30126-3.5-2R-B5-M6+24VDC-37-MN
16	**Solenoid valve (Make: ASCO), Model : WSNF8327B101**
17	**Spares for control valves at CGGS-Madhuban, Make: Emerson Process Management pvt ltd**
	Switching valve, 167DA, 1/4 NPT, 0-35 PSIG PART NO : FS167DA-16LOCK VALVE SIZE : 1.5" EZ TAG NO./VALVE SRL NO: PV-5601/IA57621
	Trip valve, 377 TRIP VALVE 585C/60-130 WITH POST PART NO : FS377D-15-FM
	Trip valve, 377 TRIP VALVE 585C/60-130 WITH POST PART NO : FS377U-15-FM

	Volume booser assembly, PART NO : FS2625-12 VALVE SIZE : 24" X 20" EWT TAG NO./VALVE SRL. NO : PV-3603/IA61340
18	**Spares for flare flowmeter, Make: M/s SICK GMBH India pvt ltd.**
	Processor board for MCU unit, Make: Sick GMBH Part No.: 2062078.
	LC display for MCU unit, Make: Sick GMBH Part No.: 2055943.
	Power supply module for MCU unit, Make: Sick GMBH Part No.: 2062150.
	Analog O/P module for MCU unit, Make: Sick GMBH Part No.: 2034657/6033578 /2040977.
19	**Temperature transmitter fot the flare area, Make: Honeywell** **Model No. STT850-S-0-A-CFJ-16C-B-11A0-F1-0000** **Calib range: 0 to 400 deg C**
20	**Thermocouple with thermowell**
21	**Helium cylinder, HELIUM GAS FOR HP GAS CHROMATOGRAPH,PURITY 99.995%**
22	**Motherboard for workstations in control room (Model no:CRD,PLN,LNK,PWS,-T3500,TPM,V3)**
23	**Distilled water,Distilled water in 1 litre bottle** **PH value : 6.5 to 9.5** **Chlorode : 1.0 ppm max limit.** **Total Hardness(as CaCo3) : should be not detectable.** **Electrical Conductance : 5/1000000 Mhos Max.**
	Spares for instrument air compressor, Make: Atlas copco, Model : ZT-45
	ELECTRONIC DRAIN VALVE KIT 115V (Pt no: 2901146551)

24	ELECTRONIC DRAIN VALVE KIT 115V Z-IMD (Pt no: 2901146554)
	ELECTRONIC DRAIN VALVE KIT 115V Z-IC (Part no: 2901146555)
	KIT VALVE UNIT COMPLETE (Pt no: 2901063520)
	KIT VALVE UNIT COMPLETE (Pt no:2901064120)
	PRESSURE GAUGE D63 0/161/4G (Pt no: 9090023900)
	NOZZLE (Pt no:1617628703)
	SOLENOID VALVE (Pt no: 9096976800)
	SOLENOID VALVE (Pt no:1089064043)
	SOLENOID VALVE (Pt no:1089042813)
	ELEKTRONIKON MK5 I/O2 (Pt no: 1900520033)
	GRAPHIC (Pt no:1900520013)
	FITTING PIPE (Pt no:583810070)
	Calibration gas mixture

ANNEXURE-D

25	Calibration gas mixture, CALIBRATION GAS MIXTURE Required for GC-4101/GC-4103 COMPOSITION Methane-91.811 Ethane-2.821 Propane-1.766 I-Butane-0.388 N-Butane-0.605 I-Pentane-0.267 N-Pentane-0.267 Hexane- 0.35 Co2-0.535 N2-1.24 Total-100 +/- 0.4% on components greater than 1% &+/- 1% on components less than 1% & +/- 2% on Methane Cylinder Volume=10 Litres Gas Volume=0.5 M3 Gas pressure=50 kg/cm2 Stability=2 year

	Calibration gas mixture, CALIBRATION GAS MIXTURE Required for GC-4102 COMPOSITION Methane-88.7 Ethane-4.38 Propane-2.34 I-Butane-0.55 N-Butane-0.72 I-Pentane-0.00 N-Pentane-0.19 Hexane- 0.35 Co2-1.09 N2-1.68 Total-100 +/- 0.4% on components greater than 1% &+/- 1% on components less than
	Cylinder, capacity 10L, CYLINDER, CARBON STEEEL,CAPACITY 10 L, Cylinder(Seamless) with brass valve, capacity 10Litre used for NaturalGas Calibration Mixture.

26	**Lubricant for Atlas copco air compressor, Density at 15 °C (ISO 3675) : 0.860 kg/dm³** **Viscosity at 40 °C(ASTM D 445) : 68 mm²/s** **Viscosity index (ASTM D 2270) : 133** **Foam stability (ASTM D 892) : 0/0/0 ml** **Total acid number (ASTM D 974) : 0.18 mg KOH/g** **Rust test (ASTM D 665B) : pass** **Pour point (ASTM D97) : - 30 °C.**
27	**Book, bound**
	BOOK, BOUND, 200 PAGES (AS PER SAMPLE 1)
	FORM-B, EMPLOYEES REGISTER
	REGISTER BOOK, FORM 'J', HARD BINDING
	REGISTER BOOK, FORM 'K', HARD BINDING
	REPORT OF ACCIDENT, FULLSCAPE SIZE,
	REGISTER BOOK, FORM-B, HARD BINDING,
	FORMS, EMPLOYEE BASIC BIO-DATA
	RECORD BOOK OF PRESSURE VESSEL TESTING

	RECORD BOOK OF SRV TESTING
	REGISTER BOOK, LEAVE FORM "G"),
28	**Heat exchanger plates for Gas Generator, Make:Caterpillar, Model: G3512**
	M10M2-316-0.6-NBRP/C-END PLATE II 4H, End Plate II 4H for Heat Exchanger M10M2-316-0.6-NBRP/C-END PLATE II 4H
	M10M2-316-0.6-NBRP/C-END PLATE I 0H, End Plate I 0H for Heat Exchanger M10M2-316-0.6-NBRP/C-END PLATE I 0H
	M10M LT CH (CHANNEL PLATES), Channel Plates for Heat Exchanger.
	M10M CH PLATE GASKET NBRP CO(GASKET SET), M10M CH PLATE GASKET NBRP CO(GASKET SET) Gasket Set for Heat Exchanger.
	Gas Generator Spares, Make: Caterpillar, Model no: G3512
	Harness As Engine(Ignition), Pt no: 4P9322
	Turbo Charger GP, Pt no: 1345402
	Seal GP Exhaust, Pt no: 4W1478
	Pump GP Water, Pt no: 1664378
	Regulator as Gas Pressure, Pt no: 3355764
	Diaphragm, Pt no: 1233970
	Pump GP Aux. Water, Pt no: 7E9781

	Seal O Ring, Pt no: 3B8453
	Seal O Ring, Pt no: 2353546
	Seal O Ring, Pt no: 2624378
	Seal, Lip Type, Pt no: 9X4594
	Seal O Ring Pt no:1251372
	Seal (Pressure Relief) Pt no: 1352651
	Seal O Ring Pt no: 2986387
	Actuator As, Pt no: 1187590
29	Sensor GP Temp, Pt no: 2419591
	Thermo Couple, Pt no: 5N9365
	Starting Motor GP, Pt no:2071562
	Curbo rettor GP, Pt no: 9Y4358
	Cylinder Head. Pt no: 2061556
	Body As Piston, Pt no: 1339375
	Ring Top, Pt no: 7E7581
	Ring Intermediate, Pt no: 8N1234

	Ring (Oil).Pt.No.7W2221
	Harness As Sensor, Pt no: 2435281
	Core AS After cooler, Pt no: 7E3568
	Gasket, Pt no: 1525705
	Seal O Ring, Pt no: 5P7701
	Seal O Ring, Pt no: 8L2786
	Sensor GP Temperature, Pt no: 1342252
	Sensor GP Speed, Pt no: 5L5840
	Transformer .Pt.No. 1651589
	TOH/MOH KIT
30	**WTP Spares, Make:Neelwater**
	CARBON, ACTIVATED FOR AQUAGUARD WATER
	CHOKE,UV TUBE FOR WTP,P/N-WCB-UV07-C36-P
	SPARES,10 LPH DOSING PUMP,WCB-DP10-DOR-M
	SPARES, 5 LPH DOSING PUMP,WCB-DP05-DOR-M
	RESIN, IRON REMOVAL,P/N-WCB-IR00-R00-I

	CARTRIDGE, MICRON,FOR WTP,WCB-MF07-C21-0
	RING'O', NEELWATER,WCB-UV07-T36-P-1
	GLASS,QUARTZ,FOR WTP,P/N-WCB-UV07-Q41-P
	TUBE,ULTRAVIOLET,FOR WTP,WCB-UV07-T36-P
	Other spares/Consumables
	Motor spirit
	Cat Adv 40-Lube oil.
	HSD
	Coolant
31	Hydralic oil
	Oil filter
	Spark Plug
	Ferric alum
	Battery (12V, 180-200AH)
	Bleaching powder
	Flare system spares, Make:M/s Ador Welding

	Ignition Transformer
	Pressure Gauge (Each Type)
	Indicating Lamps Set
	Aux Contactor
	MCB
	Solenoid Valve
	Ceramic Fibre blankets
	Remote ON / OFF Valve
32	Restricted Orifice
	Level Transmitter
	Level gauge
	Ignition chamber glass
	Gasket Set
	Hardware Set
	Igniter Cable (H T Cable) in Mtr
	Pressure Control Valve

