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NOTICE INVITING TENDER

(Document No PS:MSX:NIT)

Bharat Heavy Electricals Limited

Ref: BHEL/ NR/SCT/UNCHAHAR/U#6 STG-IV/CHEM CLEAN/1038

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NOTICE INVITING E-TENDER (NIT)
BIDDER TO SUBMIT OFFERS ON PORTAL
https://bheleps.buyjunction.in

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To

Dear Sir/Madam

Sub : NOTICE INVITING E-TENDER

Sealed offers in two part bid system are invited from reputed & experienced bidders (meeting PRE QUALIFICATION CRITERIA as mentioned in Annexure-I) for the subject job by the undersigned on the behalf of BHARAT HEAVY ELECTRICALS LIMITED as per the tender document. Following points relevant to the tender may please be noted and complied with.

1. **Salient Features of NIT**

SL NO	ISSUE	DESCRIPTION	
i	**TENDER NUMBER**	**BHEL/NR/SCT/UNCHAHAR/U#6 STG-IV/CHEM CLEAN/1038**	
ii	**Broad Scope of job**	**Pre-Boiler Flushing & Chemical cleaning of Boiler of Unit no. 6 (Stage-IV) at 1X500 MW UNCHAHAR TPP.**	
iii	**DETAILS OF TENDER DOCUMENT**		
a	Volume-IA	*Technical Conditions of Contract (TCC) consisting of Scope of work, Technical Specification, Drawings, Procedures, Bill of Quantities, Terms of payment, etc*	*Applicable*
b	Volume-IB	*Special Conditions of Contract (SCC)*	*Applicable*
c	Volume-IC	*General Conditions of Contract (GCC)*	*Applicable*
d	Volume-ID	*Forms and Procedures*	*Applicable*
e	Volume-II	*Price Schedule (Absolute value).*	*Applicable*
iv	**Issue of Tender Documents**	**From BHEL website (www.bhel.com) and https://bheleps.buyjunction.in** Tender documents will be available at website till due date of submission	*Applicable*
v	**DUE DATE & TIME OF OFFER SUBMISSION**	***Date : 29/09/2016, Time : 1500 HRS*** ***Place : on https://bheleps.buyjunction.in***	*Applicable*
vi	**OPENING OF TENDER**	***At due date / time*** ***Date : 29/09/2016, Time : 1530 HRS*** *Notes:* *(1) In case the due date of opening of tender becomes a non-working day, then the due date & time of offer submission and opening of tenders get extended to the next working day.*	*Applicable*

		(2) Bidder may depute representative to witness the opening of tender. ***However it being an e-tender it shall be opened online***	
vii	**EMD AMOUNT**	*Rs. 60,000/-.*	*Applicable*
viii	**COST OF TENDER**	*Rs 2000/-.*	*Applicable*
ix	**LAST DATE FOR SEEKING CLARIFICATION**	***Five days before bid submission due date****. Along with soft version also, addressing to undersigned*	*Applicable*
x	**SCHEDULE OF Pre Bid Discussion (PBD)**		*Not applicable.*
xi	**INTEGRITY PACT & DETAILS OF INDEPENDENT EXTERNAL MONITOR (IEM)**		*Not applicable*
xii	**Latest updates**	Latest updates on the important dates, Amendments, Correspondences, Corrigenda, Clarifications, Changes, Errata, Modifications, Revisions, etc to Tender Specifications will be hosted in BHEL webpage (www.bhel.com -->Tender Notifications →View Corrigendums) & portal https://bheleps.buyjunction.in **and not in the newspapers**. Bidders to keep themselves updated with all such information	
xiii	**Tender submission**	on portal https://bheleps.buyjunction.in	

2. The offer shall be submitted as per the instructions of tender document and as detailed in this NIT. Bidders to note specifically that all pages of tender document, including these NIT pages of this particular tender together with subsequent correspondences shall be submitted by them, **Rates/Price including discounts/rebates, if any, mentioned anywhere/in any form in the techno-commercial offer other than the Price Bid, shall not be entertained.**

3. Unless specifically stated otherwise, bidder shall remit cost of tender and courier charges if applicable, in the form of Demand Draft drawn in favour of Bharat Heavy Electricals Ltd, payable at Power Sector Regional HQ at Noida issuing the Tender, along with techno-commercial offer. Bidder may also choose to deposit the Tender document cost by cash at the Cash Office of BHEL PS HQ at Noida, on any working day; and in such case copy of Cash receipt is to be enclosed with the Techno Commercial offer.

   As this tender is an E-Tender and no paper bids will be accepted therefore the scanned copy of the Demand Draft or the Cash Receipt issued by BHEL PSNR should be uploaded in the E procurement portal. Hard Copy of the demand draft should reach BHEL PSNR HQ Noida before the due date and time of bid submission. BHEL shall not be responsible for postal or any other delays in this regard.

4. Unless specifically stated otherwise, bidder shall deposit EMD through Demand Draft/Pay Order in favour of Bharat Heavy Electricals Ltd, payable at Noida. As this tender is an E-Tender and no paper bids will be accepted therefore the scanned copy of the Demand Draft/Pay Order should be uploaded in the E procurement portal. Hard Copy of the Demand Draft/Pay Order should reach BHEL PSNR HQ Noida before the due date and time of bid submission. BHEL shall not be responsible for postal or any other delays in this regard. For other details and for 'One Time EMD' please refer General Conditions of Contract.

5. **Procedure for Submission of Tenders**: This is an E-tender floated online through our E-Procurement Site **https://bheleps.buyjunction.in**. The bidder should respond by submitting their offer online only in our e-Procurement platform at https://bheleps.buyjunction.in. Offers are invited in two-parts only.

   Documents Comprising the e-Tender

The tender shall be submitted online ONLY EXCEPT TENDER FEE & EMD (in physical form) as mentioned below:

a. Technical Tender (UN priced Tender)

All Technical details (eg. Eligibility Criteria requested (as mentioned below)) should be attached in e-tendering module, failing which the tender stands invalid & may be REJECTED. Bidders shall furnish the following information along with technical tender (preferably in pdf format):

- **i.** Tender Cost and Earnest money Deposit (EMD) furnished in accordance with NIT Clause 3.0 & 4.0. Alternatively, documentary evidence for claiming exemption as per clause 29 of NIT
- **ii.** Technical Bid (without indicating any prices).

b. Price Bid:

i. Prices are to be quoted in the attached Price Bid format online on e-tender portal.
ii. The price should be quoted for the accounting unit indicated in the e-tender document.
iii. Note: It is the responsibility of tenderer to go through the Tender document to ensure furnishing all required documents in addition to above, if any. Any deviation would result in REJECTION of tender and would not be considered at a later stage at any cost by BHEL.
iv. A person signing (manually or digitally) the tender form or any documents forming part of the contract on behalf of another shall be deemed to warrantee that he has authority to bind such other persons and if, on enquiry, it appears that the persons so signing had no authority to do so, the purchaser may, without prejudice to other civil and criminal remedies, cancel the contract and hold the signatory liable for all cost and damages.
v. A tender, which does not fulfil any of the above requirements and/or gives evasive information/reply against any such requirement, shall be liable to be ignored and rejected.
vi. In case offer is sent through hard copy/fax/telex/cable/electronically in place of e-tender, same shall not be considered.

DO NOT"S

Bidders are requested NOT to submit the hard copy of the Bid. In case offer is sent through hard copy/fax/telex/cable/electronically in place of e-tender, the same shall not be considered. **Also, uploading of the price bid in prequalification bid or technical bid may RESULT IN REJECTION of the tender**.

Digital Signing of e-Tender

Tenders shall be uploaded with all relevant PDF/zip format. The relevant tender documents should be uploaded by an authorized person having Class 3- SHA2- 2048 BIT- SIGNING & ENCRYPTION digital signature certificate (DSC).

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The Requirement:

1. A PC with Internet connectivity &
2. DSC (Digital Signature Certificate)(**Class 3- SHA2- 2048 BIT- SIGNING & ENCRYPTION**)

BHEL has finalized the e-procurement service Provider-:

M/s M Junction services Limited, Kolkata

Godrej Water Side, 3rd Floor, Tower-1, Plot-V, Block - DP
Sector - V, Salt Lake, Kolkata-700091, West Bengal, INDIA

The contact details of the service provider are given below:

1. **First level:**
   - MJ Helpdesk : 033-66011717, eps.customercare@mjunction.in
2. **Second Level:**

- Bhaskar Chakraborty: 8584008205, bhaskar.chakraborty@mjunction.in, eps.customercare@mjunction.in
- Santosh Kumar: 9717149600, santosh.kumar@mjunction.in

3. **Third Level:**
   - Rimi Ghosh: 9650044156, rimi.ghosh@mjunction.in

1. Customer care Help Desk of M/s MJUNCTION SERVICES LIMITED, Kolkata:
   Tel ~ 033 - 66011717 (From 9.30 am to 5.30 pm),
   Mob - 91633 48283 - 86/ 85840 08116 (From 5.30 pm to 8.30 pm)
   HELPDESK email: eps.customercare@mjunction.in,
   The process of utilizing e-procurement necessitates usage of **DSC (Digital Signature Certificate)(Class 3- SHA2- 2048 BIT- SIGNING & ENCRYPTION)** and you are requested to procure the same immediately, if not presently available with you. Please note that only with DSC, you will be able to login the e-procurement secured site and take part in the tendering process.

2. The contact details of the DSC Certifying Authority as given below

1	**GNFC**	www.ncodesolutions.com
2	**e-Mudhra**	http://www.e-Mudhra.com
3	**Safescrypt**	www.safescrypt.com

Vendors are also requested to go through seller manual available on www.bheleps.buyjunction.in

6. **Not Used**

7. Deviation with respect to tender clauses and additional clauses/suggestions in Techno-commercial bid / Price bid shall NOT be considered by BHEL. Bidders are requested to positively comply with the same.

8. BHEL reserves the right to accept or reject any or all Offers without assigning any reasons thereof. BHEL also reserves the right to cancel the Tender wholly or partly without assigning any reason thereof. Also BHEL shall not entertain any correspondence from bidders in this matter (except for the refund of EMD).

9. **Assessment of Capacity of Bidders:**
Bidders capacity for executing the job under tender shall be assessed 'LOAD' wise and 'PERFORMANCE' wise as per the following:

I. **LOAD**: Load takes into consideration **ALL** the contracts of the Bidder under execution with BHEL Regions, irrespective of whether they are similar to the tendered scope or not. The 'Load' is the sum of the unit wise identified packages (refer Table-1) for contracts with BHEL Regions. The cut off month for reckoning 'Load' shall be the month, two (2) months preceding the month corresponding to the 'latest date of bid submission', in the following manner:

(Note: For example if latest bid submission is in Aug 2011, then the 'load' shall be calculated upto and inclusive of June 2011)

i). Total number of Packages
Total number of Packages in hand = P
Where
- 'P' is the sum of all unit wise identified packages under execution with BHEL Regions as of the cut off month defined above, including packages yet to be commenced, excepting packages which are on HOLD due to reasons not attributable to Bidder..

II. **PERFORMANCE**: Here 'Monthly Performance' of the bidder for all the packages (**under execution**/ executed during the 'Period of Assessment' in all the Power Sector Regions of BHEL) **SIMILAR** to the packages covered under the tendered scope, excepting packages not commenced shall be taken into consideration. The 'Period of Assessment' shall be 6 months preceding the cut off month. The cut off

month for reckoning 'Period of Assessment' shall be the month two (2) months preceding the month corresponding to the 'latest date of bid submission', in the following manner:

(Note: For example if 'latest date of bid submission' is in Aug 2011, then the 'performance' shall be assessed for a 6 month period upto and inclusive of June 2011, for all the unit wise identified packages (refer Table I)

i). Calculation of Overall 'Performance Rating' for 'similar Package/Packages' for the tendered scope under execution at Power Sector Regions for the 'Period of Assessment':
This shall be obtained by summing up the 'Monthly Performance Evaluation' scores obtained by the bidder in all Regions for all the similar Package/packages', divided by the total number of Package months for which evaluation should have been done, as per procedure below:

a) P_1, P_2, P_3 , P_4 , P_5 , …. P_N etc be the packages (**under execution**/ executed during the 'Period of Assessment' in all Regions) **SIMILAR** to the packages covered under the tendered scope, excepting packages not commenced. Total number of similar packages for all Regions = $\mathbf{P_T}$ (ie $P_T = P_1 + P_2 + P_3 + P_4 + .. P_N$)

b) Number of Months 'T_1' for which 'Monthly Performance Evaluation' as per relevant formats, should have been done in the 'Period of Assessment' for the corresponding similar package P_1. Similarly T_2 for package P_2, T_3 for package P_3, etc for the tendered scope. Now calculate cumulative total months '$\mathbf{T_T}$' for total similar Packages '$\mathbf{P_T}$' for all Regions (i.e $\mathbf{T_T} = T_1 + T_2 + T_3 + T_4 + .. T_N$)

c) Sum 'S_1 ' of 'Monthly Performance Evaluation' Scores ($S_{1\text{-}1}$, $S_{1\text{-}2}$, $S_{1\text{-}3}$, $S_{1\text{-}4}$, $S_{1\text{-}5}$,…. $S_{1\text{-}N}$) for similar package P_1, for the 'period of assessment' 'T_1' (i.e $S_1 = S_{1\text{-}1} + S_{1\text{-}2} + S_{1\text{-}3} + S_{1\text{-}4} + S_{1\text{-}5} + \ldots S_{1\text{-}N}$). Similarly S_2 for package P_2 for period T_2, S_3 for package P_3 for period T_3, etc for the tendered scope for all Regions. Now calculate cumulative sum 'S_T' of 'Monthly Performance Evaluation' Scores for total similar Packages '$\mathbf{P_T}$' for all Regions (i.e 'S_T '$= S_1 + S_2 + S_3 + S_4 + S_5 + \ldots S_N$.)

d) **Overall Performance Rating 'R_{BEHL}' for the similar Package/Packages** (**under execution**/ executed during the 'Period of Assessment') in all the Power Sector Regions of BHEL)**:**

$$= \frac{\textbf{Aggregate of Performance scores for all similar packages in all the Regions}}{\textbf{Aggregate of months for each of the similar package for which performance should have been evaluated in all the Regions}}$$

$$= \frac{S_T}{T_T}$$

e) Bidders to note that the risk of non evaluation or non availability of the 'Monthly Performance Evaluation' reports as per relevant formats is to be borne by the Bidder

f) Table showing methodology for calculating 'a', 'b' and 'c' above

Sl no	Item Description	Details for all Regions							Total
(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)	(x)
1	Similar Packages for all Regions → (under execution/ executed during period of assessment)	P_1	P_2	P_3	P_4	P_5	…	P_N	Total No of similar packages for all Regions = $\mathbf{P_T}$ ie Sum (Σ) of columns (iii) to (ix)
2	Number of Months for which 'Monthly Performance Evaluation' as per relevant formats should have been done in	T_1	T_2	T_3	T_4	T_5	…	T_N	Sum (Σ) of columns (iii) to (ix) = $\mathbf{T_T}$

	the 'period of assessment for corresponding similar Package (as in row 1)								
3	Monthly performance scores for the corresponding period (as in Row 2)	S_{1-1}, S_{1-2}, S_{1-3}, S_{1-4}, … S_{1-T1}	S_{2-1}, S_{2-2}, S_{2-3}, S_{2-4}, … S_{2-T2}	S_{3-1}, S_{3-2}, S_{3-3}, S_{3-4}, … S_{3-T3}	S_{4-1}, S_{4-2}, S_{4-3}, S_{4-4}, … S_{4-T4}	S_{5-1}, S_{5-2}, S_{5-3}, S_{5-4}, … S_{5-T5}	.. … … … …	S_{N-1}, S_{N-2}, S_{N-3}, S_{N-4}, … S_{N-TN}	---------
4	Sum of Monthly Performance scores of the corresponding Package for the corresponding period (as in row-3)	S_1	S_2	S_3	S_4	S_5	…	S_N	Sum (Σ) of columns (iii) to (ix) = $\mathbf{S_T}$

ii) Calculation of Overall 'Performance Rating' (**R_{BHEL}**) in case 'similar Package/Packages' for the tendered scope ARE NOT AVAILABLE, during the 'Period of Assessment':

This shall be obtained by summing up the 'Monthly Performance Evaluation' scores obtained by the bidder in all Regions for ALL the packages, divided by the total number of Package months for which evaluation should have been done. 'R_{BHEL} ' shall be calculated subject to availability of 'performance scores' for at least.6 'package months' in the order of precedence below:

a) 'Period of Assessment.
b) 12 months preceding the cut-off month
c) 24 months preceding the cut-off month
d) 36 months preceding the cut-off month

In case, R_{BHEL} cannot be calculated as above, then Bidder shall be treated as 'NEW VENDOR'. Further eligibility and qualification of this bidder shall be as per definition of 'NEW VENDOR' described in 'Explanatory Notes'

iii) Factor "L" assigned based on Overall Performance Rating (R_{BHEL}) at Power Sector Regions,:

Sl no	Overall Performance Rating (R_{BHEL})	Corresponding value of 'L'
1	=60	NA
2	> 60 and ≤ 65	0.4
3	> 65 and ≤ 70	0.35
4	> 70 and ≤ 75	0.25
5	> 75 and < 80	0.2
6	≥ 80	NA

III. 'Assessment of Capacity of Bidder':

'Assessment of Capacity of Bidder' is based on the Maximum number of packages for which a vendor is eligible, considering the performance scores of similar packages, as below:

Max number of packages P_{Max}= (R_{BHEL}- 60) divided by corresponding value of 'L'
i.e. (R_{BHEL}- 60)/L

Note:

i. In case the value of P_{Max} results in a fraction, the value of P_{Max} is to be rounded off to next whole number
ii. For R_{BHEL} = 60 , P_{Max} = '1'
iii. For R_{BHEL} ≥ 80, there will be no upper limit on P_{Max}

The Bidder shall be considered 'Qualified' as per 'Assessment of Capacity of Bidder' for the subject Tender if $P \leq P_{Max}$

(where P is calculated as per clause 9.I)

IV. **Explanatory note**:

a) Similar package means Boiler or ESP or Piping or Turbine or Civil or Structure or Electrical or CI, etc at the individual level irrespective of rating of Plant, and irrespective of whether the subject tender is a single package or as part of combined/composite packages. Normally Boiler, ESP, Piping, Turbine, Electrical, CI, Civil, Structure, etc is considered individual level of package. For example in case the tendered scope is a Boiler Vertical Package comprising of Boiler, ESP and Power Cycle Piping (i.e the 'identified packages as per Table-1 below), the 'PERFORMANCE' part against sl no II above, needs to be evaluated considering all the identified packages (ie Boiler, ESP and Power Cycle Piping) and finally the Bidder's capacity to execute the tendered scope is assessed in line with III above

b) Identified Packages (Unit wise)

Table-1

	Civil	Electrical & CI	Mechanical
	i). Enabling works ii). Pile and Pile Caps iii). Civil Works including foundations iv). Structural Steel Fabrication & Erection v). Chimney vi). Cooling Tower vii). Others (Civil)	i). Electrical ii). CI iii). Others (Elec & CI)	i). Boiler & Aux (All types including CW Piping if applicable) ii). Power Cycle Piping/Critical Piping iii). LP Piping iv). ESP v). Steam Turbine Generator set & Aux vi). Gas Turbine Generator set & Aux vii). Hydro Turbine Generator set & Aux viii). Turbo Blower (including Steam Turbine) ix). Material Handling x). Material Management xi). Material Handling & Material Management xii). Others (Mechanical)

c) Bidders who have not been evaluated for at least six package months in the last 36 months in the online BHEL system for contractor performance evaluation in BHEL PS Regions, wef July'2010 shall be considered "NEW VENDOR".

A 'NEW VENDOR' shall be considered qualified subject to satisfying all other tender conditions

A 'NEW VENDOR' if awarded a job (of package/packages identified under this clause) shall be tagged as "FIRST TIMER" on the date of first LOI/ LOA from BHEL.

The "FIRST TIMER" tag shall remain till execution of work for a period of not less than 09 months, from the commencement of work of first package

A Bidder shall not be eligible for the next job as long as the Bidder is tagged as "FIRST TIMER" excepting for the Tenders which have been opened on or before the date of the bidder being tagged as 'FIRST TIMER'.

After removal of 'FIRST TIMER' tag, the Bidder shall be considered 'QUALIFIED' for the future tenders subject to satisfying all other tender conditions including 'Capacity Evaluation of Bidders'.

In case assessment of "FIRST TIMER" cannot be done for 9 months due to ***completion of work in less than 9 months****, the "FIRST TIMER" tag will be removed and the vendor shall be considered as "NEW VENDOR" for any new tender/s, provided the average score for which Performance Evaluation has been done, is not less than 60%.*

d) In the unlikely event of all bidders shortlisted against Technical and Financial Qualification criteria not meeting the criteria on 'Assessment of Capacity of Bidders' detailed above, OR leads to a single tender response on applying the criteria of 'Assessment of Capacity of Bidders' or due to non-approval by Customer, then BHEL at its discretion reserves the right to consider the further processing of the Tender based on the **Overall Performance Rating** 'R_{BHEL}**'** only, starting from the upper band.

e) 'Under execution' shall mean works in progress as per the following:

i. up to Boiler Steam Blowing in case of Steam Generator and Auxiliaries

ii. upto Synchronisation in case of all other works excepting sl no (i) and (iii)

iii. Upto execution of at least 90% of anticipated contract value in case of Civil & Structures (unit wise), Enabling works and upto 90% of material unloading (in tonnage) as per the original contract in case of MM Package.

Note : BHEL at its discretion can extend (or reduce in exceptional cases in line with Contract conditions) the period defined against (i), (ii) and (iii) above, depending upon the balance scope of work to be completed.

f) Performance evaluation in CL 9 above is applicable to Prime bidder and consortium partner (or Technical tie up partner) for their respective scope of work.

10. Since the job shall be executed at site**,** bidders must visit site/ work area and study the job content, facilities available, availability of materials, prevailing site conditions including law & order situation, applicable wage structure, wage rules, etc before quoting for this tender. They may also consult this office before submitting their offers, for any clarifications regarding scope of work, facilities available at sites or on terms and conditions.

11. For any clarification on the tender document, the bidder may seek the same over e-procurement portal as per specified format, within the scheduled date for seeking clarification, from the office of the undersigned. BHEL shall not be responsible for receipt of queries after due date of seeking clarification due to postal delay or any other delays. Any clarification / query received after last date for seeking clarification may not be normally entertained by BHEL and no time extension will be given.

12. BHEL may decide holding of pre-bid discussion [PBD] with all intending bidders as per date indicated in the NIT. The bidder shall ensure participation for the same at the appointed time, date and place as may be decided by BHEL. Bidders shall plan their visit accordingly. The outcome of pre-bid discussion (PBD) shall also form part of tender.

13. In the event of any conflict between requirement of any clause of this specification/ documents/drawings/data sheets etc or requirements of different codes/standards specified, the same to be brought to the knowledge of BHEL in writing for clarification before due date of seeking clarification (whichever is applicable), otherwise, interpretation by BHEL shall prevail. Any typing error/missing pages/ other clerical errors in the tender documents, noticed must be pointed out before pre-bid meeting/submission of offer, else BHEL's interpretation shall prevail.

14. Unless specifically mentioned otherwise, bidder's quoted price shall deemed to be in compliance with tender including PBD.

15. Bidders shall submit Integrity Pact Agreement (Duly signed by authorized signatory who signs in the offer), **if applicable**, along with techno-commercial bid. This pact shall be considered as a preliminary qualification for further participation. **The names and other details of Independent External Monitor (IEM) for the subject tender is as given at point 1(xi) above.**

15a. **Integrity Pact (IP)**

i) IP is a tool to ensure that activities and transactions between the Company and its Bidders / Contractors are handled in a fair, transparent and corruption free manner. A panel of Independent External Monitors (IEMs) have been appointed to oversee implementation of IP in BHEL.

The IP as enclosed with the tender is to be submitted (duly signed by authorized signatory who signs in the offer) along with techno-commercial bid. Only those bidders who have entered into such an IP with BHEL would be competent to participate in the bidding. In other words, entering into this Pact would be a preliminary qualification.

Details of IEM for this tender is given at point 1 (xi) above.

ii) Please refer Section-8 of the IP for Role and Responsibilities of IEMs. In case of any complaint arising out of the tendering process, the matter may be referred to the IEM mentioned in the tender.

No routine correspondence shall be addressed to the IEM (phone / post / email) regarding the clarifications, time extensions or any other administrative queries, etc. on the tender issued. All such clarification / issues shall be addressed directly to the tender issuing (procurement) department.

16. The Bidder has to satisfy the Pre Qualifying Requirements stipulated for this Tender in order to be qualified. The Price Bids of only those bidders will be opened who will be qualified for the subject job on the basis of satisfying the Pre Qualification Criteria specified in this NIT as per Annexure-I (as applicable), past performance etc. and date of opening of price bids shall be intimated to only such bidders. BHEL reserves the right not to consider offers of parties under HOLD.