	Refractory castable
	Pilot burner
33	**Filter element, Make:M/s Gas Tech**
	Filter element, Part no: GTFE 12-00-220
	Spares or ETP, Make:Neelwater
	For Filter feed pump- SP1H
	Impellar
	delivery casing
	Pump Shaft
	Shaft sleeve
	Munting casing
	Gland
	Lanter ring
	Set of Mechanical seal
	Liquid defector
	Set of key

Imeller nut
Ball bearing
Set of stud
For Effluent pump - SP2H
Impellar
delivery casing
Pump Shaft
Shaft sleeve
Mounting casing
Gland
Lanter ring
Set of Mechanical seal
Liquid defector
Set of key
Imeller nut
Ball bearing

34	Set of stud
	For IGF Unit -
	Small sleeve bearing kits for Aquafloat aerator- sleeve.
	Small sleeve bearing kits for Aquafloat aerator- Bearing
	Aerator motors (0.55 KW,8P,415V Toshiba)
	Scraper motors (5.5 KW,2P,415V Toshiba)
	VITON scraper blade
	For CPI Unit -
	VICTAULIC COUPLING
	Do Sensor
	Oil controller unit
	Corrosion Monitor unit
	Butterfly valve
	GI Nut bolt with washer (1/2"*2")
	GI Nut bolt with washer (1/2"*3")
	Pressuregauge 4" dial size

ball valve 3/8"
Non return valve
Solenoid valve
Solenoid valve coil
Dosing spares
PCB - 15 lph
Coil - 15 lph
PCB - 10 lph
Coil - 10 lph
PCB - 5 lph
Coil - 5 lph
Suction Foot valve
Dosing NRV
Electricals
PLC- CPU
Power supply 24V

35	**Spares list for WTP, Make:Neelwater**
	Gland for Filter pump
	Butterfly valve 1.5"
	Butterfly valve 3"
	Nut bolt
	GI Nut bolt with washer (1/2"*2")
	GI Nut bolt with washer (1/2"*3")
	Sand
	Bag filter bags
	Pressure guage 4"
	Electrical spares (cont, MCB, relay)
	CaOCl (40kg x 24 months)
	Dechlorine chem (25 kg x 24 months)
	Spare list for Instrument Air compressor, Make- Atlas Copco, Model: ZT-45
	Oil Filter Element
	Air Filter element

36	Roto-Z can (20L) (Pt no: 27101980)
	Check valve kit
	Inlet valve Overhaul kit
	Inlet valve Overhaul kit
	Kit set of wearing parts
	Oil pump kit
	HP element exchange kit
	LP element exchange kit
	Drive shaft bearing kit
	Press.transducer
	Press.transducer
	Temp. Sensor
	Press.transducer
37	**Flow computer, Model No. S600+, Make:Emerson**
	P144 I/O Board1 (Pt no: 7281440)
	P153 Front Panel/ Keyboard/ Display (Pt no: 7181530)

37	P155 FloBoss S600 PSU (Pt no: 7161550)
	P152 CPU Board for S600+ (Pt no: 7381520)
	RAM supported battery (Pt no: 1327045)
38	**Ultrasonic Flowmeter and panel spares, Make: Emerson, Model: 3400**
	Mark III CPU Board Assy w/o keys (Pt no: 233400425)
	Mark III Field Connection Board assy (Pt no: 233400421)
	Mark III Acquisition Board Assy (Pt no:233400420)
	O-Ring for Base Cover (Pt no: 249163361)
	Fuses, 2A SB 5X20mm (Pt no: 254203420)
	O-Ring for Upper Enclosure End caps (Pt no: 249163259)
	T-21 Upgrade kit >12" USM Size (Pt no: 136003201)
	T-22 Upgrade kit <= 12" USM Size (Pt no: 136003211)
	O-Ring J/K Style Mount (Pt no: 150352222)
	O-Ring Backup J/K Style Mount (Pt no: 150313222)
	Transducer Holder O-Ring (Pt no: 150352120)
	Transducer Holder O-Ring Backup (Pt no: 150313120)

	24 V DC Power Supply (Pt no: TRIO/PS/1AC/24DC/10
	Diode Module for 24VDC Redundancy (PC-DIO/RED/10)
	AI Barrier cum Repeater (KFD2-STC4-EX1.20)
	Pulse Barrier cum Repeater (KFD2-SOT2-EX2.LK)
	RS 232 to RS 485 Converter (Pt no: TCC-100)
	8Port Ethernet Switch (Pt no: EDS-208)
39	**Chemicals required at ETP and WTP, Make:Neelwater**
	Alum (Fitkari) /Poly Aluminium Chloride
	Poly electrolyte
	Bactericide (A 201)
	Antiscalent (RD 300)
	Oxygen scavenger (3030)
	Corrossion inhibitor (2870)
	Poly Aluminium Chloride
	Twin oxide chemical
	Mechanical seal, Make:Sulzer Pump

	SEAL TYPE: QBQ/QBQ; SIZE: 2.6250"/2.500" AS PER DRG NO: 2H-129987 FOR SULZER PUMP
	SEAT GASKET #VITON
	SEAT GASKET #VITON
	SEAL FACE #SILCAR
	SEAL FACE #SILCAR
	SEAL FACE #CARBON
	SEAL FACE #CARBON
	FLANGE GASKET #VITON
	SLEEVE GASKET #VITON
	ADAPTER GASKET #VITON
	ROTARY FACE GASKET #VITON
	ROTARY FACE GASKET #VITON
	Seal Type: QBQ, Size: 2.125", As Per Drawing No: 2H-129988/ 2H-129989/ 2H-129990/ 2H-134690 for Sulzer Pump
40	GASKET #VITON
	SEAL FACE #SILCAR
	SEAL FACE #CARBON

GASKET #VITON
GASKET #VITON
GASKET #VITON
Seal Type: GSL, Size: 2.125", As Per Drawing No: 2H-130777, 2H-130780, 2H-130781, 2H-130782, 2H-130783 & 2H-130809 for Sulzer Pump
SEAL FACE #SILCAR
SEAL FACE #CARBON
FLANGE GASKET #GFD
SLEEVE GASKET #VITON
SEAT GASKET #VITON
O-RING #VITON
O-RING #VITON
ROTATE FACE GASKET #VITON
Diesel Engine, Make:Model no: 6SL1500TA
V-belt (Pt no: F6.019.16.0.00)
Fuel filter mico (Pt no: 48.117.05.0.00)
Fuel filter pre (Pt no: 48.117.05.0.00)

41	Lube oil filter (Pt no: 06.436.01.0.00)
	Air cleaner (Pt no: F6.729.03.0.00)
	Air cleaner (Pt no: F6.729.04.0.00)
	Injector (Pt no: F6.361.02.0.00)
	Fuel pump (Pt no: F6.713.01.0.00)
	Self starter (Pt no: F6.028.01.0.00)
	GG Spares,Make: Caterpillar, model: G3512
	Harness AS engine (Ignition) (Pt no: 4P9322)
	Control GP engine (Pt no:CAT-2050628)
	Diaphragm (Pt no: CAT-7W4286)
	Turbocharger GP (Pt no:1345402)
	Seal GP exhaust (Pt no: 4W1478)
	Valve GP solenoid (CAT-9Y6992)
	Pump GP water (Pt no: 1664378)
	Seal O ring (Pt no: CAT-1495462)
	Seal O ring (Pt no: CAT-5H6734)

	Regulator AS gas pressure (Pt no: 3355764)
	Diaphragm (Pt no: 1233970)
	Pump GP aux. water (Pt no: 7E9781)
	Seal O ring (Pt no:3B8453)
	Seal O ring (Pt no:2353546)
	Seal O ring (Pt no:2624378)
	Seal lip type (Pt no: 9X4594)
	Seal O ring (Pt no:1251372)
	Seal (pressure relief)
	Pump GP oil (Pt no: CAT-4P5638)
	Seal O ring (Pt no:2986387)
	Actuator AS (Pt no: 1187590)
	Sensor GP pressure (Pt no: CAT-3E1854)
42	Sensor GP speed (Pt no: CAT-2659034)
	Sensor GP temp (Pt no: 2419591)
	Thermocouple (Pt no: 5N9365)

Regulator AS voltage (Pt no: CAT3147755)
Starting motor GP (Pt no: 2071562)
Curborettor GP (Pt no: 9Y4358)
Oil cooler (Pt no: CAT-4W4980)
Cylinder head (Pt no: 2061556)
Body AS piston (Pt no: 1339375)
Ring top (Pt no: 7E7581)
Ring intermediate (Pt no: 8N1234)
Ring oil (Pt no: 7W2221)
Harness AS Sensor (Pt no: 2435281)
Core AS aftercooler (Pt no: 7E3568)
Gasket (Pt no: 1525705)
Seal O ring (5P7701)
Seal O ring (8L2786)
Sensor GP temp (1342252)
Sensor GP speed (Pt no: 5L5840)

	Sensor GP pressure (inlet manifold), Pt no: CAT-3E1854)
	Sensor pressure oil (Pt no: CAT-1638516)
	Diaphragm (Pt no: CAT-7W4286)
	Sensor GP temp and press (Pt no: CAT-9W5565)
	Transformer (Pt no: 1651589)
43	**Gas and Flame detectors, Make:M/s Detection Instruments (India) pvt. Ltd.**
	Flame detector, Make-Spectrex, Model: 40/40-L4B
	Open path gas detector, Make- Spectrex, Model: 700 series
	Hydrocarbon gas detector, Make: Crowcon, Model: IR Max
	PMCC & SLDB panel spares
	1 Amps, Single Pole MCB
	LED Type Indication Lamp,230 VAC, RED
	LED Type Indication Lamp,230V AC, GREEN
	LED Type Indication Lamp,230V AC, AMBER
	LED Type Indication Lamp,230V AC, WHITE
	Push Button RED + NC contact Block

Push Button GREEN + NC contact Block
Trip-Neutral-Switch
Space Heater, 100W
Thermostat
3-Phase PT, 415/rt.3/110/rt.3, 100VA
3-Phase PT, 415/rt.3/110/rt.3, 200VA
16 Amps, 3-Pole, 50KA MCCB
32 Amps, 3-Pole, 50KA MCCB
63 Amps, 3-Pole, 50KA MCCB
100 Amps, 3-Pole, 50KA MCCB
125 Amps, 3-Pole, 50KA MCCB
FD Kit for 16- 125 A MCCB
400 Amps, 3-Pole, 50KA MCCB
TP Power contractor, 9 Amps, 240 V AC operating coil
TP Power contractor, 25 Amps, 240 V AC operating coil
TP Power contractor, 32 Amps, 240 V AC operating coil

44	TP Power contractor, 50 Amps, 240 V AC operating coil
	BMR 1.0 - 1.5 Amps
	BMR 1.8 - 2.7 Amps
	BMR 2.5 - 4 Amps
	BMR 4 - 6.3 Amps
	BMR 5.5 - 8.5 Amps
	BMR 8 - 12 Amps
	BMR 10 - 16 Amps
	BMR 14.5 - 18 Amps
	BMR 17.5 - 22 Amps
	BMR 30 - 43 Amps
	MI AC Ammeter,CT operated, 72 x 72 sq.mm
	Current Transformer, 25/1, Class1, 5 VA, make: Kappa
	Current Transformer, 50/1, Class1, 15 VA, make: Kappa
	Current Transformer, 50/1, Class1, 5V A, make: Kappa
	Current Transformer, 150/1, Class1, 5 VA, make: Kappa

	Current Transformer, 30/1, Class1, 15 VA, make: Kappa
	Current Transformer, 30/1, Class1, 5 VA, make: Kappa
	Current Transformer, 1600/1, Class1, 15 VA, make: Kappa
	Current Transformer, 15/1, Class1, 5 VA, make: Kappa
	Current Transformer, 400/1, Class1, 5 VA, make: Kappa
	Current Transformer, 150/1, Class1, 5 VA, make: Kappa
	32 Amps, 4-Pole, 300 mA, RCBO
	63 Amps, 4-Pole, 300 mA, RCBO
	10 Amps, 2-Pole, 300 mA, RCBO
	16 Amps, 2-Pole, 300 mA, RCBO
	Auto/ Manual Selector Switch
	Time Switch
	TP power Contractor, 40 Amps, 240 V AC operating coil
	Spares for IBH
	BMS fuse
	BMS card

45	Spark plug
	Pilot assembly
	Solenoid valve
	Air filter regulator
	Pressure gauge
	Temperature gauge
	Limit switch
	Fasteners for all sizes
	Gaskets for all sizes
	Manual valve 2" and below
	Filter elements
	ZT 37 VSD, Air Compressors)
	A Maintenance Kit
	B Maintenance Kit
	C Maintenance Kit
	Cooler Kit

46	EWD Service Kit
	Air/Oil Filter Kit
	Breather Kit
	DP Air Filter Pressure Transducer
	Pressure Transducer
	Temperature Sensor
	Flare system spares, Make:M/s Ador Welding
	Ignition Transformer
	Pressure Gauge (Each Type)
	Indicating Lamps Set
	Aux Contactor
	MCB
	Solenoid Valve
	Ceramic Fibre blankets
	Remote ON / OFF Valve
47	Restricted Orifice

	Level Transmitter
	Level gauge
	Ignition chamber glass
	Gasket Set
	Hardware Set
	Igniter Cable (H T Cable) in Mtr
	Pressure Control Valve
	Refractory castable
	Pilot burner
48	**CDX 120, Air Dryers)**
	Silencer
	Dessicant Kit
	Butterfly Valve
	Blow off Valve Assmbly
	Solenoid Valve
	Filter Element (DD)

	Filter Element (PD)
	Gas chromatograph spares, Make: Emerson, Model no: GC 500
	Pre-Amplifier board for model 500GC; P/N: 2-3-0500-201
	Temperature controller and valve driver board
	Motherboard for model 500 GC; P/N: 2-3-0500200
	PCA valve drive for 500 GC; P/N:2-3-0500178
	Kit 9k thermistor seal; P/N: 2-6-1611-083
	Accopian power supply assembly; P/N: 2-49500230
	6 port GC Valve repair kit; P/N: 2-3-9300-108
49	Filter element (2 micron), swagelok SS-2F-k4-2; P/N: 2-4-5000-113
	Filter inline (1/8",SS-2F-2)
	Membrane kit model 120 filter/bypass/LSO
	4 way solenoid valve; P/N 2-4-5000-075
	Membrane kit; P/N: 2-4-5000-394
	3 way solenoid valve; P/N: 2-4-5000-075
	Ferrule 1/16" RER; P/N: 2-4-9500-005

	Ferrule 1/16" FNT; P/N: 2-4-9500-006
	Tubing nut 1/16"; P/N: 2-4-9500-001
	DCS spares, Make: Emerson, Model: Delta V
	MD Plus controller; Model no: VE:3006
	2 wide power/controller carrier; Model no: VE3051C0
	Enhance system power supply 12/24 VDC i/p, Model no: VE5009
	Analog input card 8 channel, 4-20ma HART, fused to i/o terminator; Model no: VE4003S2B2
	Discrete input card, 8 channel, 24VDC, Dry contact I/o terminator block, Model no: VE4001S2T2B1
	Discrete output cards 8 channel, 24VDC, Highside I/O termination block, Model no: VE4002S1T2B1
	Simplex H1 fieldbus I/O interface cards & termination block; Model no: VE4017P0
	Redundant H1 fieldbus interface card, two wide termination block with two ports
	Redundant serial interface card with two ports and termination block, Model no: VE4036P2
	Bulk power supply 12 VDC, 20A; Model no: Quint-PS/1AC/12DC/20
	Bulk power supply 24 VDC, 40A; Model no: Quint-PS/1AC/24DC/40
	Bulk power supply 12 VDC, 15 A; Model no: Quint-PS/1AC/12DC/15
50	Bulk power supply 24 VDC, 20 A; Model no: Quint-PS/1AC/24DC/20

Bulk power supply 24VDC, 10A; Model no: QUINT-PS/1AC/24DC/10
Quint diode; Model no: QUINT DIODE/40
FISCO Power supply; Model 9122
Surge protector for trunk protection; Model FP-32
Redundant logic solver for for Delta V (SIS); Model: VS3202
SIS Net terminator assembly
Redundant SIS net repeater; Model: VS6002
Interposing relays for DI 2 no/nc interposing relays for digital input
Interposing relays for DO 2 no/nc interposing relays for digital output
SIS relays for DI/DO; Model:VS6907
Analog input barrier; Model 9160/13-10-11
Digital input barrier; Model: 9170/10-40-12
Pressure and Temperature transmitters, Make:Rosemount
Pressure transmitter; Range: 0 to 15kg/cm2 (HART), Model: 3051S2CG5A2F12A1AB3D1I1L4M5Q4T1QT
Pressure transmitter; Range: 0t o 50kg/cm2 (FF), Model: 3051S2TG3A2E11F1AB4I1M5Q4T1
Pressure transmitter; Range: 0 to 14kg/cm2 (FF), Model: 3051S2TG3A2E11F1AB4I1M5Q4T1

51	Pressure transmitter; Range: 0 to 5kg/cm2 (FF) Model: 3051S2TG2A2E11F1AB4I1M5Q4T1
	Differential pressure transmitter; Range: 0 to 1kg/cm2 (FF), Model: 3051S2CD3A2E12F1AB4I1L4M5Q4T1
	Temperature transmitter; Range: 0 to 100 C (FF), Model: 3144PD1F1I1B4M5Q4T1
	Temperature transmitter; Range: 0 to 100 C (HART), Model: 3144PD1A1I1B4M5Q4T1QT
	Pressure transmitter; Range: 0 to 50kg/cm2 (HART), Model: 3051S2CG5A2F12A1AB3D1I1L4M5Q4T1QT
52	**Helium Gas for Gas chromatograph**
	Helium cylinder, HELIUM GAS FOR HP GAS CHROMATOGRAPH,PURITY 99.995%
53	**Calibration Gas mixture for Gas chromatograph**
	Calibration gas mixture, Required for GC-3101 COMPOSITION Methane-89.7009 Ethane-4.975 Propane-0.9972 I-Butane-0.2994 N-Butane-0.302 I-Pentane-0.1001 N-Pentane-0.0999 Hexane- 0.0303 Co2-0.9932 N2-2.502 Total-100 +/- 0.4% on components greater than 1% &+/- 1% on components less than 1% & +/- 2% on Methane Cylinder Volume=10 Litres Gas Volume=0.5 M3 Gas pressure=50 kg/cm2

ANNEXURE-D

	Cylinder, capacity 10L, CYLINDER, CARBON STEEEL,CAPACITY 10 L, Cylinder(Seamless) with brass valve, capacity 10Litre used for NaturalGas Calibration Mixture.