17. Not used.

18. An email intimation regarding e-price bid opening shall be sent to all techno-commercially qualified parties. Validity of the offer shall be for **six months** from the latest due date of offer submission (including extension, if any) unless specified otherwise.

19. BHEL reserves the right to decide the successful bidder on the basis of Reverse Auction process. In such case all qualified bidders will be intimated regarding procedure/ modality for Reverse Auction process prior to Reverse Auction and price will be decided as per the rules for Reverse Auction. .

However, if reverse auction process is unsuccessful as defined in the RA rules/procedures, or for whatsoever reason, then the sealed 'PRICE BIDs' will be opened for deciding the successful bidder. BHEL's decision in this regard will be final and binding on bidder.

20. On submission of offer, further consideration will be subject to compliance to tender & qualifying requirement and customer's acceptance, as applicable.

21. In case the bidder is an "Indian Agent of Foreign Principals", 'Agency agreement has to be submitted along with Bid, detailing the role of the agent along with the terms of payment for agency commission in INR, along with supporting documents.

22. The bidders shall not enter into any undisclosed M.O.U. or any understanding amongst themselves with respect to tender.

23. **Not Applicable**

24. The bidder shall upload documents in support of possession of 'Qualifying Requirements' duly self-certified and stamped by the authorized signatory, indexed and properly linked in the format for PQR. In case BHEL requires any other documents/proofs, these shall be submitted immediately.

25. The bidder may have to produce original document for verification if so decided by BHEL.

26. The offers of the bidders who are on the banned/ hold list as also the offer of the bidders, who engage the services of the banned/ hold firms, shall be rejected. The list of **banned/ hold firms** is available on BHEL web site www.bhel.com.

27. BHEL reserves the right to go for **Reverse Auction (RA**) instead of opening the price bid, submitted by the bidder. This will be decided after techno-commercial evaluation. All bidders to give their acceptance for participation in RA. Non-acceptance to participate in RA may result in non-consideration of their bids, in case BHEL decides to go for RA.

In case BHEL decides to go for Reverse Auction, only those bidders who have given their acceptance to participate in RA will be allowed to participate in the Reverse Auction. Those bidders who have given their acceptance to participate in Reverse Auction will have to necessarily submit „online sealed bid" in the Reverse Auction. Non-submission of "online sealed bid" by the bidder will be considered as tampering of the tender process and will invite action by BHEL as per extant guidelines in vogue."

Information and General Terms and Conditions governing RA shall form part of the RFQ/ Enquiry.

28. It may please be noted that **guidelines/rules** in respect of Suspension of Business dealings', 'Vendor evaluation format', 'Quality, Safety & HSE guidelines', milestone/ completion certificate, etc may **undergo change** from time to time and the latest one shall be followed. The abridge version of extant 'Guidelines for suspension of business dealings with suppliers/ contractors' is available on www.bhel.com on "**supplier registration page".**

29. **Micro and Small Enterprises (MSE)**

Any Bidder falling under MSE category, shall furnish the following details & submit documentary evidence/ Govt. Certificate etc. in support of the same along with their techno-commercial offer

Type under MSE	SC/ST owned	Others
Micro		
Small		

Note: - If the bidder does not furnish the above, offer shall be processed construing that the bidder is not falling under MSE category.

MSE suppliers can avail the intended benefits only if they submit along with the offer, attested copies of either EM-II certificate having deemed validity (five years from the date of issue of acknowledgement in EM-II) or valid NSIC certificate or EM-II certificate along with attested copy of a CA certificate (format enclosed as Annexure – 3 where deemed validity of EM-II certificate of five years has expired) applicable for the relevant financial year (last audited). Date to be reckoned for determining the deemed validity will be the date of bid opening (Part 1 in case of two part bid). Non submission of such documents will lead to consideration of their bids at par with other bidders. No benefits shall be applicable for this enquiry if any deficiency in the above required documents are not submitted before price bid opening. If the tender is to be submitted through e-procurement portal, then the above required documents are to be uploaded on the portal. Documents should be notarized or attested by a Gazetted officer.

MSEs shall be exempted from payment of tender fee.

MSEs shall be exempted from payment of earnest money at the time of tender deposit. However, there is no exemption of security deposit submission.

30.0 The Bidder along with its associate/ collaborators/ sub-contractors/ sub-vendors/ consultants/ service providers shall strictly adhere to BHEL Fraud Prevention Policy displayed on BHEL website http://www.bhel.com and shall immediately bring to the notice of BHEL Management about any fraud or suspected fraud as soon as it comes to their notice.

31.0 Order of Precedence

In the event of any ambiguity or conflict between the Tender Documents, the order of precedence shall be in the order below:

a. Amendments/Clarifications/Corrigenda/Errata etc issued in respect of the tender documents by BHEL
b. Notice Inviting Tender (NIT)
c. Price Bid
d. Technical Conditions of Contract (TCC)—Volume-1A
e. Special Conditions of Contract (SCC) —Volume-1B
f. General Conditions of Contract (GCC) —Volume-1C
g. Forms and Procedures —Volume-1D

for BHARAT HEAVY ELECTRICALS LTD
(SCT)

Enclosure:-

(i) Annexure-1: Pre Qualifying criteria.
(ii) Annexure-2: Check List.
(iii) Annexure-3: Chartered Accountant certificate for MSMED
(iv) Annexure-4: General Terms and Conditions of Reverse Auction (RA)
(v) Annexure-5: Authorization of representative who will participate in the online Reverse Auction Process
(vi) Annexure-6: Feedback form
(vii) Other Tender documents as per this NIT.

ANNEXURE - 1

PRE QUALIFYING REQUIREMENTS

JOB	**Pre-Boiler Flushing & Chemical cleaning of Boiler of Unit no. 6 (Stage-IV) at 1X500 MW UNCHAHAR TPP.**
TENDER NO.	**BHEL/NR/SCT/UNCHAHAR/U#6 STG-IV/CHEM CLEAN/1038**

Sl. No.	Name and Description of Qualifying Criteria	Bidders claim in respect of fulfilling the PQR Criteria
A	**Submission of Integrity Pact duly signed**	Not Applicable
B	**Technical**	
B.1	**Bidders who wish to participate should have:** Executed similar work for any one of the following in the last seven years from latest date of bid submission:	
B.1.1	One work of Value not less than 20 lakhs	Applicable
	Or	
B.1.2	Two works each of Value not less than 12.5 lakhs	
	Or	
B.1.3	Three works each of Value not less than 10 lakhs	
C	**FINANCIAL**	
C-1	**TURNOVER** Bidder should have achieved an average annual financial turnover (Audited) of Rs 7.5 Lakhs or more over the last three Financial years (FY) i.e. (2012-13, 2013-14, 2014-15). Bidder shall submit audited annual accounts (balance sheets and profit & loss account) in support of this. In case audited financial statements have not been submitted for all the three years as indicated above, then the applicable audited statements submitted by the bidders against the requisite three years, will be averaged for three years i.e. total divided by three. If financial statements are not required to be audited statutorily, then instead of audited financial statement, financial statements are required to be certified by Chartered Accountant.	Applicable
C-2	**NET WORTH** Net worth (only in case of companies) of the bidder should be positive. **Note:** Net worth shall be calculated based on the latest audited accounts, as furnished for C-1 above. Net worth = Paid up share capital* + Reserves. (*Share capital or partnership capital or proprietor capital as the case may be)	Applicable

C-3	**PROFIT** Bidder must have earned profit in any one of the three financial years as applicable in last three years defined in C-1 above. Note:- PROFIT Shall be PBT earned during any one year of last three financial year as in C-1 above.	Applicable
D	Assessment of capacity of Bidder to execute the work as per Sl. no. 9 of NIT	Applicable (BY BHEL)
E	Approval of customer	Not Applicable
F	Consortium Criteria	Not Applicable

Explanatory Notes:-

1. Relevant documents, meeting above requirements shall be submitted by bidders.
2. For evaluation of PQR, the credentials of the Bidder alone, and not that of the group company shall be considered.
3. "Executed" means, the bidder should have completed the work of Chemical Cleaning of new/ old Boiler not less than 190 MW.
4. For criteria 'B' above, actual executed value shall be considered.
5. If the qualifying work is completed in the Seven (7) years period specified above, even if it has been started earlier, the same will also be considered meeting the qualifying requirements.
6. The word "similar work" means Chemical Cleaning of new Boiler or Post operational chemical cleaning of Boiler, not less than 190 MW.
7. For criteria 'B' above value of work is to be updated as per the PVC formula of GCC with Indices for "All India Avg. Consumer Price Index for Industrial Workers" with base month as date of completion as per certificate and indexed up to two months prior to the bid opening month."

BIDDER SHALL SUBMIT ABOVE PRE-QUALIFICATION CRITERIA FORMAT, DULY FILLED-IN, SPECIFYING RESPECTIVE ANNEXURE NUMBER AGAINST EACH CRITERIA AND FURNISH RELEVANT DOCUMENT INCLUSIVE OF WORK ORDER AND WORK COMPLETION CERTIFICATE ETC IN THE RESPECTIVE ANNEXURES IN THEIR OFFER.

ANNEXURE - 2

CHECK LIST

NOTE:- Tenderers are required to fill in the following details and no column should be left blank

1	Name and Address of the Tenderer		
2	Details about type of the Firm/Company		
3.a	Details of Contact person for this Tender	Name : Mr/Ms Designation: Telephone No: Mobile No: Email ID: Fax No:	
3.b	Details of alternate Contact person for this Tender	Name : Mr/Ms Designation: Telephone No: Mobile No: Email ID: Fax No:	
4	EMD DETAILS	DD No: Date : Bank : Amount: Please tick (√) whichever applicable:- ONE TIME EMD / ONLY FOR THIS TENDER	
5	Validity of Offer	TO BE VALID FOR SIX MONTHS FROM DUE DATE	
		APPLICABILITY (BY BHEL)	ENCLOSED BY BIDDER
6	Whether the format for compliance with **PRE QUALIFICATION CRITERIA** (ANNEXURE-I) is understood and filled with proper supporting documents referenced in the specified format	Applicable	YES / NO
7	Audited profit and Loss Account for the last three years	Applicable/~~Not Applicable~~	YES/NO
8	Copy of PAN Card	Applicable/~~Not Applicable~~	YES/NO
9	Not used		
10	Integrity Pact	~~Applicable~~/Not Applicable	
11	Declaration by Authorised Signatory	Applicable/~~Not Applicable~~	YES/NO
12	No Deviation Certificate	Applicable/~~Not Applicable~~	YES/NO
13	Declaration confirming knowledge about Site Conditions	Applicable/~~Not Applicable~~	YES/NO
14	Declaration for relation in BHEL	Applicable/~~Not Applicable~~	YES/NO
15	Non Disclosure Certificate	Applicable/~~Not Applicable~~	YES/NO
16	Bank Account Details for E-Payment	Applicable/~~Not Applicable~~	YES/NO
18	Tie Ups/Consortium Agreement are submitted as per format	~~Applicable~~/Not Applicable	

19	Not used		
20	Analysis of Unit rates	Applicable/~~Not Applicable~~	

NOTE : STRIKE OFF 'YES' OR 'NO', AS APPLICABLE. TENDER NOT ACCOMPANIED BY THE PRESCRIBED **ABOVE APPLICABLE DOCUMENTS** ARE LIABLE TO BE SUMMARILY REJECTED.

DATE :

AUTHORISED SIGNATORY
(With Name, Designation and Company seal)

ANNEXURE - 3

Certificate by Chartered Accountant on letter head

This is to Certify that M/S ..... , (hereinafter referred to as 'company') having its registered office at ..... is registered under MSMED Act 2006, (Entrepreneur Memorandum No (Part—II) ..... dtd:..... , Category: ..... (Micro/Small)). (Copy enclosed).

Further verified from the Books of Accounts that the investment of the company as per the latest audited financial year..... as per MSMED Act 2006 is as follows:

1. **For Manufacturing Enterprises:** Investment in plant and machinery (i.e. original cost excluding land and building and the items specified by the Ministry of Small Scale Industries vide its notification No. S.O.1722(E) dated October 5, 2006:
   Rs.....Lacs

2. **For Service Enterprises:** Investment in equipment (original cost excluding land and building and furniture, fittings and other items not directly related to the service rendered or as may be notified under the **MSMED** Act, 2006:
   Rs.....Lacs

(Strike off which is not applicable)

The above investment of Rs.....Lacs is within permissible limit of Rs.....Lacs for ..... Micro / Small **(Strike off which is not applicable)**

Category under MSMED Act 2006.

Or

The company has been graduated from its original category (Micro/Small) (Strike off which is not applicable) and the date of graduation of such enterprise from its original category is ..... (dd/mm/yyyy) which is within the period of 3 years from the date of graduation of such enterprise from its original category as notified vide S.O. No. 3322(E) dated 01.11.2013 published in the gazette notification dated 04.11.2013 by Ministry of MSME.

Date:

(Signature)

Name -

Membership number -

Seal of Chartered Accountant

ANNEXURE - 4

GENERAL TERMS AND CONDITIONS OF REVERSE AUCTION (RA)

Against this enquiry for the subject item/ system with detailed scope of supply as per enquiry specifications, BHEL may resort to "REVERSE AUCTION PROCEDURE" i.e., ON LINE BIDDING (THROUGH A SERVICE PROVIDER). The philosophy followed for reverse auction shall be English Reverse (No ties).

1. For the proposed reverse auction, technically and commercially acceptable bidders only shall be eligible to participate.

2. Those bidders who have given their acceptance for Reverse Auction (quoted against this tender enquiry) will have to necessarily submit "online sealed bid" in the Reverse Auction. Non submission of "online sealed bid" by the bidder for any of the eligible items for which techno commercially qualified, will be considered as tampering of the tender process and will invite action by BHEL as per extant guidelines in vogue.

3. BHEL will engage the services of a service provider who will provide all necessary training and assistance before commencement of on line bidding on internet.

4. In case of reverse auction, BHEL will inform the bidders the details of Service Provider to enable them to contact & get trained.

5. Business rules like event date, time, bid decrement, extension etc. also will be communicated through service provider for compliance.

6. Bidders have to fax the Compliance form before start of Reverse auction. Without this, the bidder will not be eligible to participate in the event.

7. In line with the NIT terms, BHEL will provide the calculation sheet (e.g., EXCEL sheet) which will help to arrive at "Total Cost to BHEL" like Packing & forwarding charges, Taxes and Duties, Freight charges, Insurance, Service Tax for Services and loading factors (for non-compliance to BHEL standard Commercial terms & conditions) for each of the bidder to enable them to fill-in the price and keep it ready for keying in during the Auction.

8. Reverse auction will be conducted on scheduled date & time.

9. At the end of Reverse Auction event, the lowest bidder value will be known on auction portal.

10. The lowest bidder has to fax/e-mail the duly signed and filled-in prescribed format for price breakup including that of line items, if required, as provided on case-to-case basis to Service provider within two working days of Auction without fail.

11. In case BHEL decides not to go for Reverse Auction procedure for this tender enquiry, the Price bids and price impacts, if any, already submitted and available with BHEL shall be opened as per BHEL's standard practice.

12. Bidders shall be required to read the "Terms and Conditions" section of the auctions site of Service provider, using the Login IDs and passwords given to them by the service provider before reverse auction event. Bidders should acquaint themselves of the

"Business Rules of Reverse Auction", which will be communicated before the Reverse Auction.

13. If the Bidder or any of his representatives are found to be involved in Price manipulation/ cartel formation of any kind, directly or indirectly by communicating with other bidders, action *as per extant BHEL guidelines*, shall be initiated by BHEL and the results of the RA scrapped/ aborted.

14. The Bidder shall not divulge either his Bids or any other exclusive details of BHEL to any other party.

15. In case BHEL decides to go for reverse auction, the H1(s) bidder (whose quote is highest in online sealed bid) may not be allowed to participate in further RA process.

ANNEXURE – 5

Authorization of representative who will participate in the on line Reverse Auction Process;

1	NAME & DESIGNATION OF OFFICIAL	
2	POSTAL ADDRESS (COMPLETE)	
3	TELEPHONE NOS. (LAND LINE & MOBILE BOTH)	
4	FAX NO.	
5	E-MAIL ADDRESS	
6	NAME OF PLACE/ STATE/ COUNTRY, WHEREFROM S/HE WILL PARTICIPATE IN THE REVERSE AUCTION	

ANNEXURE – 6

Feedback Form: From where did you get information reg. this tender

1	NEWSPAPER ADVERTISEMENT (NAME)	
2	BHEL WEBISTE (TENDER NOTIFICATION)	
3	CENTRAL PUBLIC PROCUREMENT PORTAL OF GOVERNMENT OF INDIA (CPP PORTAL)	
4	EMAIL COMMUNICATION FROM BHEL	
5	ANY OTHER SOURCE	

FOR OFFICIAL USE ONLY
NOT FOR PUBLICATION

TENDERER'S COPY
ORIGINAL COPY

TECHINICAL CONDITIONS OF CONTRACT (TCC)

TENDER NO. BHEL/NR/SCT/UNCHAHAR/U#6 STG-IV/CHEM CLEAN/1038

FOR

PRE-BOILER FLUSHING & CHEMICAL CLEANING OF BOILER OF UNIT NO. 6 (STAGE-IV) AT 1X500 MW UNCHAHAR TPP.

Bharat Heavy Electricals Limited
(A Govt. Of India Undertaking)
Power Sector – Northern Region,
Plot No. 25 , Sector - 16A ,
Distt. Gautam Budh Nagar, NOIDA – 201 301. INDIA

INDEX

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Name of the Owner	:	**NATIONAL THERMAL POWER CORPORATION LTD.(NTPC)**
Name of Customer	**:**	**NTPC BHEL POWER PROJECTS PVT. LTD. (NBPPL)**
Address	:	NTPC Unchahar Thermal Power Plant Village: Mustafabad, Tehsil - Unchahar District– Raebareli, Uttar Pradesh
New Installation	:	UNIT#6, STAGE IV-1 X 500 MW
Nearest Railway station (1 Km from site)	:	Unchahar Railway Station on Kanpur-Allahabad line
Nearest Road	:	Unchahar Lucknow-Allahabad Road (115 Km from Lucknow)
Nearest City	:	Raebareli
Nearest Airport	:	Lucknow-115 KM Allahabad- 85 KM
Highest Temperature	:	45 deg C
Lowest Temperature	:	1 deg C
Elevation	:	354.77 metres

2.0 SCOPE OF WORK

2.1 BHEL has been awarded the work of Design, Manufacture, supply, installation, erection & commissioning of BTG & electrics work at 1X500 MW: UNCHAHAR TPP UNIT#6 STAGE IV. The equipment consists of Boiler, Electro-static precipitator, Fans, milling systems, steam turbines, generators, boilers feed pumps, condensate extraction pumps and piping along with the associated auxiliary supports and controls.

2.2 PLANT DETAILS

The steam Generator is a controlled circulation boiler with rifled water wall tubes.

Boiler Design Data:

SH / RH outlet Pressure	- 178 / 42.4 Kg/cm2
SH /RH outlet Temperature	- 540 / 568 ^{0}C
Feed Water Temperature (at eco inlet)	- 255 ^{0}C
Steam Flow at SH outlet	- 1590 t/h

WATER HOLDING CAPACITY

1. Circulation System	- 175 m^3
2. Drum (full)	- 60 m^3
3. Economizer	- 110 m^3
4. Superheater	- 160 m^3
5. Re-heater	- 115 m^3

2.3 The scope of work under this tender broadly consists of:

2.3.1 Under the scope of this work contactor has to provide T&Ps, manpower, material, pumps, tanks and pipes etc. as detailed in subsequent chapter to carry out Pre-Boiler flushing and chemical cleaning of Boiler.

2.3.2 Contractor shall be fully responsible for following the procedures as prescribed by BHEL and provide sufficient resources so as to complete the process with satisfactory results. Pre boiler flushing consists of flushing of feed lines, condensate lines, drip lines, Deaerator and heaters etc. and Chemical cleaning (by using Citric Acid) of Boiler of Unit No.6.

The objective of this procedure is to chemically clean and passivate the internal surfaces of the steam generating portion (water touched surfaces) and heating surfaces (Economizer) using specified chemicals employing a single step process. This will render the above mentioned surfaces free of mill scale, and other deposits and form uniform & smooth protective layer of magnetite.

2.3.3 The Pre-Boiler system consists of Condensate system, Drip system and Feed water system. Condensate system comprises of Condensate Extraction Pumps, Low Pressure Heaters, Gland steam condenser, Drain cooler, Deaerator Feed Storage Tank, connecting pipelines including excess condensate line up to Condensate Storage Tank. Feed water

system comprises Turbine driven & Motor driven Boiler Feed Pumps, their Booster pumps and recirculation lines, High Pressure Heaters, their connecting pipelines up to Economizer inlet. RH & SH spray lines are also included for the purpose of flushing. Drip system comprises all LP and HP Heaters shells and Drip lines. Pre Boiler flushing is to be completed as per the approved scheme.

2.3.4 The Bill of Temporary Material indicated in **Annexure - I (BHEL supplied)** for carrying out Pre-Boiler flushing and chemical cleaning of Boiler to be provided by BHEL as free of cost. The contractor will transport this material from stores/location of the material to the site to do erection and after completion of chemical cleaning these material to be dismantled and returned to the BHEL store. Tentative scheme is enclosed with the specifications .The actual scheme of pipelines for the chemical cleaning and flushing process will be provided by BHEL at site. Any loss /damage of the BHEL material will be recovered from the contractor at the prevailing market rates.

2.3.5 The Bill of Temporary Material indicated **in Annexure - II (in contractor scope)** for carrying out chemical cleaning to be arranged by successful bidder within lump sum quoted price. All required materials listed in the specifications or even any additional requirement to perform and complete the process shall be provided by the contractor within the awarded price. The bidder must take care of such variations in their offer.

2.3.6 Contractor has to fabricate & erect heat exchanger coil to be used in each of the mixing tank for indirect heating of chemical solution to maintain temperature of chemical solution. Heat exchanger shall be made with inlet & outlet header (made of 150 mm pipe) connected with 02nos. rows of 12 nos. tubes of dia 33.4 mm and approx. 3 meter of length for fitting inside the mixing tank. Material for fabrication shall be provided free of cost. Installation & hydro test of heat exchanger shall be in the scope of contractor within the quoted rate.

2.3.7 All consumables i.e. welding electrodes/cutting gases/filler wire/lubricants including reagents etc. for the successful completion of Pre-Boiler flushing and chemical cleaning of Boiler, will be supplied by the contractor within quoted rate.

2.3.8 Chemicals required for Pre-Boiler flushing & chemical cleaning of boilers will be supplied as a free issue item by BHEL/ owner. They are to be received, transported, preserved, used and handled by the contractor. Necessary precautions for handling of all chemicals, particularly ammonia shall be responsibility of the contractor.

2.3.9 During the Citric acid cleaning process, all the permanent boiler instruments are isolated except providing a temporary pressure gauge of suitable capacity in the drum for monitoring pressure in the drum during chemical cleaning.

2.3.10 Provisions should be made at the following locations for the measurement of temperature at two locations in the drum (left & right) for the measurement of boiler Water temperature. Long thermocouples of around 1500 mm length or required length shall be installed directly in the spare / unused stubs in the drum.

2.3.11 Provision has to be made for monitoring temperature in the control room. Instrument cables for measurement of temperature should be temperature compensated. They are to be laid from the measuring instrument to the control room.

2.3.12 Thermocouples to be used should be accurate in the range of 0-200^{o}C. All the instruments pressure & temp. Gauges should be calibrated with valid calibration certificates.

2.3.13 To get representative samples of the process solution, sampling points with sample coolers are to be provided at the following locations:

A) Drum water sample to be drawn from CBD sampling cooler and from a spare tapping point in water side through the permanent saturated steam cooler.

B) One number of sampling line to be drawn from the middle CC pump casing (which is to be run during acid cleaning) drains.

2.3.14 Temporary drum level indications – 02 in numbers, one at the control room and the other near circulating pumps – along with electric bulbs, switches and cables are to be provided.

2.3.15 Two nos. temporary gauge glasses are to be erected by the contractor for local drum level indication. Temporary gauge glasses (range 900mm) will be supplied by the contractor.

2.3.16 Only the source of power will be provided by the owner at one point at project site. Cables from the source of power to power distribution boards, Motor control centers and to individual equipment are to be provided and laid by the contractor. Earthing of individual motors is to be provided by contractor.

2.3.17 Test coupons (Boiler water wall tube pieces) are to be placed in the boiler drum with proper fixing arrangement to assess the effectiveness of cleaning.

2.3.18 All temporary connections to the existing systems, all modifications in existing pipelines, valves and in civil works are to be normalized by the contractor after pre-boiler flushing and chemical cleaning of boiler. All temporary supports erected for these operations are to be removed by the contractor after completion of the operations.

2.3.19 Laboratory equipment for testing of chemicals along with chemical reagents for testing are to be arranged by contractor. Testing personnel (chemists) are to be arranged by the contractor.

2.3.20 Electrical testing equipment like tong-tester, multicenter, megger etc. are to be arranged by the contractor. Ammeter for each motor is to be provided in its MCC.