OIL INDIA LIMITED
(A Government of India Enterprise)
Duliajan, Assam

DESCRIPTION OF WORK/SERVICE: Operation and Maintenance of CGGS Madhuban and FGS Chabua for a period of 04 (Four) years.

PRICE BID FORMAT Tender No. CDO6415P18

NAME OF BIDDER	
Bidder's GST No.	
SAC/HSN Code	
Select the benefit sought under the Policy (Use Drop Down List)	

Item No.	Description of Services (For detailed description of Services Refer SOQ)	UOM	Estimated Quantity	Rate (Rs.) Per Month Excluding GST	Applicable GST Rate in %	Applicable GST (Select from Drop Down List)	Amount (Rs.) Excluding GST	Amount (Rs.) Including GST
			A	**B**	**C**		**D = A * B**	**E = D+(D * C%)**
10	O&M Service Charge CGGS Madhuban	Monthly	48.00				0.00	0.00
20	Mobilisation Charge for CGGS Madhuban	Lumpsum	1.00				0.00	0.00
30	Demobilisation Charge for CGGS Madhuban	Lumpsum	1.00				0.00	0.00
40	O&M Service Charge FGS Chabua	Monthly	48.00				0.00	0.00
50	Mobilisation Charge for FGS Chabua	Lumpsum	1.00				0.00	0.00
60	Demobilisation Charge for FGS Chabua	Lumpsum	1.00				0.00	0.00
						Total (Rs)	0.00	0.00

1. The price/rate(s) quoted by the Bidders will be inclusive of all taxes except GST (i.e. IGST or CGST and SGST/UTGST as applicable in case of interstate supply or intra state supply respectively and Cess on GST , if applicable) on the final services. However, GST rate (including cess) & Custom Duty to be provided in the respective places in the Price Bid.

2. Price Bids shall be evaluated on overall lowest cost to OIL (L-1 offer) basis i.e. considering total quoted price for all services including applicable GST(CGST & SGST/UTGST or IGST)

PRICE BID FORMAT Tender No. CDO6415P18
3 OIL will prefer to deal with registered bidder under GST. Therefore, bidders are requested to get themselves registered under GST, if not registered yet. However, in case any unregistered bidder is submitting their bid, their prices will be loaded with applicable GST while evaluation of bid. Where OIL is entitled for input credit of GST, the same will be considered for evaluation of bid as per evaluation methodology of tender document.
4. Price Bid uploaded without giving any of the details of the taxes (Including rates and amounts) will be considered as inclusive of all taxes including GST. When a bidder mentions taxes as extra without specifying the rates & amount, the offer will be loaded with maximum value towards taxes received against the tender for comparison purposes. If the bidder emerges as lowest bidder after such loading, in the event of order on that bidder, taxes mentioned by OIL on the Purchase Order/ Contracts will be binding on the bidder.
5. Input Tax Credit on GST (Goods & Service Tax) for this service is NOT available to OIL & The bids will be evaluated based on total price including GST.
6. Bidder may seek benefits under PP-LC policy as well as Public Procurement Policy for MSEs – Order 2012, Bidder hereby categorically seek benefits against only one of the two policies i.e. either PP-LC or MSE policy. i. PP-LC OR ii. MSE policy.
7. Purchase preference policy-linked with Local Content (PP – LC) notified vide letter No. O-27011/44/2015-ONG/II/FP dated 25.04.2017 of MoPNG shall be applicable in this tender Bidders seeking benefits under Purchase Preference Policy (linked with Local Content) (PP - LC) shall have to comply with all the provisions specified in ITB and shall have to submit all undertakings/documents applicable for this policy.
8. Refer to GCC for detail of GST
9. Refer to SOQ & SCC for Item detail Description
10. Period of Contract : 04 (Four) years.
11. Mobilisation Period: Mobilisation for CGGS Madhuban and FGS Chabua need to be completed by 22.07.2018. Mobilization shall be completed within 30 days from date of issue of LOA.
12. Bidder must submit cost break up against each line item above, except Mobilisation & Demobilsation charge as per the format provided in 'Price Break up' worksheet.
14. Maximum allowable Mobilisation & demobilisation charge is upto 2.5% each, of quoted price against O&M service for the FGS Chabua & CGGS Madhuban.

Cost Break for CGGS Madhuban, FGS Chabua
Inclusive of all taxes except GST

SOR: CGGS Madhuban

ITEMS	DESCRIPTION	Monthly Rate(Rs.)	Remarks	
10	SALARY EXPENSES	0.00	Item No.10 of Price bid format.	
20	AMC SERVICE COST	0.00		
30	PPE & GENERAL CONSUMABLES	0.00		
40	VEHICLE	0.00		
50	FIRE EXTINGUISHERS MAINT.	0.00		
60	PME COST	0.00		
70	TOOL COST	0.00		
80	GARDENING/HOUSEKEEPING COST	0.00		
	Total Monthly Cost	0.00	Cost for 4 Year	0.00

SOR: FGS Chabua

ITEMS	DESCRIPTION	Monthly Rate(Rs.)	Remarks	
10	SALARY EXPENSES	0.00	Item No.40 of Price bid format.	
20	AMC SERVICE COST	0.00		
30	PPE & GENERAL CONSUMABLES	0.00		
40	VEHICLE	0.00		
50	FIRE EXTINGUISHERS MAINT.	0.00		
60	PME COST	0.00		
70	TOOL COST	0.00		
80	GARDENING/HOUSEKEEPING COST	0.00		
	Total Monthly Cost	0.00	Cost for 4 Year	0.00

Break up of SOR items:CGGS Madhuban (Item No.10 of Price bid format)

10	SALARY EXPENSES PER MONTH			
Srl.No.	Item description	Qty	Unit Price(Rs.)	Monthly Price(Rs.)
1	Chief Plant Manager	1		0.00
2	HR/Adm./PR/Accounts Manager	1		0.00
3	HSE Manager	1		0.00
4	Safety supervisor	3		0.00
5	Inst. O&M Manager	1		0.00
6	Instrumentation Supervisor/Fitter	4		0.00
7	Instrumentation technician	6		0.00
8	Electrical O&M Manager	1		0.00
9	Electrical Supervisor/Fitter	4		0.00
10	Electrical Technician	6		0.00
11	Mechanical O&M Manager	1		0.00
12	Maintenance Supervisor/Fitter	4		0.00
13	Maintenance Technician	9		0.00
14	Chemist(Lab. In Charge)	1		0.00
15	Lab. Assistant	1		0.00
16	Control Room Engineer	4		0.00
17	Operator (FW Pump/ GG/WTP/ETP/Air Cop. Etc)	4		0.00
18	Materials officer	1		0.00

19	Office boy	1		0.00
20	Unskilled Helper	4		0.00
21	Sweeper	1		0.00
			Total Monthly Cost	0.00

20	**AMC SERVICE COST PER MONTH**

SR.NO.	DESCRIPTION	Monthly Price(Rs.)
1	Hirel UPS system (2 Nos. X 45 KVA) with all auxiliary equipment viz.,Charger and bypass line equipment UPS system etc.	
2	Atlas Copco make Air Compressor ZT-45 (2 Nos.) with with all auxiliary equipment viz. Dryer and other auxiliary equipment etc.	
3	Emerson make DCS- Delta V system & ESD sytem with all auxiliary equipment.	
4	Daniel make:i)Gas Chrmatograph Analyser(04Nos.),ii) Metering panel each with 6 Nos. Flow(S600+) Computers (03Nos.), iii)Electro Magnetic Flowmeter(02Nos.),iv) Ultrasonic Flowmeter(34Nos.) v) Coriolis Flow Meter(02Nos.)	
5	Caterpillar make Gen Sets (906KVA-2 Nos.) with Gas Engines (2 Nos, including overhauling jobs) with all auxiliary equipment viz., synchronizing panel, MCC panels, NGRs etc.	
6	Flare Flow Controller-Sick make	
	Total Monthly Cost	**0.00**

30	**PPE & GENERAL CONSUMABLES**

Srl.No.	**MATERILAS**	**Monthly Price(Rs.)**	**No of employees**	**Frequency Consumption**
1	SAFETY SHOE(PAIR) For 59 Pairs		59	Twice/Year
2	SAFETY HELMET (NO) For 59 Nos		59	Once/year
3	DANGRI (SET) For 59 Nos		59	Twice/year
4	GUM BOOT(PAIR) For 59 Nos		59	Once/2 year
5	HAND GLOVES(LEATHER) For 46 Pairs		46	Once/ week
6	HAND GLOVES((High Temperatures & chemical usage)) For 2 Pairs		2	Once/Month
7	EAR PLUG (NO) For 59 Nos		59	Once/month
8	EYE GOGGLE (NO) For 49 Nos		49	Once/2 month
9	MASK (NO) For 59 Nos		59	Once/2 month
10	BREATHER (SET) For 59 Nos		59	Once/2 month
11	RAIN COAT(SET) For 59 Nos		59	Once/3 year
12	APRON (SET) For 2 Nos		2	Once/month
13	JACKET (SET) For 59 Nos		59	Once/3 year

14	Water filter(Min. 2 Nos.)			2 Nos. water filter in working condition must be available all throughout the year
15	General Consumables			As and when required basis and as per terms and conditions given in SCC
	Total Monthly Cost	0.00		

40	**VEHICLE**

Srl. No.	Item	Monthly Price(Rs.)
1	Monthly Costs for Vehicle 1 No	

50	**FIRE EXTINGUISHERS MAINT.**

Srl.No.	**Type of fire extinguishers for periodic inspection, maintenance & refilling, hydro testing as per statutory norms**	**Monthly Price(Rs.)**
1	ABC Type/DCP Type/Foam Type 10 kg/50Ltr.-64 Nos,.	
2	CO2 cylingder - 4.5/6.5 KG capacity-05 Nos.	
3	DCP type fire extinguisher, 50/75kg-03 Nos.	
	Total Monthly Costs	0.00

60	**PME COST ONCE IN 3 YEARS**

Srl.No.	Name of service	No of employees	Monthly Price(Rs.)
1	Cost /person on Periodic Medical Examination as per statutory requirement For 59 Nos.	59	
		Total Monthly Costs:	0.00

70	**TOOL COST**

Srl.No.	Item	**Consumption in 4 years**	Monthly Price(Rs.)
1	Chain pulley block (5MT)-1 No	1	
2	Tripod (C.I, 9")	1	
3	Grinding wheel(6"OD)	6	
4	Bench Vice	1	
5	Thread Dies	2	
6	Dial Gauge	12	

7	Rossette	12	
8	Grease Gun	2	
9	Hydraulic pullers	1	
10	Sledge Hammer (5lbs)	2	
11	Non sparking Sledge Hammer (10 lbs)	1	
12	Sledge Hammer (20 lbs)	1	
13	Wrenches (adjustable)	60	
14	Pipe Wrench (10")	4	
15	Pipe Wrench (14")	4	
16	Pipe Wrench (18")	4	
17	Pipe Wrench (24")	4	
	Total Monthly Costs:		0.00

80	**GARDENING/HOUSEKEEPING COST**

Srl.No.	Name of service	Unit (M2)	Total Area	**No of job reqd per yr**	**Monthly Price(Rs.)**
1	Maintenance and Upkeepment of Parks and flower garden including propogation of new seedling as directed.	Sq.m	5000	12	
2	Supply of Cowdung and flower saplings.	Sq.m	5000,(with 4000 Nos. of Flower saplings)	contract cost spread in throughout the year	
3	Wild grass cutting, jungle cutting with dao, sickles etc including disposal at a distance of max 2 KM	Sq.m	40000	12	
4	Removing(cutting, clearing) creepers and other wild growth over fencing, wall etc. and disposing the cut materials.	Sq.m	4572	6	
5	Cleaning surface drains of one metre depth and carriage of debris to company's indicated places.	Sq.m	1760	6	
6	Collection and disposal of oily sludge etc around ETP area / OWS system / OWS gravity separators / technical liquid drain system etc and safe disposal (polyethene) of the same as directed by OIL	Daily oil cleaning job all around plant by engaging 2/3 persons & safe disposal			
7	Ground Water Reservoir cleaning	04 times in a year	Plankton,vegetation grow removal on the surface	4	
				Total Monthly Costs:	0.00

Break up of SOR items:FGS Chabua(Item No.40 of Price bid format)

10	**SALARY EXPENSES PER MONTH**

Srl.No.	Item descritption	Qty	Unit Price(Rs.)	Monthly Price(Rs.)
1	Plant Manager	1		0.00
2	Safety supervisor	3		0.00
3	Inst. O&M Manager	1		0.00
4	Instrumentation technician	4		0.00
5	Electrical O&M Manager	1		0.00
6	Electrical Technician	4		0.00
7	Mechanical O&M Manager	1		0.00
8	Maintenance Supervisor/Fitter	1		0.00
9	Maintenance Technician	3		0.00
10	Control Room Engineer	4		0.00
11	Operator (FW Pump/ GG/WTP/ETP/Air Cop. Etc)	4		0.00
12	Office boy	1		0.00
13	Unskilled Helper	1		0.00
14	Sweeper	1		0.00
			Total Monthly costs:	0.00

20	**AMC SERVICE COST PER MONTH**

SR.NO.	DESCRIPTION	Monthly Price(Rs.)
1	Hirel UPS system (2 Nos. X 40KVA) with all auxiliary equipment viz.,Charger and bypass line equipment UPS system etc.	
2	Atlas copco make Air Compressor ZT-37 (2 Nos.) with with all auxiliary equipment viz. Dryer and other auxiliary equipment etc.	
3	Emerson make DCS- Delta V system & ESD sytem with all auxiliary equipment.	
4	Daniel make i) Gas Chrmatograph Analyser (01Nos.), ii) GCC &PLC panels, iii)Electro Magnetic Flowmeter (05Nos.), v) Coriolis Flow Meter(06Nos.), vi) Sick make Flowmeter (06Nos.)	
5	Caterpillar make Gen Sets (619 KVA-2 Nos) with Gas Engines (2 Nos, including overhauling jobs) with all auxiliary equipment viz., synchronizing panel, MCC panels, NGRs etc.	
6	Flare Flow Controller-Sick make	
	Total Monthly cost	**0.00**

30	**PPE & GENERAL CONSUMABLES**

Srl.No.	**MATERILAS**	**No of employees**	**Monthly Price(Rs.)**	**Frequency Consumption**
1	SAFETY SHOE(PAIR) For 30 Pair	30		Twice/year
2	SAFETY HELMET (NO) For 30 Nos	30		Once/year
3	DANGRI (SET) For 30 Nos	30		Twice/year
4	GUM BOOT(PAIR) For 30 Nos	30		Once/2 year
5	HAND GLOVES(LEATHER) For 10 Pair	10		Once/ week
6	HAND GLOVES(NITRILE) For 1 Pair	1		Once/month
7	EAR PLUG (NO) For 30 Nos	30		Once/month
8	EYE GOGGLE (NO) For 5 Nos	5		Once/2 month
9	MASK (NO) For 5 Nos	5		Once/2 month

10	BREATHER (SET) For 30 Nos	30		Once/2 month
11	RAIN COAT(SET) For 30 Nos	30		Once/3 year
12	APRON (SET) For 2 Nos	2		Once/month
13	JACKET (SET) For 30 Nos	30		Once/3 years
14	Water filter (Min.02Nos.)			2 Nos. water filter in working condition must be available all throughout the year
15	General Consumables			As and when required basis and as per terms and conditions given in SCC
			Total Monthly Cost	0.00

40	**VEHICLE**

Srl. No.	Item	Monthly Price(Rs.)
1	Monthly Costs for 1 No Vehicle	

50	**FIRE EXTINGUISHERS MAINT.**

Srl.No.	**Type of fire extinguishers for periodic inspection, maintenance & refilling, hydro testing as per statutory norms**	**Monthly Price (Rs.)**
1	Co2 cylingder - 6.5 KG cpapacity-5 Nos.	
2	ABC/DCP/Foam type fire extinguisher , 10kg/50 ltr.-37 Nos.	
	Total Monthly Cost	0.00

60	**PME COST ONCE IN 3 YEARS**

Srl.No.	Name of service	No of employees	Monthly Price(Rs.)
1	Cost /person on Periodic Medical Examination as per statutory requirement.	30	
		Total Monthly cost:	0.00

70	**TOOL COST**

Srl.No.	Item	Consumption in 4 years	Monthly Price(Rs.)
1	Chain pulley block (5MT)	1	
2	Tripod (C.I, 9")	1	
3	Grinding wheel(6"OD)	6	
4	Bench Vice	1	
5	Thread Dies	2	
6	Dail Gauge	12	

7	Rossette	12	
8	Grease Gun	2	
9	**Hydraulic pullers**	1	
10	Sledge Hammer (5lbs)	2	
11	Non sparking Sledge Hammer (10 lbs)	1	
12	Sledge Hammer (20 lbs)	1	
13	Wrenches (adjustable)	60	
14	Pipe Wrench (10")	4	
15	Pipe Wrench (14")	4	
16	Pipe Wrench (18")	4	
17	Pipe Wrench (24")	4	
		Total Monthly Cost:	0.00

80	**GARDENING/HOUSEKEEPING COST PER MONTH**

Srl.No.	Name of service	Unit	Total Area	No of job reqd per yr	Monthly Price(Rs.)
1	Maintenance and Upkeepment of Parks and flower garden including propogation of new seedling as directed.	Sq.m	200	12	
2	Supply of Cowdung and flower saplings and plantation of flower saplings & trees.	Sq.m	1500,(with 2000 Nos. of Flower saplings)	contract cost spread in throughout the year	
3	Wild grass cutting, jungle cutting with dao, sickles etc including disposal at a distance of max 2 KM	Sq.m	13500	8	
4	Cutting, clearing and removing creepers and other wild growth over fencing, wall etc. and disposing the cut materials.	Sq.m	1188	4	
5	Cleaning surface drains of one metre depth and carriage of debris to company's indicated places.	mtr	280	6	
6	Collection and disposal of oily sludge etc around ETP area/OWS system/OWS gravity separators/technical liquid drain system etc and safe disposal of the same as directed inside CGGS	Daily oil cleaning job all around plant by engaging 2/3 persons & safe disposal			
7	Ground Water Reservoir cleaning	04 times in a year	Plankton,vegetation grow removal on the surface	4	
				Total Monthly Costs:	0.00