2.3.21 Civil works related to pumping units, supports etc are to be carried out by the contractor.

2.3.22 All temporary lines are to be hydraulically tested (at working pressure of fluid) as required.

2.3.23 The contractor has to make arrangement for disposal of effluent and further pumping out the spent/ neutralized acid after 15 days of aeration from neutralizing pit to a suitable location. Proper effluent treatment arrangement is to be made available at site.

A neutralizing pit of approximately 800 m^3 capacity shall be made available by BHEL/Customer.

2.3.24 The contractor shall fabricate pipes, special bends, etc. threading and welding as required.

2.3.25 The contractor shall erect & test all the piping systems, covered in the specification including sampling lines, hangers & supports, valves & accessories in accordance with the drawings furnished. This includes all necessary bolting, welding, and pre-heating, stress relieving, testing, and cleaning. System shall be demonstrated in condition to operate continuously in a manner acceptable to the Engineer. Welding shall be used throughout for joining pipes except where flanged screwed or other type joints are specified or shown on the drawings. All piping shall be erected true to the lines & elevation as indicated in the drawings.

2.3.26 Wherever piping erected by the contractor is connected to equipment/ piping erected by the other agencies the joint at the connecting point shall be the responsibility of the contractor under this contract.

2.3.27 The contractor shall be responsible for correct orientation of all valves so that seats, stems & hand wheels will be in desired location. It is the responsibility of the contractor to obtain the information regarding orientation of valves not fully located on drawings before the same are installed.

2.3.28 The adjustment of all supports erected for maintaining the proper slopes of piping wherever required is also included in the scope of the contractor.

2.3.29 No temporary supports should be welded on the piping. In case of absolute necessity prior approval should be taken from BHEL Engineer. In such cases heat treatment if required, shall be carried out by the contractor as part of subject work.

2.3.30 All supports and anchors shall be installed to obtain safe and reliable and complete pipe installation as per instructions of Engineer. Any additional support as called for by Engineer shall have to be fabricated and provided by the contractor. Contractor shall install piping in such a way that no excessive or destructive expansion forces exist under any condition. The contractor shall ensure that all supporting elements, anchors & restraint have been installed and adjusted in accordance with the drawings / sketches & other written instructions of the Engineer.

2.3.31 All the valves, including motorised valves, flap valves, etc. shall be serviced and lubricated to the satisfaction of Engineer before erecting the same and during pre-commissioning also. Welding or jointing of extension spindle for valves to suit the site conditions and operational facility shall be part of erection work within the quoted rates.

2.3.32 Additional platforms and ladders of permanent nature incidental to the job for approaching different equipment/ valves as per site requirement, which may not be indicated in drawings, shall be fabricated and installed by the contractor within the quoted rate.

2.3.33 Erection and welding of necessary instrumentation tapping points, valves to be provided on equipment, auxiliaries and pipe lines covered within the scope of this specification, will also be the responsibility of the contractor and will be done as per the instructions of BHEL Engineer within the quoted rate.

2.3.34 BHEL shall have lien on all T&P's, IMTEs & other equipment of the Contractor brought to the Site. BHEL shall continue to hold the lien on all such items throughout the period of Contract. No material brought to the Site shall be removed from the Site by the Contractor or his Sub-contractors without the prior written approval of the BHEL Engineer In-charge.

2.3.35 Chemical cleaning system / equipment is to be completed as per the approved scheme. Tentative scheme is attached at **Annexure - III** for reference.

2.4 Tentative Chemical Cleaning Process Procedure to be followed at site is as below::

2.4.1 Cold Water Rinse

1. Before starting the acid cleaning process, the Boiler is rinsed with cold DM water containing 15 ppm Ammonia to remove loose debris, rust etc.

2. SH backfilling is done with ammoniated DM water containing 15 ppm Ammonia.

2.4.2 Hot Water Rinse

1. Boiler is again filled with ammoniated DM water containing 15 ppm Ammonia at ambient temperature.

2. Boiler is lit up as per O&M instructions and Boiler water temperature is gradually raised to 90^{o}C (metal temperature of BCP suction manifold and BCP casing are observed).

3. Boiler is shut down and BCP is stopped.

4. Boiler is drained in hot condition to the plant water disposal system by keeping the drain valves wide open.

2.4.3 Alkali Flushing

1. The following chemicals are used:

   a. Tri Sodium Phosphate 0.1 %
   b. Di Sodium Hydrogen Phosphate 0.05%

2. The chemicals are added in the mixing tank along with DM water and the solution is thoroughly mixed by running the temporary pumps on recirculation. Boiler is filled with the solution up to normal working level in the Drum.

3. Boiler is lit up as per O&M instructions and Boiler water temperature is gradually raised to 85- 90 deg C (BCP suction header and pump casing temperatures are observed). Samples are analyzed for phosphate and pH on hourly basis. Temperature is maintained for 6 hours and should be closely monitored. BCP is kept running during the holding period. Boiler is then shut down.

4. After the holding period is complete, the BCP is stopped. Boiler is drained to the plant water disposal system by keeping the drain valves wide open (i.e., without throttling). The drained solution is diluted with plenty of service water.

2.4.4 Hot Water Rinse

1. Once draining of boiler is complete, it is refilled with DM water. BCP is started and Boiler is lit up. Boiler water temperature is raised to 90 deg C and then Boiler is shut down.

2. BCP is stopped after 30 minutes and boiler is drained in hot condition to plant water disposal system by keeping the drain valves wide open (i.e., without throttling). pH and PO_4 are measured in the drain water.

2.4.5 Cold Water Rinse

1. Once the draining is complete the Boiler is again filled with DM water containing 15 ppm ammonia. BCP is started. BCP is stopped after 30 minutes and Boiler is drained to the plant water disposal system. pH and PO_4 are measured in the drain water.

2. Cold rinsing is continued till the phosphate content in the drained water is less than 10 ppm.

3. All sampling and drain lines are also flushed.

2.4.6 Acid cleaning & Passivation

1. Boiler is filled with DM water containing 15 ppm of ammonia up to normal drum level. BCP is started.

2. Boiler is lighted up and Boiler water temperature is raised to 90 deg C. Then Boiler is shut down, FD and ID fans are stopped and boiler boxed up. BCP is stopped. Circulation to and from the boiler is established with the help of temporary pump and mixing tank. (Alternately boiler water temperature can be raised by heating with external steam in the mixing tank after establishing circulation to and from the boiler.)

3. At water temperature of 90 – 70 deg C, the inhibitor, citric acid monohydrate and ammonia solution are added in the mixing tank so that finally the boiler water contains 3- 4% citric acid, 0.3% inhibitor and pH between 3.5 – 4. Concentration of citric acid at point of injection should never cross 10%.

4. Additional ammonia, if required, may be added to adjust the pH of the cleaning solvent in the range of 3.5 to 4.0. If the pH of the solvent goes beyond 4, citric acid can be used to bring the pH to the desired level. Circulation of the solution is maintained by temporary pump. Temperature of the citric acid solution is maintained around 70~90 deg C by controlling, if required, the steam input in the temporary heat exchanger (non-contact type) installed in the temporary system.

5. Once the required concentration of citric acid, inhibitor and pH is achieved at the inlet and outlet of boiler, circulation with the temporary pump can be continued along with BCP (only one number - preferably it should be the middle BCP) for continuous circulation .be operated for 30 minutes. At the end of 30 minutes, the BCP is stopped the chemical solution is allowed to soak. The same BCP is operated for 5 minutes at an interval of 30 minutes.

6. With citric acid inside the boiler or pH of the solution in the acidic range, boiler is NOT to be fired.

7. Counting of time (i.e., T = 0) for the purpose of calculation of minimum contact period will start only after achieving the required concentration of citric acid, inhibitor and pH at the inlet and outlet of boiler.

8. Concentration of citric acid and iron in the cleaning solvent are analyzed every 30 minutes. The process is continued for 6 hours or till the iron concentration equilibrium in three consecutive samples is reached, whichever is earlier. A minimum contact period of 4 hrs. With acid solution is to be maintained.

9. ID / FD Fans are run, if required, to bring down Boiler water temperature to around 70 deg C.

10. When the temperature comes down to 70 deg C, ID / FD Fans are stopped.

11. The circulation to and from the boiler is again established with the temporary pump.

12. Adequate quantity of ammonia is added to achieve pH of about 9.5.

13. Sodium nitrite is added in the mixing tank so as to achieve 0.5% concentration of sodium nitrite in the passivation solvent. Temporary pump is stopped and circulation is continued using BCP for about four (4) hours. The temperature is maintained around 55 ~ 60 deg C.

14. BCP is stopped and the solution is drained into the effluent pit by opening all drain valves.

15. Boiler is refilled with DM water containing 15 ppm ammonia. Circulation is maintained for 30 minutes by running BCP.

16. After stopping BCP the Boiler is drained. Boiler filling, circulation with BCP and draining is continued till conductivity of the final rinse is within 50 μS/cm of the source water (treated DM water).

17. After completion of chemical cleaning activity the next startup of the boiler should be done within a reasonable duration. If there is going to be a delay of more than 4 weeks, the water circuits and Superheater should be preserved as per approved procedure.

18. Alternately boiler water temperature can be raised by heating with external steam n the mixing tank.

2.4.7 PROCESS COMPLETION CRITERIA:

2.4.7.1 Hot / Cold water rinsing after Alkali flushing

PO_4 < 10 ppm

2.4.7.2 Acid cleaning & Passivation

Chemical cleaning process will be declared complete when the Iron concentration in three (03) consecutive samples stabilizes OR the citric acid contact period of six (06) hours is achieved, whichever is earlier.
The test coupons placed at identified locations will be taken out. All coupons shall be free of deposits and have uniform coating of the protective layer.
The drum surface shall be visually inspected for uniform smooth coating of protective layer.

2.4.7.3 Rinsing after Passivation

Conductivity of the effluent within 50 μS/cm of treated DM water. The ring headers will be inspected and loose debris if any, will be removed.

2.4.8 CHEMICAL CLEANING WASTE TREATMENT & DISPOSAL

1. Treatment and disposal of the waste and effluents of the chemical cleaning process shall comply with the requirements / stipulations of State Pollution Control Board.

2. Cold and hot DM water after flushing shall be drained into plant normal drain.

3. The organic spent citric acid solution after the cleaning process is drained into the neutralizing pit. The pH of the effluent will be in the range of 8.5 to 9.0 and hence no treatment for pH adjustment is required as it would meet the pH requirement for disposal, subject to verification at site.

4. The effluent shall be disposed of only after complete degradation of citric acid, as per State Pollution Control Board norms.

5. Mixing tank, pipelines and inhibitor carboys shall be cleaned with water and the effluent shall be drained into the neutralizing pit.

NOTE:

- Drains to be provided at lowest points of temporary piping.
- All temporary connections to Boiler should be of good quality. They will be hydraulically tested at 15 kg/cm2 with the temporary boiler filling pump. Small drains which are not connected to the neutralizing pit, shall be let into storm water canal.
- Additional Check lists / Modifications in the layout, if found necessary, shall be made at site in consultation with BHEL site engineers.

2.5 SAFETY PRECAUTIONS

1. Adequate number of safety equipment like goggles, masks, aprons, gloves, gum boots etc. are to be arranged by the contractor.

   Minimum requirements for a boiler shall be as under:

a.	Gum boots (various sizes)	6 Pairs
b.	Rubber gloves	6 Pairs
c.	Rubber or Polythene aprons	6 Nos
d.	Helmets	12 Nos
e.	Safety goggles plain glass	6 Nos
f.	Face mask (transparent, plastic)	6 Nos

2. First aid box (containing dilute ammonium hydroxide, 50% sodium bicarbonate solution, eye lotion, bandages, tincture of iodine, cotton, Burnol etc) should be available near the work area.

3. Ample supply of water for flushing and washing should be available at all possible points of discharge, spillage or escape of chemicals.

4. Adequate number of eye wash bottles for treatment of eye should be kept at easily approachable locations where discharge, spillage or escape of chemicals can occur.

5. Safety shower should be provided.

6. A suitable first aid room with outside telephone facilities shall be provided within a reasonable distance from the place where chemicals are being handled.

7. Protective clothing and apparatus required for emergency use should be available near the chemical cleaning area.

2.6 FIRST AID TREATMENT

2.6.1 Splash of chemicals in eye

1. Affected eye should be immediately washed / irrigated with plenty of water. To make the washing effective the eyelids must be kept open. The eyelids should be pushed apart using the thumb and index finger of one hand. The affected person may not be able to open the eye himself because of painful spasms.

2 If an eye wash bottle is used, the jet should not be directed to the front of the eye. It should be directed from the side so that flow is over the surface of the eye.