Queries for pre-bid meeting						
#	Sec No./ Clause No.	Page No/Document number	Clause Description as per Bidder	Querry	OIL's Remarks on Pre-Bid querry on 20.02.2018	OIL's Final Remark
1	Part-I GCC clause No. 28	9 of 18	LIQUIDATED DAMAGES FOR DELAY IN MOBILZATION/COMPLETION OF WORKS AND SERVICES	Additional grace period of 15 days to be permitted for complete manpower deployment after receipt of LOI. Maximum celling limited to 5% of annual contract value and not to full contract value.	Not agreed. Mobilization shall be completed within 30 (Thirty) days from the Date of issue of LOA. Mobilisation notice shall be issued separately for CGGS Madhuban and for FGS Chabua.Oil will revert back.	Remains as it is. No change of the clause.
2	Part-I GCC clause No. 32	11 of 18	CONSEQUENTIAL DAMAGE:	Shall be confirm after mutual agreement and recovery should be limited to 50% of monthly invoice value for particular month.	Remains as it is. Will not be chnaged.	Remains as it is. No change of the clause.
3	Part-III SCC Clause 2.02. xvi	55 of 125	The O&M Contractor must carry out all operation and maintenance of any new equipment/facilities/instruments installed for compliance of any recommendation(s) of any statutory bodies or audits etc. during the currency of the contract.The new additional units/facilities will comprise minor changes only and there shall not be any additional n-power requirement. The O&M of such additional items shall have to be carried out by the O&M Contractor.	We would carryout all operation and maintenance of newly install equipemet during currency of contract, however any additional requirement of manpower if required to fullfill plant operational requirement apart from declared manpower before starting of work will be chargeable to M/s. OIL. Additional cost will be evaluated by contractor and M/s.OIL will issue separate PO for the same.	Oil will revert back.	Not agreed. However the clause is modified and reframed for better understanding. Addendum of the tender clause will be issued.
4	Part-III SCC Clause 2.04. B.ii	61 of 125	In cases of purchase of items from foreign market etc., OIL shall pay the O&M Contractor all invoiced amount including the price of the item, duties & taxes wherever applicable, freight & transportation charges or any other expenses subject to furnishing all supporting purchase-documents in that regard. O&M Contractor shall be paid an additional amount of 5% on invoiced price of the item as administrative cost. On emergency cases as per advice and permission from OIL, the O&M Contractor shall have to arrange air-freight of items which shall be reimbursed to the O&M Contractor on actual after submission of supporting documents.	O&M Contractor shall be paid an additional amount of 10% on invoiced price of the item as administrative and handling cost.	Not agreed. OIL shall pay the O&M Contractor the OEM/OM quoted rate, duties & taxes wherever applicable, freight & transportation charges or any other expenses subject to furnishing all supporting purchase-documents in that regard. O&M Contractor shall be paid an additional amount of 5% on OEM/OM quoted rate as administrative cost. On emergency cases as per advice and permission from OIL, the O&M Contractor shall have to arrange air-freight of items which shall be reimbursed to the O&M Contractor on actual after submission of supporting documents.	Not agreed. However relevant clause 2.04 (iii) (A) & (B) is modified and reframed for better understanding. Addendum of the tender clause will be issued.

5	Part-III SCC Clause 2.04. B	62 of 125	For spares, consumables & replacements which are required for regular day to day processes, for safe, trouble-free & uninterrupted plant operations, regular&/or day-to-day routine maintenance jobs and running repair jobs and consumables and spares that are required at CGGS Madhuban & at FGS Chabua, as given in Annexure D. However, the list of items given in Annexure D is not completely exhaustive. The O&M contractor shall also be required to do necessary purchasing for those items which are not included in Annexure D.	1. M/s. OIL to provide Annexure D. 2. Any additonal spares requirment not mentioned in Annexure D; will be procured by contractor and spares cost will be charged to M/s. OIL. 3. Additional spares requirment not mentioned in Annexure D shall be considered for penalty due to non availability.	OIL's Remarks:1. OIL to provide Annexure D. 2. Yes. 3. Yes. The O & M Contractor shall be solely responsible for forecasting the consumption of spares, preparation of specifications, collection of budgetary quotations, procurement actions to ensure timely availability of any spares and consumables whenever required and whether these spares are included in Annexure D or NOT. The shortage or lack of the spares and consumables may lead to malfunction, underperformance & breakdown of any unit / facility / equipment of the plant which in turn may affect / hamper the safe, trouble-free & uninterrupted operation of the plant. Hence,Penalty clauses in regards of the reason(s) of shut down of any unit or the entire plants due to lack of spares/non availability of spares shall remain applicable irrespective of scope of spares supply.	Please refer pre bid meeting reply. Further, relevant clause 2.04 (iii) (A) & (B) is modified and reframed for better understanding. Addendum of the tender clause will be issued.
6	Part-III SCC Clause 5	101 of 125	Imposition of Penalty	In any case, maximum penalty should be limited to 50% of monthly invoice value.	OIL will revert Back	The clause is modified and reframed for better understanding. Addendum of the tender clause will be issued.
7	Part-III SCC Clause 5, iii (table Sl.No. 1)	102 of 125	Actual cost of items as per OIL's last PO	M/s. OIL to provide last PO copy for reference.	Will be provided during procurement process.	Please refer pre bid meeting reply
8	Part-III SCC Clause 18	122 of 125	SUBCONTRACTING:	Contractor will sublet part of contract for semiskilled and unskilled manpower with prior approval from EIC.	Contractor shall not subcontract or assign, in whole or in part, its obligations to perform under this contract except AMC service from 5(Five) OEMs as mentioned in this SPECIAL CONDITIONS OF CONTRACT(SCC). Manpower management through third party shall not be allowed. However, OIL agrees to review to allow sub contracting of grass cutting, drain cleaning and flower plantation jobs.OIL will revert Back .	The clause is modified and reframed for better understanding. Addendum of the tender clause will be issued.
9	Part-III SCC Clause 25	124 of 125	PROTECTION OF PROPERTY AND EXISTING FACILITIES:	Not acceptable	Not agreed, since the damage is due to the activities of the Contractor.	Remains as it is. No change of the clause.

10			Payment terms to be clarified	Payment terms to be clarified	The payment term has been clarified	Payment term has been added in SCC
11	BEC/BRC Clause No. 1.2	2 of 8	TECHNICAL CRITERIA(BEC)	1. Gas Chromatographs should be deleted from BEC and can be part of SOW. 2. Operation and maintenance service, including experience in overhauling of Gas engines/Diesel engines along with the power generation system of minimum capacity change to 200 KVA instead of 500 KVA.	The bidder must have full experience in O&M of Online Gas Flow Meters, DCS & PLC based instrumentation, Gas engines, Power Generating system etc. as these are core component of the installation CGGS Madhuban. This is required considering the criticality of the installation as well as 24x365 hrs operation without a single minute shut down is of utmost important.However, the bidder's request for deleting Gas Chromtograph will be reviewed and will be revert back.	Necessary changes of this clause shall be intimated through Addendum of BEC/BRC.
12	GCC Clause 19.1Arbitration subclause j)		The Arbitration shall be held at Duliajan, Assam. However, parties to the contract can agree for a different place for the convenience of all concerned	Bidder request to re-phrase the claue as "The Arbitration shall be held at Mumbai / New Delhi. However, parties to the contract can agree for a different place for the convenience of all concerned". The seat of Arbitration shall be Mumbai / New Delhi.	The clause will remain same.	Remains as it is. No change of the clause.
13	Second Last Para of Proforma II - Undertaking for Annual Maintenance Contract (AMC) Service.		I further authorize the Company(OIL), in the event of my default or non-compliance of AMC Service provisions from above mentioned OEMs, to deduct/recover and adjust such AMC cost amount incurred by OIL or claim for services by the above mentioned OEMS or any loss mount/compensation claimed by OIL's customers due to shut down of the plant which is/are caused by the non availability of the above mentioned equipment in addition to the penalties as per the conditions of the Contract from/against my Bills due under the Contract or against any other existing or future Contracts with the Company including that of performance security.	We are not comfortbale with any sort of conseqential / unlimited liabilities, hence bidder requests Owner to remove same.	Not agreed. The clause remains same.	The clause is modified and reframed. Addendum of the tender clause will be issued.
14	Proforma III - subclause f)		All losses caused due to inadequate safety measures or lack of supervision on our part would be fully compensated by us and the Company will not be responsible for any lapses on our part in this regard	We are not comfortbale with any sort of conseqential / unlimited liabilities, hence bidder requests Owner to remove same.	Not agreed. The clause remains same.	Proforma III will be deleted to avoid duplication with Part V (Safety Measures) of the tender.
15	Proforma III - subclause d)		We would ensure that all the provisions under the Oil Mines Regulations, 1984(and amended thereafter) and other safety rules related to execution of our work would be strictly followed by our personnel. Any violation pointed out by the Company's Engineers would be rectified forthwith or the work suspended till such time the rectification is completed by us andall expenditure towards this would be on our account	Bidder requests Owner to remove any reference to documents (1968 General Conditions of Contract of Oil India Limited) which are not part of this Contract documents.	Not agreed. However, the latest edition of OMR 2017 and other relavent statutory acts/laws/guidelines will be incorporated in the Tender.	Proforma III will be deleted to avoid duplication with Part V (Safety Measures) of the tender.
16	GCC clause 31.9 limitation of liability		Notwithstanding any other provisions incorporated elsewhere in the contract, the aggregate liability of the Contractor in respect of this contract, whether under Contract, in tort or otherwise, shall not exceed 100% of the Contract price, provided however that this limitation shall not apply to the cost of repairing or replacing defective equipment by the Contractor, or any obligation of the Contractor to pay Liquidated Damages plus GST or to any obligation of the Contractor to indemnify the Company with respect to Intellectual Property Rights."	Bidder strongly disagrees with such a provision and requests Owner to limit the aggregate liability to 10% of the Contract Price and remove exclusions from the aggregate liability.	Not agreed. The clause remains same.	Remains as it is. No change of the clause.

17	GCC Clause 1 b) and c)		b) In this Contract all words and expressions shall have the same meaning as are respectively assigned to them in the 1968 General Conditions of Contract of Oil India Limited which the Contractor has perused and is fully conversant with before entering into this Contract. c) The clauses of this contract and of the specifications set out hereunder shall be paramount and in the event of anything herein contained being inconsistent with any term or terms of the 1968 General Conditions of Contract of Oil India Limited, the said term or terms of the 1968 General conditions of Contract to the extent of such inconsistency, and no further, shall not be binding on the parties hereto.	Bidder requests Owner to remove any reference to documents (1968 General Conditions of Contract of Oil India Limited) which are not part of this Contract documents.	Not agreed. The clause remains same.	Remains as it is. No change of the clause.
18	GCC Clause 19.1 b)		Clause 19.1 b of GCC indicates Sole Arbitrator appointed by OIL for claims up to 5 Crores.	Bidder disagrees with such a provision and requests similar provision for all arbitrations as for 'Above Rs. 5 Crore' i.e. 3 Arbitrators (One Arbitrator by each party and the 3rd Arbitrator, who shall be the presiding Arbitrator, by the two Arbitrators.)	The clause remains as it is.	Remains as it is. No change of the clause.
19	GCC Clause 20.1 b)		Clause 20.1 b defines Force Majeure as,"The term ‘Force Majeure’ as employed herein shall mean acts of God, earthquake, war (declared/undeclared) revolts, riots, fires, floods, rebellions, explosions, hurricane, sabotage, civil commotions, and acts and regulations of respective Govt. of the two parties, namely the Company and the contractor."	Bidder requests Owner to rephrase this clause as,"The term "Force Majeure" as employed herein shall mean act of God, strikes, lockouts or other industrial disturbances, acts of public enemy, wars whether declared or not, blockade, insurrections, riots, epidemic, landslides, lightning, earthquake, fire storms, floods, washouts, arrests and restraints of Government, civil disturbances, explosion, breakage or accident to machinery etc. and any other cause, whether of the kind herein enumerated or otherwise which are not within the control of the party claiming suspension, and which by exercise of due diligence such party is unable to prevent or overcome and which renders the performance of the Contract by the said party impossible."	Not agreed. The clause remains same.	Remains as it is. No change of the clause.

20	SCC Clause 16.2 and 16.4		Clause 16.2 says - "Contractor shall nevertheless perform the work as changed, and the parties will resolve the dispute in accordance with Clause 31.0 hereunder" and Clause 16.4 says - "If the Service Provider disagrees with the compensation or credit set forth in the change order, the Service Provider shall nevertheless perform the Work as changed, and the parties will resolve the dispute in accordance with Clause 36.0 hereunder"	Detailed description of SCC Clause 31.0 and 36.0 referred are missing	OIL agrees to review. Please read this clause as "16.2 If any change result in an increase in compensation due to Contractor or in a credit due to Company, Contractor shall submit to Company an estimate of the amount of such compensation or credit in a form prescribed by Company. Such estimates shall be based on the rates shown in the Schedule of Rates. Upon reviewof Contractor's estimate, Company shall establish and set forth in the Change Order the amount of the compensation or credit for the change or a basis for determining a reasonable compensation or credit for the change. If Contractor disagrees with compensation or credit set forth in the Change Order, Contractor shall nevertheless perform the work as changed, and the parties will resolve the dispute in accordance with SETTLEMENT OF DISPUTES AND ARBITRATION Clauses of GCC. Contractor's performance of the work as changed will not prejudice Contractor's request for additional compensation for work performed under the Change Order.	The clause is modified and reframed for better understanding. Addendum of the tender clause will be issued.
21	SCC Clause 5.0 i); Page 101 of 125		Imposition of Penalties : Clause 5.0 i) 1 & 2	We are not comfortbale with any sort of conseqential / unlimited liabilities, hence bidder requests Owner to remove same.	Not agreed. However, OIL agrees to review and will revert back.	The clause is modified and reframed for better understanding. Addendum of the tender clause will be issued.
22	Forwarding Letter(Invitation for Bid)		Bid Closing Date and Time	Since we are currently discussing with vendors for backup required for AMC during O&M period, this activity requires more time as there are many vendors to be contacted. IN this regard, bidder request for extension of bid submission date by 3-4 weeks and time as 17.00 Hrs instead of 11.00 hrs.	Arising outcome of the pre-bid meet BCD will be suitably chnaged & notified.	BCD will be suitably chnaged & will be notified.
23	Forwarding letter, 2 v	1 of 11	Bid closing date and time	For giving a proper quote, bidders will need to visit the location, see the facilities and get quotes from vendors for the AMC of equipment. This will take some considerable time. Requested to please provide atleast 1 month from prebid meeting for submission of bid	Arising outcome of the pre-bid meet BCD will be suitably chnaged & notified.	BCD will be suitably changed and will be notified
24	BEC/BRC, B	2 of 8	Similar work experience	If a bidder is qualifying on the basis of experience in processing 3000KLPD of crude, is it still necessary to have the experience in B (i)? A crude processing station might not be having the facilities in B (i). The requirements in B should not be necessary prequalification criteria as it is a bit too detailed. Satisfying the conditions in A would be enough to establish the qualification of vendor	The clause remains unchanged.	Necessary changes of this clause shall be intimated through Addendum of BEC/BRC.
25	BEC/BRC, B	2 of 8	Similar work experience	If a bidder satisfies 1.2.1 A and 1.2.1 B in separate work orders, it should be accpetable. 1.2.1 A would establish the Operators capability in a similar work of similar scale and 1.2.1 B would establish the Operators experience in handling such equipment.	The clause remains unchanged.	Necessary changes of this clause shall be intimated through Addendum of BEC/BRC.

26	Part-I GCC, 3.0	2 of 18	Engineer's power	While we are agreebale to deduction in payments for poor work quality, any reduction in rates has to be agreed with by the bidder. A one sided reduction by the engineer makes the process arbitrary. There has to be a process established for the same along with a grievance redressal forum	The clause will remain same.	Remains as it is. No change of the clause.
27	Part-I GCC, 6.0	3 of 18	Statutory increase in wage rate	While any regular periodic increase in wage will not be reimbursed by the Company, in case there is any abnormal increase in wages during the 4 year period which cannot be possibly estimated by the bidder, it will have a negative impact on the ability of the bidder to exceute the work. Such specific additional cost impact due to revisions should be reimbursed by the Company at actuals	The clause will remain same.	Remains as it is. No change of the clause.
28	Part-I GCC, 21.5	7 of 18	Termination due to change of ownership & assignment	Assignment will be allowed to a fully owned subsidiary of the contractor with prior written consent of OIL	The clause will remain same.	Remains as it is. No change of the clause.
29	Part-I, GCC, 29.0	9 of 18	Subcontracting	As per GCC, CONTRACTORs shall not subcontract or assign, in whole or in part, their obligations to perform under this contract, except with COMPANY'S prior written consent. Clause 18 of SCC (Page 121 of 125) mentions that no subcontracting will be allowed except for AMC. Requested to please retain the GCC clause. There will be specific tasks which would need to be subcontracted. Contractor will take approval from Company for subcontracting	The clause in GCC will remain as same.Please refer to sl no .8 of this document.	The clause in GCC will remain as same. Please refer to sl no. 8 of this document.
30	Part-I, GCC, 38.0	17 of 18	Withholding	For any withholding, the contractor will be given prior intimation in writing and provided a time frame within which Contractor will have to rectify the defect or provide a response. Only upon not getting a satisfactory response will any withholding be done. Also, there will be a grievance redresaal mechanism for addressing any disputes.	The clause remains same.	Remains as it is. No change of the clause.
31	Part-II, SOQ	Page 1 of 1	Mobilization period	30 days is too short for mobilization as it would involve relocation of people from different places. Please provide 60 days for mobilization.	Oil will reiew & revert back. Three parties have requested to increase the mobilization period.	Remains as it is. No change of the clause.
32	Part -III, SCC, 1.1	Page 1 of 125	General description	Contractor's scope of work will be confined to the area within the boundary of the CGGS or FGS. Please confirm. Please provide a layout diagram of both locations with defined battery limit.	Oil will reiew and revert back. The details will be provided.	Normally contrator's scope of work is confined within the boundary wall of the installations. However, in addition to this, the contractor is also responsible for cleaning the outside perepherial road, front lobby, flare pit of FGGS Chabua, road to the flare pit at FGS Chabua, gardening / flower plantation at the front area / lobby of CGGS and FGS Chabua.