3 Irrigation should be continued for 5 – 10 minutes after which the affected person should be taken to the first aid room.

4 Irrigation should be continued in the first aid room. After thorough irrigation the eye should be covered with a pad. The patient should then be referred for medical opinion.

2.6.2 Splash of chemicals on skin

1. If skin irritation occurs the persons should be referred for medical opinion.

2. In the event of splashing of chemicals on the skin, the affected area should be washed thoroughly avoiding spread of chemical on the face and eyes.

2.6 .3 First aid measures for Ammonia

1. **Inhalation:** Take precautions to ensure your own safety before attempting rescue (e.g. wear appropriate protective equipment). Move victim to fresh air. If breathing is difficult, trained personnel should administer emergency oxygen. DO NOT allow victim to move about unnecessarily. Symptoms of pulmonary edema may be delayed. Immediately call a Poison Centre or doctor. Treatment is urgently required. Transport to a hospital.

2. **Skin Contact**: Gas: flush with lukewarm, gently flowing water for 5 minutes. If irritation or pain persists, see a doctor. Liquefied gas: quickly remove victim from source of contamination. DO NOT attempt to rewarm the affected area on site. DO NOT rub area or apply direct heat. Gently remove clothing or jewelry that may restrict circulation. Carefully cut around clothing that sticks to the skin and remove the rest of the garment. Loosely cover the affected area with a sterile dressing. DO NOT allow victim to drink alcohol or smoke. Immediately call a Poison Centre or doctor. Treatment is urgently required. Transport to a Hospital.

3. **Eye Contact:** Gas: immediately flush the contaminated eye(s) with lukewarm, gently flowing water for 5 minutes, while holding the eyelid(s) open. If irritation or pain persists, see a doctor. Liquefied gas: move victim to fresh air. Immediately and briefly flush with lukewarm, gently flowing water. DO NOT attempt to re warm. Cover both eyes with a sterile dressing. DO NOT allow victim to drink alcohol or smoke

2.7 EMERGENCY PROCEDURES:

1. The testing team should be aware of the operating procedures of fire extinguishers and permanent firefighting system installed in and around Boiler area to be used for quenching minor or major fires, procedure to be followed in case of accidents involving injury top personnel.

2. The testing team should be aware of the procedure to be followed in case of accidents involving personnel injury.

3. Any gland leak in valves in the system observed during hot rinsing and alkali flushing should be attended before coming to notice of putting acid into boiler.

4. At strategic locations of the cleaning circuit, hydrated lime powder will be kept in small containers with proper identification for neutralization of any acid spill during cleaning. Once the cleaning job is completed, these chemicals should be moved to neutralizing pit.

5. In case of failure of running pump the stand by pump should be started immediately without delay.

6. An operator posted at the pump area, should be instructed to stop the pumps and properly isolate the system in the event of emergency. All operators should be well conversant with the emergency operating instructions.

7. **All the procedure mentioned above is tentative only and all efforts shall be put to mitigate emergency situations.**

2.8 PROCEDURE FOR ESTIMATION OF CITRIC ACID DURING FILLING

Citric Acid concentration is determined by titration with a standard base, the citric acid concentration is calculated assuming a pH 4 solution.

1. Regents
   - Phenolphthalein indicator solution.
   - Sodium hydroxide solution standard (0.5 N).
2. Test procedure
   - Pipette out 10 ml of sample in an Erlenmeyer flask.
   - Add 10-20 ml of water.
   - Titrate to permanent pink colour with standard base.
3. Calculation

   Citric acid % = AN * 12.4 / BS

   A= ml of NaOH solution required for the titration.

   N= Normality of NaOH solution.

B= ml of sample titrated.

S = specific gravity which is usually 1 for our cleaning solution.

2.9 PROCEDURE FOR DETERMINATION OF TOTAL IRON CONCENTRATION IN PROCESS SOLUTION DURING CHEMICAL CLEANING

1. APPARATUS REQUIRED

- HACH DR/890 COLORIMETER
- Volumetric flasks
- Pipettes
- Measuring cylinders

2. REAGENTS REQUIRED

- FerroVer reagent powder pouches (Supplied by HACH)

3. TEST METHOD

1. Sample is diluted with DM water so that the concentration of Iron is less than 3 ppm in the test solution.
2. 25 ml / 10 ml of the diluted solution is taken in the cuvette. This will be used as a blank.
3. Place the blank in the cell holder and cover the sample cell with cap.
4. Zero the equipment and display will be showing 0.00 mg/L Fe.
5. Fill another sample cell with 25/10 ml sample
6. Add the contents of one FerroVer Iron Reagent Powder Pillow to the sample cell (the prepared sample). Cap and invert to dissolve the reagent powder.
7. Start the timer for 3 mts period.
8. Place the prepared sample into the cell holder. Cover the sample cell with the instrument cap.
9. Press READ.
10. The concentration will be displayed.
11. Multiply with dilution factor and report the ppm / g/ lit of Fe concentration.

Note: All the procedure mentioned above is tentative and for information only. Any changes shall be intimated during execution and contractor has to carry out job as per the instruction of engineer In-charge within the quoted rate.

2.10 PRELIMINARY AND CIVIL WORKS

1. Before starting erection job contractor shall ensure that area connected to his scope of work is sufficiently enclosed against ingress of dust and water and all debris have been cleared of from the floor to a designated area as per instruction of engineer. The contractor shall arrange to get the working area and surroundings cleared daily to ensure the dust free atmosphere and free from seepage water for working and shall maintain sufficient labour and general cleaning of work areas. Delay of work on this account will not be acceptable.

2. The contractor shall cover all opening on floor and put temporary hand railing on all sides of the floor to avoid any accident to the working personnel.

3. Any civil works required for safe and efficient operation of tools and tackles like grouting/ excavation/ casting of foundation/ anchor points for derricks, winches, guy ropes fastening scaffoldings etc. or any other temporary supports shall also be the contractor's responsibility. For these civil works all materials including cement/ steel and required facilities will have to be arranged by contractor at his own cost.

4. The contractor shall provide his tool stores for special tools and instruments at a convenient place near to the place of working area.

2.11 Welding requirements.

1. Contractor must ensure that the welders involved in the job are qualified as per BHEL/NTPC/NBPPL procedures & statutory requirement (preferably IBR welder to be used)

2. Contractor to procure and use only BHEL/NTPC/NBPPL approved welding electrodes.

3. Contractor to ensure storage, drying facilities of the welding electrodes as per BHEL norms.

4. Suitable edge preparation is required to make prior to carry out the welding.

5. Contractor to ensure proper cleaning of welds between the beads

6. No visible cracks, pinholes or incomplete fusion are allowed.

7. Under cuts should not exceed 1 mm.

2.12 GENERAL

2.12.1 Contractor shall ensure following:

I. Contractor has to maintain contact with local hospital having ambulance facility, scanning & other ultra-modern medical facilities required during emergency.

II. Contractor has to ensure pre-employment medical check for all staff & workers.

III. Contractor has to ensure that adequate First Aid facilities with trained nurse are available at work site for emergency purpose. This emergency set-up should include, but not limited to, following:-

Male nurse (in shifts)
Oxygen set up
Breathing apparatus
Eye wash facility
Stretcher
Trauma blanket
Medicines

In addition to above, BHEL (through it's another contractor) has arranged ambulance at work site for emergency purpose, which can be utilized by contractor in case of emergency. The charges for the same will be decided mutually at site. In case, under unavoidable circumstances, if the ambulance is not available/ being used elsewhere, the contractor will have to arrange for the same in emergency situation.

2.12.2 The contractor shall comply with following towards Social Accountability;

a) The contractor shall not employ any employee less than 15 years of age in pursuant to ILO convention. If any child labour were found to have been engaged, the Contractor shall be levied with expenses of bearing his education expenditure which will include stipend to substantiate appropriate education or employ any other member of family enabling to bear the child education expenditure.
b) The contractor shall not engage Forced/ Bonded Labour and shall abide by abolition of Bonded Labour System (Abolition) Act, 1976.
c) The contractor shall maintain Health & safety requirement as stipulated in the Contract and Contract Labour (Regulation & Abolition) Act, 1970.
d) The Contractor shall abide by UN convention w.r.t. Human Rights and shall be liable for Discrimation/ Corporal Punishment for failure in meeting with relevant requirements.
e) The Contractor shall abide the requirement of Contract Labour (Regulation & Abolition) Act, 1970 for working hours.
f) The Contractor shall abide by the statutory requirement of Minimum Wages Act 1948, payment of Wages Act 1936.
g) The Contractor shall arrange potable drinking water to its employees & workers.

Chapter - III: Facilities in the scope of Contractor/BHEL

3.0 FACILITIES IN THE SCOPE OF CONTRACTOR/BHEL

S.No.	Description	Scope /to be Taken care by		Remarks
		BHEL	CONTRACTOR	
1.1.0	ESTABLISHMENT			
1.1.1	FOR CONSTRUCTION PURPOSE			
A.	Open space for office	YES		Free of charge. As and where made Available by customer M/s NTPC/ NBPPL/ BHEL
B.	Open space for storage	YES		Free of charge. As and where made Available by customer M/s NTPC/NBPPL/ BHEL
1.1.2	FOR LABOUR COLONY			
A	Open space	YES		Contractor have to make own arrangement
1.2.0	ELECTRICITY			
1.2.1.	Electricity for construction purposes (chargeable/free)			
1.2.1.1	Single point source	YES		FREE OF CHARGE
1.2.1.2	Further distribution for the work to be done Which include supply of materials & Execution		YES	
1.2.2	Electricity for the office, stores, canteen etc of the bidder which include:			
1.2.2.1	Distribution from single point including supply of materials & service		**YES**	

1.2.2.2	Supply, Installation & connection of material of Energy meter including operation & maintenance		**YES**	
1.2.2.3	Duties & deposits including statutory clearances for above		**YES**	
1.2.2.4	Demobilization of the facilities after completion Of works		**YES**	
1.2.2.5	Electricity for living accommodation of the bidder's Staff, engineers, supervisors etc. on the above Lines		**YES**	Chargeable As per UPPCL standard Rates. Contractor shall install calibrated energy meter for metering electricity consumption.
1.3.0	WATER SUPPLY			
1.3.1	FOR CONSTRUCTION:			
1.3.1.1	Making the water available at single point		YES	Contractor has to make arrangement on their own.
1.3.1.2	Further distribution as per the requirement of work including supply of materials & Execution		YES	
1.3.2	LABOUR COLONY:			
1.3.2.1	Making the water available at single point			Contractor has to arrange on his own.
1.3.2.2	Further distribution as per the requirement Of work including supply of materials & execution			
1.4.0	LIGHTING			
1.4.1	For construction work (supply of all materials) 1. At office storage area 2. At preassembly area 3. At construction site/area		YES	

1.4.2	For construction work (execution of lighting work/arrangements) 1. At office storage area 2. At preassembly area 3. At construction site/area		YES	
	Providing the necessary consumables like bulbs, Switches, etc during the course of construction		YES	
1.5.0	Communications facilities for site operations of the bidder			
1.5.1	Telephone, fax, intranet, email etc.		YES	
1.6.0	COMPRESSED AIR SUPPLY			
1.6.1	Supply of compressor and all other equipment Required for compressor & compressed air System including pipes, Valves, storage system etc.		YES	
1.6.2	Installation of the above system and operation & maintenance of the same		YES	
1.6.3	Supply of all the consumables for the above System during the contract period.		YES	
	ERECTION FACILITIES			
2.1.1	Providing erection drawings for all the Equipment covered under this scope	YES		
2.1.2	Drawings for construction method	**YES**	**YES**	In consultation with BHEL
2.1.3	As-built-drawings-where ever deviations Observed & executed and also based on Decisions taken at site		**YES**	do
2.1.4	Shipping lists etc for reference & planning the Activities	YES	**YES**	**do**
2.1.5	Preparation of site erection schedules and Other input requirements		**YES**	**do**

2.1.6	Review of performance & revision of site erection schedules in order to achieve the end dates & commitments	YES	**YES**	**do**
2.1.7	Weekly erection schedule based on Sl. No.2.1.5		**YES**	**do**
2.1.8	Daily erection/work plan based on Sl. No.2.1.7		**YES**	**do**
2.1.9	Periodic visit of senior official of bidder to site to review the progress so that works are completed as per schedule. It is suggested this review by the senior official of the bidder should be done once in every two month		**YES**	
2.1.10	Preparation of preassembly bay		**YES**	

3.1 BHEL will not be responsible for any loss or damage to the contractor's equipment as a result of variation in voltage or frequency or interruptions in power supply.