33	Part-III, SCC, 2.0	Page 49 of 125	Scope of work	The price bid will have the figures as per option I for FGS Chabua. Please confirm. Also, the difference between Option I and Option II will be in terms of number of manpower and the other conditions remain the same, please confirm	The bidder will quote as per option-I for FGS Chabua. The differences in between Option-I & Option-II are detailed in SCC. The difference between Option I and Option II will be in terms of number of manpower and and the other conditions will remain same. For option II payment will be made based on the of manpower as per proforma -I,part-III at FGS Chabua and based on the rate quoted by the bidder while submitting the bid. However, the cost break up and price bid format will be integrated.	Please refer Pre bid meeting reply
34	Part-III, SCC, 2.0	Page 49 of 125	Scope of work	15 days period for mobilization of 18 nos manpower is too short. A longer duration has to be considered.	OIL agrees to review and revert back	The clause is modified and reframed for better understanding. Addendum of the tender clause will be issued.
35	Part-III, SCC, 2.02 viii	Page 52 of 125	Appointment of competent person	The person referred to in the clause will be from among the persons positioned at site and no additional manpower is required for the same. Please confirm	Yes.	Please refer Pre bid meeting reply
36	Part-III, SCC, 2.02 xvi	Page 55 of 125	O&M of new equipment	While we understand that new equipment might not involve additional manpower, but there might be cost involved in maintenance of the same. Hence cost of the same will have to be agreed upon by both parties	Oil will revert back.	The clause is modified and reframed for better understanding. Addendum of the tender clause will be issued.
37	Part-III, SCC, 2.04	Page 59 of 125	Maintenance	In the equipment list provided, specific make and model has not been provided for many equipment. Please provide the same.	Requested to visit CGGS and FGS Chabua for detalied understanding. Also requested to collect the details about specific make and model from CGGS Madhuban. Available Details of major equipments will be provided by OIL.	Please refer Pre bid meeting reply
38	Part-III, SCC, 2.04	Page 60 of 125	Scope of provisioning of Spares, consumables & replacements	The scope for OIL and Contractor seems to be overlapping at the moment with some abmiguities in responsibility. Requested to have a clear demarcation between the scope of Company and Contractor	OIL agrees to review and further clarification will be given. The category of consumables to be supplied by Contractor at their own cost , will be provided by OIL. Running hours of the critical equipments as on date will be provided. OIL will give available data along with Annexure-D. The bidder will be required to quote for annexure-D as per the terms of tender.	Bidders are not required to quote the rate / price against the items given in Annexure D. Relevant clause 2.04 (iii) (A) & (B) is modified and reframed for better understanding. Addendum of the tender clause will be issued.
39	Part-III, SCC, 2.2 xvi	Page 107 of 125	Mobilization	Completion of mobilization for CGS Madhuban is not feasible before 19.03.18. The clause to be modified taking into consideration the tender timelines as well as a 60 days mobilziation period	Oil will reiew & revert back. Three parties have requested to increase the mobilization period. As discussed in sl. No 31 in this document.	Date of completion of mobilization will be intimated. Mobilization period of 30 days shall remain as it is. Please refer sr. no 1 of this document.

40	Price bid	1 of 2	Price bid format	1 single rate will be applicable for the 4 year period. There will be no escalation during this period. Is our understanding correct?	Yes.	Please refer Pre bid meeting reply
41	Cost breakup	08-Jan	Cost breakup	The Cost breakup will not be used for any tender evaluation purpose. Please confirm	Yes.	Please refer Pre bid meeting reply
42				Requested to please provide extension of bid submission date till 15th March.	OIL agrees to review.	BCD will be suitably changed and will be notified
43	Price bid format	Sl. No.12	In Price bid format Sl. No.12, it is mentioned that the Bidder must submit cost breakup	Whether the Cost Breakup be mandatorily be in line with Price schedule? OIL to clarify?	Already covered in Sl no. 33	Yes
44	Part III of SCC	Page no.62	In page no.62 of Part III of SCC it is mentioned that the Prices in Annexure D will be reviewed after 2 years. But in Annexure D it is mentioned that the price shall be valid for 4 years.	Which will prevail? OIL to clarify.	Please refer sl no 53 below.	Relevant clause 2.04 (iii) (A) & (B) is modified and reframed for better understanding. Addendum of the tender clause will be issued.
45	Part III of SCC clause no.10.7	Page no.117	In page no.117 of Part III of SCC clause no.10.7 mention guarantee of repaired or replacement materials for no less than 48 months.	Is the guarantee applicable for all the spares supplied by the contractor? OIL to clarify if the guarantee period can go beyond the period of contract.	OIL agrees to review.Guarantee/warranty will be as manufacturer's recommmendation	The clause is modified and reframed for better understanding. Addendum of the tender clause will be issued.
46	Part III SCC, Clause no. 16.2 and 16.4	Ppage nos. 120 & 121	In page nos. 120 & 121 of Part III SCC, in clause no. 16.2 and 16.4, there is a reference on Clause nos. 31.0 & 36.0 respectively.	In this section, the last clause is found to be 27.0. OIL to clarify.	PLease refer sl no. 20 above.	The clause is modified and reframed for better understanding. Addendum of the tender clause will be issued.
47	Forwarding letter	Page No.1	In Forwarding letter, Page No.1, Bid closing date and time is 15/02/2018 at 11.00Hrs.	Since the time available with the bidder to incorporate the pre-bid answers and to finally compile the techno commercial bid is too short, we request you to extend the due date for submission of Tender by minimum 30 days.	PLease refer sl no. 22 above.	BCD will be suitably changed and will be notified
48				Normally all the tenders provide the provision of incorporated Technical Collaboration, Joint Venture and Consortium classes so that the primary bidder can bid with the help of the same if they have got shortfall of eligibility partly, with the support from the Technical collaborator. However, in the said tender, it is missing resulting which the bid becomes more specific eligibility wise eliminating many intending bidders from Participation which was not observed in few PSU tenders, favoring only a few intending bidders.	Not agreed.	The requirement shall be as per ammended BEC/BRC of the tender which shall be notified.

49				**It is also worth mentioning that public sector undertakings (OIL, ONGC etc.) seek experience od minimum 1 year for similar type of jobs. However in this tender, the minimum experience asked is two years resulting in elimination of many intending bidders including us. Kindly refer the BEC/BRC of the following tenders.** **i. CDG16711P18- Hiring service for operation of upgraded pump stations….(9 crs)** **ii. CDG5214P18-Hiring the services of 30 no's of dosing pumps (18 crs)** **iii. CDI2263P17- Operation of news facility in Central tank farm in Duliajan and Moran (22 Crs)** **iv. CDG574P18- Hiring of services of 4 (four) nos of surface production facility packages operational area in Assam and Aurnachal Pradesh for a period of 3 years.**	**Not agreed.**	**The requirement shall be as per ammended BEC/BRC of the tender which shall be notified.**
50				**With respect to the clause 1.2.1 (a) of the tender, we seek clarification on terminologies of gas gathering station, gas production station, gas processing station, gas compressing station, crude oil production station and crude oil processing station so that we can determine whether or not we can meet the eligibility criteria. Further we would like to whether central tank farm lies under crude oil processing station or not as the injection of the de-emulsifies/de-oiler including separation of formation water are taking place in the central tank farm.**	**Gas gathering station, gas production station, gas processing station, gas compressing station, crude oil production station and crude oil processing station are standard terminology used in Oil and gas industry. The experience must be as per BEC/BRC clause in the Tender.**	**Please refer Pre bid meeting reply**
51				**With respect to clause 1.2.1 (B). (i), the experience in operation and maintenance service as sought by Oil India Limited is much more specific so that only a few bidders can supplement the same resulting in restriction of participation of other intending bidders. Further we hope that central tank farms at Moran and Duliajan, which are crude oil processing stations and possess crude oil mass flow meter and PLC and SCADA systems (Partial DCS system) will substantiate the requirements as asked by this clause. Apart from these, the tender is silent about the latest firefighting system as per OISD norms, which is more vital than the gas flowmeter and gas chromatography systems as sought in the tender.**	**Not agreed.**	**The requirement shall be as per ammended BEC/BRC of the tender which shall be notified.**

52				With respect to clause 1.2.1.B.(ii), APL carried out MMC activity which include overhauling of gas engine/diesel engine, generating set of minimum capacity 625 KVA for drilling rigs through OEM. We seek your clarification on whether we will be eligible for the same by virtue of afore mentioned experience. Further, we suggest the amendment of eligibility criteria of the same for overhauling of gas engine/ diesel engine of minimum capacity 500 KVA, should the bidder does not have the experience, stating the following- " The bidders who does not possess this experience, can submit an experience letter on the overhauling of gas engine/ diesel engine generating set of minimum capacity 500 KVA from the OEM", will suffice the criteria. In view of the above, we earnestly request you to amend the BEC/BRC criteria of the aforementioned tender to have maximum participation in the same thereby getting maximum competitive bids for the same.	Not agreed. May refer sl no.11 in this document.	The experience criteria shall be as per ammended BEC/BRC of the tender which shall be notified.
53			Cost of Spares		Modalities for reimbursement of cost of spare parts and Annexure-d will be reviewed and will be amended.	Please refer pre bid meeting reply.
54	Part-III (SCC) , clause no 2.12, point (iii)		Public Relation Jobs	Explanation in case of pending liability of OIL	Oil will extent all possible assistance to mitigate any unforseen events of bandhs agianst Oil india limited.	The clause is modified and reframed for better understanding. Addendum of the tender clause will be issued.
55	Application of paints and surface preparation prior to that for all steel structure of CGGS Madhuban and FGS Chabua shall be as per standard DINEN-ISO-12944		Application of paints and surface preparation prior to that for all steel structure of CGGS Madhuban and FGS Chabua shall be as per standard DINEN-ISO-12944	Explanation of painting, surface area, paint quality etc.	OIL will revert back. The frequency of painting will be once in 3 years.	The clause is modified and reframed for better understanding. Addendum of the tender clause will be issued.