3.2 The Contractor shall be responsible for providing all necessary facilities like residential accommodation, transport, electricity, water, medical facilities etc. at his own cost as required under various labour laws and statutory rules and regulations framed there under to the personnel employed by him.

3.3 Provision of distribution lines of both electrical power and water from the central points to the required place with proper distribution boards observing the safety rules laid down by the electrical authorities of the state shall be done by the contractor, supplying all the materials like cables, distribution board, switch boards, TPN, CBS, ELCBS/ MCCBS/ Copper / Brass clamps, copper conductor, change over switches pipes etc. at his own cost. If any failure is caused in supply of the power and water, it is the responsibility of the contractor to make alternate arrangements at his cost. The contractor shall adjust his working shifts / hours accordingly and deploy additional manpower if necessary so as to achieve the targets.

3.4 The contractor while drawing construction power supply from Distribution Board should strictly adhere to following points.

a) All electrical installations should be as per Indian Electricity rules.

b) All distribution Boards installed by the contractor should be constructed with fire proof materials viz. Steel frames, Bakelite sheets etc.

c) Connection for single phase should be taken from phase and neutral. Nowhere the connection should be taken with earth as neutral.

d) All electrical connections should be made through connectors, nuts and bolts, switches, plug and sockets. Loose connections or hooking up of wires shall not be permitted.

e) Contractor have to make their own earthing arrangement for their equipment / DB earthing.

f) All electrical equipment / tools and plants should be properly earthed. DBs to be earthed diagonally opposite at two points.

g) Contractor should use "MCCB" and "ELCB" either on incoming or outgoing connections to the DBs.

h) Contractor should ensure that all the CBs / TPNs/ Fuses/ MCCB / ELCB cables etc. should be of adequate rating/ capacity.

i) For permission of supply connections contractor has to submit a test report of their installations with a single line diagram of connected/ proposed loads.

3.5 Adequate lighting arrangement such as flood lights, hand lamps and area lighting shall be arranged by the contractor at the site of construction, storage area etc within finally accepted rates

3.6 In case of power cuts / load shedding no compensation for idle labour or extension of time for completion of work will be given to contractor.

3.7 The contractor should provide sample testing facilities like chemical lab, chemists and required accessories within the firm price of contract.

3.8 **Road permits / other documents required for despatching their material has to be provided/arranged by the contractor only.**

3.9 On completion of work or as and when required by BHEL, all the temporary buildings, structures, pipe lines, cables etc. Shall be dismantled and levelled and debris shall be removed, as per instructions of BHEL, by the contractor at his cost. In the event of his failure to do so, the Engineer will get it done and expenses incurred shall be recovered from the contractor along with prevailing overheads. The decision of BHEL Engineer in this regard shall be final.

4.0 T&P AND MMD DEPLOYED BY CONTRACTOR

4.1 T&Ps and IMTEs (Inspection, Measuring & Testing Equipment), which are required for successful and timely execution of the work covered within the scope of this tender, shall be arranged and provided by contractor with in the finally accepted rate. In the event of the failure of contractor to bring necessary and sufficient T&Ps/ and IMTEs, BHEL will be at liberty to arrange the same at the risk and cost of contractor and hire charges as applicable shall be deducted from contractor's bill. Decision of BHEL in this regard shall be final and binding on contractor.

4.2 All distribution boards, connecting cables/ welding cables, wire ropes, hoses etc. including temporary air/ water/ electrical connections etc, shall have to be arranged by the contractor at his own cost.

4.3 Contractor shall ensure deployment of reliable and calibrated IMTEs (Inspection, measuring and Test equipment). The IMTEs shall have test/ calibration certificates from authorised/ Govt. approved/ accredited agencies traceable to National/ International standards. Each IMTE shall have a label indicating calibration status i.e. date of calibration, calibration agency and due date for calibration. A list of such instruments deployed by contractor at site with its calibration status is to be submitted to BHEL Engineer for control.

4.4 Re-testing/ re-calibration shall also be arranged at regular intervals during the period of use as advised by BHEL Engineer with in the contract period. The contractor will also have alternate arrangements for such IMTE so that work does not suffer when the particular instrument is sent for calibration. Also if any IMTEs not found fit for use, BHEL shall have the right to stop the use of such item and instruct the contractor to deploy proper item and recall i.e. repeat the readings taken by that instrument. Failing which BHEL may deploy IMTEs and re-take the readings at contractor's cost.

4.5 Contractor to use his own T&P for the unloading, loading & transportation of the material.

5.0: T&P AND MMD DEPLOYED BY BHEL FREE OF CHARGE ON SHARING BASIS

As per the specific work requirement and decided by the BHEL Engineer, the suitable capacity crane will be provided to the contractor on free of charge basis.

6.0 TIME SCHEDULE

6.1 The contractor is required to commence the work within 15 days from the date of issue of LOA unless BHEL decides to fix any other later date. However, the actual date of start of work, to fix up the zero date of the contract, will be certified by BHEL Engineer after adequate mobilisation of manpower and T&Ps by the contractor.

6.2 Entire work as detailed in the tender specifications shall be completed within 03 **(THREE) months from** the date of start of work as per programme/schedule certified by BHEL Engineer**.**

Programme for execution of work shall be tentatively as follows::

Preparatory works for Pre-Boiler flushing	– 15 days approx.
Process Time for Pre-Boiler flushing, rinsing etc.	– 5 days approx.
Preparatory works for Chemical cleaning	– 30 days approx.
Process Time for Chemical cleaning, sample testing etc.	- 5 days approx.
Aeration of effluent and their disposal	-20 days approx.
Approx. time for completion for Chemical cleaning	-3 months

Milestones	**Unit#6**
Start of activity	**ZERO**
Completion of activity	**THREE**

NOTE:
The programme of works and time period shall be decided jointly along with BHEL Engineer/ Customer at site depending upon the work fronts availability at respective site.

6.3 The work under the scope of this contract is deemed to be complete in all respects, only when the contractor has discharged all the responsibilities laid down in the contract. The decision of BHEL Engineer In-charge on completion date shall be final and binding on the contractor.

7.0 TERMS OF PAYMENT	
7.1	The 'Engineer' will certify regarding the actual work executed in the measurement books and bills, which shall be accepted by the contractor in measurement book.
7.2	Contractor shall submit bills for the work completed under the specification detailing work done. The format for billing shall be approved by BHEL before raising invoices.
7.3	Subject to any deduction which BHEL may be authorised to make under the contract, the contractor on the certificate of the Engineer at site is entitled for payment as explained hereunder:
7.3.1	**1X500 MW::UNCHAHAR TPP UNIT#6 STAGE IV** **FOR ITEM AT SL. NO. 1 OF RATE SCHEDULE AT CHAPTER XI**
	7.3.1.1 70% of the Lumpsum price at sl. no. 1 shall be payable on successful completion of chemical cleaning of UNCHAHAR TPP UNIT#6 as certified by BHEL Engineer In-Charge. **7.3.1.2 25%** of the Lumpsum price at sl. no. 1 shall be payable on successful completion of pre boiler flushing of UNCHAHAR TPP UNIT#6 as certified by BHEL Engineer In-Charge.
	Balance 5% of the contract value shall be payable as ; 7.3.1.3 2.5% of the Lumpsum price at sl. no. 1 shall be payable on completion of all pending work, reconciliation of material wherever required, area cleaning etc. 7.3.1.4 The balance 2.5% of the Lumpsum price at sl. no. 1 shall be payable after 3 months on contractors discharging his responsibilities as stipulated in this contract and on passing of final bill. The SD amount, if any, deducted by the BHEL Site from the contractor's RA bills, shall be released along with this final payment. 7.3.1.5 No separate payment shall be made for any temporary structures, lifting arrangements for testing and other NDT etc., as all these activities shall be performed as integral to erection work as per site requirement and as directed by Engineer. 7.3.1.6 Above payment shall be released after adjustment of the contract value based on actual work carried out.

8.0	**TAXES & DUTIES**
8.1	The contractor shall pay all (save the specific exclusions as enumerated in this contract) taxes, fees, license charges, deposits, duties, tools, royalty, commissions or other charges which may be levied on the input goods & services consumed and output goods & services delivered in course of his operations in executing the contract. In case BHEL is forced to pay any of such taxes, BHEL shall have the right to recover the same from his bills or otherwise as deemed fit. However, provisions regarding **Service Tax, SBC & KKC** on output service **and Value Added Tax (VAT)** on goods shall be as per following clauses.
8.2	**Service Tax, Swachh Bharat Cess (SBC) & Krishi Kalyaan Cess (KKC)**
8.2.1	Service Tax and Swachh Bharat Cess (SBC) & Krishi Kalyaan Cess (KKC) as applicable on output Services are excluded from contractor's scope; therefore contractor's price/rates shall be **exclusive** of Service Tax, Swachh Bharat Cess (SBC) & Krishi Kalyaan Cess (KKC).
8.2.2	Contractor shall obtain prior written consent of BHEL before billing the amount towards such taxes. Where the Service Tax Act permit more than one option or methodology for discharging the liability of tax/levy/duty, BHEL will have the right to adopt the appropriate one considering the amount of tax liability on BHEL/Client as well as procedural simplicity with regard to assessment of the liability. The option chosen by BHEL shall be binding on the Contractor for discharging the obligation of BHEL in respect of the tax liability to the Contractor. Contractor shall submit to BHEL documentary evidence of Service Tax registration certificate specifying name of services covered under this contract.
8.2.3	**For the purpose of claiming any Service Tax, SBC & KKC from BHEL, the following procedure shall be adopted:**
8.2.3.1	Contractor shall submit serially numbered Service Tax, SBC & KKC Invoices, signed by him or a person authorized by him in respect of taxable service provided, and shall contain the following, namely:
8.2.3.1.1	The name, address and registration number of the contractor
8.2.3.1.2	The name and address of the party receiving taxable service (BHEL)
8.2.3.1.3	Description, classification and value of taxable service provided and
8.2.3.1.4	The Service Tax, Swachh Bharat Cess (SBC) & Krishi Kalyaan Cess (KKC) payable thereon.
8.2.3.1.5	The service invoice for output services provided should show service tax, SBC & KKC amount separately
8.2.4	All the five conditions shall be fulfilled in the invoice for payment of Service Tax, SBC& KKC by BHEL. Where more than one nature of Service as per Service Tax act is involved in the execution of contract, the invoice mentioned above shall contain the breakup of values for each nature of Service.
8.2.5	Name and address of the Contractor should be same in the service tax invoice and monthly bill as it is in the service tax registration certificate. Any change in the name and address should be supported by documentary evidence duly certified by the authorized signatory.
8.2.6	Purpose of above requirements, inter-alia, is to enable availment of Cenvat credit by BHEL. As per recent amendments, Time restrictions for taking Cenvat credit is one year from date of invoice. Hence subcontractor must submit its invoice within

	one year from date of invoice. Hence subcontractor must submit its invoice within 30 days from the date of completion of service. Wherever Cenvat credit could not be availed by BHEL due to delay in submission of invoices or for any other reasons attributable to contractors, Liability towards loss of such Cenvat credit shall be passed on to sub-contractors..
8.2.7	The documentary evidence of deposition of service tax, SBC& KKC is to be submitted at the earliest opportunity.
8.2.8	The payment of service tax, SBC& KKC as per clause no. 8.2 is restricted to the direct transactions between BHEL & its sub-contractor only.
8.3	**VAT (Sales Tax /WCT)**
8.3.1	Price quoted should be inclusive of all the applicable charges, taxes and duties, including entry tax, VAT/Sales Tax and BHEL shall not reimburse any amount on this account due to any reason whatsoever.
8.3.2	The Contractor shall register himself with the respective Sales Tax authorities of the state and submit proof of such registration to BHEL along with the first RA bill. Deduction of tax at source shall be made as per the provisions of law unless otherwise found exempted. In case tax is deducted at source as per the provisions of law, this is to be construed as an advance tax paid by the contractor and no reimbursement thereof will be made unless specifically agreed to. Contractor has to make his own arrangement at his cost for completing the formalities, if required, with Sales Tax/VAT Authorities, for bringing all their material, plant and equipment etc at site for the execution of the work, including arrangement of Road Permits if and as applicable under the relevant VAT Act.
8.4	**Modalities of Tax Incidence on BHEL**
8.4.1	Wherever the relevant tax laws permit more than one option or methodology for discharging the liability of tax/levy/duty, BHEL will have the right to adopt the appropriate one considering the amount of tax liability on BHEL/Client as well as procedural simplicity with regard to assessment of the liability. The option chosen by BHEL shall be binding on the Contractor for discharging the obligation of BHEL in respect of the tax liability to the Contractor.
8.5	**New Taxes/Levies**
8.5.1	In case the Government imposes any new levy/tax on the output service/ goods/work after award of the contract, the same shall be reimbursed by BHEL at actual. The reimbursement under this clause is restricted to the direct transaction between BHEL and its subcontractor only.
8.5.2	In case any new tax/levy/duty etc. becomes applicable after the date of Bidder's offer, the Bidder/Contractor must convey its impact on his price duly substantiated by documentary evidence in support of the same before opening of Price Bid. Claim for any such impact after opening the Price Bid will not be considered by BHEL for reimbursement of tax or reassessment of offer.

Chapter - IX: Others

9.1. Contractor has to fulfil quality requirement as per Chapter-VIII of Special Condition of Contract (SCC). In case of any gap in fulfilling these requirements by the contractor, financial penalty shall be imposed on the contractor with the rate mentioned in the "MEMO for penalty imposition against non-compliance in Quality area" enclosed as **Annexure-IV.**

ANNEXURE- I

List of BHEL supplied Temporary Piping Material for Pre-boiler flushing and Chemical Cleaning of Boiler using Citric Acid at 1X500 MW Unchahar TPP Stage IV Unit#6.

Item Name	Size Nb (ODxThk)	Quantity In Mtrs / Nos	Type	Remarks
PIPE	Nb300mm/12 inch (323x6.35)	6.00 mtr		Material to be given by BHEL
	Nb250mm/10 inch (273x6.35)	30.00 mtr		Material to be given by BHEL
	Nb200mm/8 inch (219x6.35)	1200 mtr	Seamless & ERW	Material to be given by BHEL
	Nb150mm/6 inch (168x3.40)	200 mtr		Material to be given by BHEL
	Nb100mm/4 inch (114x3.05)	150 mtr		Material to be given by BHEL
	Nb50mm/2 inch (60.32x2.77)	150 mtr		Material to be given by BHEL
	Nb40 (48.26x2.77)	50mtr		Material to be given by BHEL
	Nb25mm/1 inch (33.40x2.77)	200 mtr		Material to be given by BHEL
	Nb15 mm (26.34x2.11)	100.00 mtr		Material to be given by BHEL
TEE				
	Nb300 X 300 X 250	02 Nos		Material to be given by BHEL
	Nb200 X 200 X 200	03 Nos		Material to be given by BHEL
	Nb100 X 100 X 100	04 Nos		Material to be given by BHEL
	Nb50 x 50 x 50	02 Nos		Material to be given by BHEL
REDUCER	Nb200 / 150	05 Nos		Material to be given by BHEL
	Nb250 / 200	02Nos		Material to be given by BHEL
	Nb200 / 100	01 No		Material to be given by BHEL
	Nb150 / 100	04 Nos.		Material to be given by BHEL
	Nb100 / 50	03 Nos		Material to be given by BHEL
ELBOW 90°				
	Nb250mm/10 inch	02 Nos		Material to be given by BHEL
	Nb200mm/8 inch	20 Nos		Material to be given by BHEL

	Nb150mm/6 inch	12 Nos		Material to be given by BHEL
	Nb100mm/4 inch	15 Nos		Material to be given by BHEL
VALVE Hand Operated, Butt welded / Socket welded	Nb 200	09 Nos	Gate, 300 Class	Material to be given by BHEL
	Nb 150	01 No	Gate, 800 Class	Material to be given by BHEL
	Nb 150	04 Nos	Gate, 300 Class	Material to be given by BHEL
	Nb 100	06 Nos	Gate, 300 Class	Material to be given by BHEL
	Nb 150	03 Nos	NRV, 300 Class	Material to be given by BHEL
	Nb 50	10 Nos	Globe, 300 Class	Material to be given by BHEL
	Nb 50	02 Nos	NRV, 300 Class	Material to be given by BHEL
	Nb 40	08 Nos	Globe, 300 Class	Material to be given by BHEL
	Nb 25	15 Nos	Globe, 300 Class	Material to be given by BHEL
	Nb 15	10 Nos	Globe, 300 Class	Material to be given by BHEL

Note:
In addition to above list any pipe, fittings, valves required for the successful completion of the pre boiler flushing & chemical cleaning will be provided by the BHEL as free of cost to the bidder.

Annexure-II

Tentative List of IMTEs for Pre-boiler flushing and Chemical Cleaning of Boiler using Citric Acid at 1X500 MW: Unchahar TPP Unit#6 in Contractor within the quoted rate

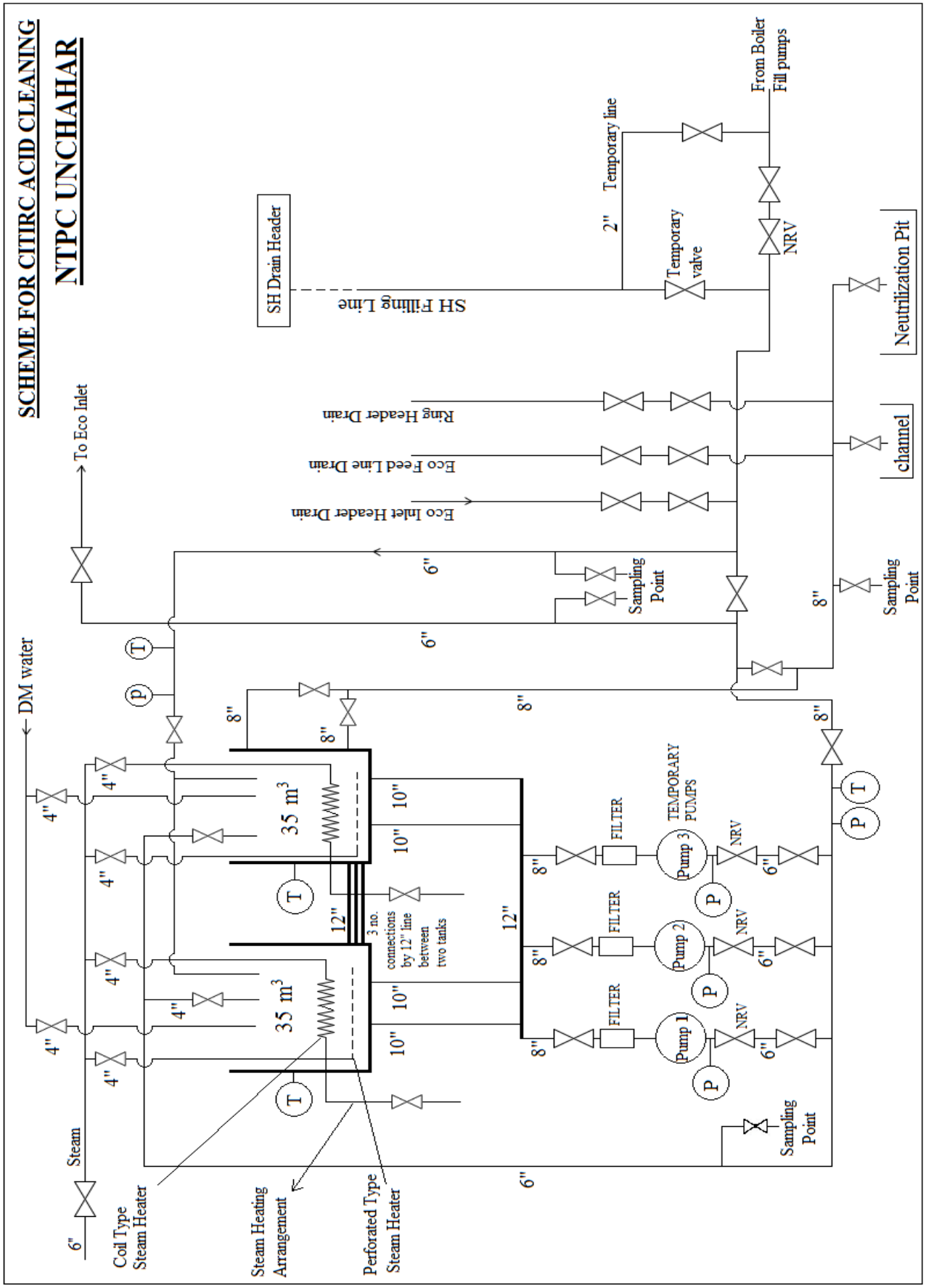
Sl . No.	Description	QTY for this tender
1	MS Tank (covered), rectangular, 35 Cu M with supporting structure for mixing the chemicals	02 No
2	Pump suitable for handling Citric Acid at 90 deg C, 200 Cu M / Hr. , 20 Kg / cm^2 with strainer, base frame and spares Along with suitable drive Motor with starter, ammeter, cable etc. with MCC and distribution board	03 Sets
3	Power Cable from source to distribution board	150 Meters
4	PVC Hose Pipe, 50 mm dia	Approx. 50 Meters
5	Sample Coolers	05 Nos.
6	Mineral wool, of standard dimension 1520 mmx1220 mmx 40 mm thick of density approx.. 100 Kg/cub mtr.	800 Nos
	Instruments (IMTEs) :	
7	Pressure Gauge, 0 - 25 Kg /cm^2	05 nos.
8	Condensing Loop	05 nos.
9	Thermometer, 0 – 100 deg. C	02 nos
10	Peening Type MTM Thermocouples (K type) with pad and compensating cable Up to control room	10 nos
11	Thermocouple (K type), 1500 mm long with compensating cable up to control room	02 nos.
12	Drum gauge glass, range 900 mm long	02 nos.
13	Temporary Drum level indication at Control Room & near pump along with cable from drum floor	02 nos.
14	Safety Appliances	APR
15	Laboratory testing equipment & reagents	APR

*APR- As per requirement assessed by BHEL, Engineer In charge

*Requirement above is tentative and contractor may be required to arrange additional T&P and IMTEs as per requirement given by BHEL Site in charge to complete the process with the quoted rate

Annexure-III

TENTATAIVE SCHEME FOR CITRIC ACID CLEANING



Bharat Heavy Electricals Limited
(A Govt. of India Undertaking)
Power Sector- Northern Region

Rev. 01

BHEL/PSNR/Site..... Dated: _____

MEMO for imposition of penalty against non-compliances in Quality area

The Lapse as tick marked below has been observed in your area and penalty is being imposed as per the details mentioned at the bottom of this memo:-

S. No	Nature of non- compliance	Penalty (in Rs.)	Remarks
1.	Non availability of required no. of Quality Engineers/NDT certified person as per contract	1000	Per Person
Calibration:-			
2.	Use of IMTEs without having valid calibration certificate	1000	Per equipment per instance
3.	Use of NDT equipment, welding equipment's without having valid calibration certificate, condition not as per requirement	1000	Per equipment per instance
Welding & NDT area:-			
4.	Un qualified Welder carrying out weld/ tack weld	1000	Per welder per instance
5.	Not using portable oven	500	Per welder per instance
6.	Not using electrodes pre- baked in master oven/ approved make of electrodes/correct electrodes as per EWS/ WPS	500	Per instance
7.	Non- removal of slag and spatters after welding	200	Per Joint
8.	Not using NDT equipment as prescribed in the manual/contract/guidelines	1000	Per equipment per instance
9.	Welder doing welding without job card	500	Per instance
10.	Discrepancy observed in the RT taken of weld joints vs RT offered	2000	Per joint
Material management:-			
11.	Mismatch of location of material in store area wrt in Stock register	200	Per instance
12.	Non- compliance of preservation of material as per storage & preservation manual	1000	Per equipment
13.	Non verification of material within stipulated time as per contract	500	Per instance
Other Areas:-			
14.	Painting without surface cleaning	500	Per instance
15.	Not attending Quality meeting by the nominated member	1000	Per meeting

Details of non- compliance (Name of Sub contractors, persons, description of deficiency, etc.)

_____

_____

Penalty imposed:-

1, Rate as per above chart_____

2. No. of Persons/ equipment/ instance/ Joint/ welder/meeting. _____

3. Total Penalty= 1. X 2. =_____

Signature

(Witnessed by Sub- Contractor representative)
Name_____

(Witnessed by PSNR Personnel)
Name_____

Distribution: 1. Sub- contractor
2. Head (Quality & Safety)/ BHEL PSNR

Chapter - XI: UNPRICED RATE SCHEDULE

10.0 UNPRICED RATE SCHEDULE

Sl. No.	DESCRIPTION OF WORK	Total Amount for One Unit in INR (IN FIGURES AND WORDS)
1	**Lumpsum price** for carrying out Pre-boiler flushing & Chemical cleaning for Boiler of Unit No. 6 Stage IV at 1X500 MW: Unchahar TPP as per tender specifications.	

NOTES:

1 The contractor has to handle / erect / commission all the items indicated by BHEL for successful completion of chemical cleaning work within the quoted rate.

2 Evaluation of bids shall be done on total amount against this Rate Schedule / BOQ.