

E-TENDER SPECIFICATION

BHE/PW/PUR/KKRN TG PIPING/2507

COLLECTION OF MATERIALS FROM BHEL/CLIENT'S STORES/STORAGE YARD, TRANSPORTATION OF MATERIALS TO SITE, ERECTION, TESTING, COMMISSIONING, APPLICATION OF FINAL PAINTING INCLUDING SUPPLY OF PAINTS & PRIMERS, ERECTION AND COMMISSIONING OF TG PIPINGWITH HANGERS& SUPPORTS, ASSOCIATED VALVES, FITTINGS, INSTRUMENTS ETC. FOR UNIT-4 OF 2X700 MWe NPCIL KAKRAPAR ATOMIC POWER PROJECT AS PER TENDER SPECIFICATIONS

AT

**NPCIL (NUCLEAR POWER CORPORATION OF INDIA)
KAKRAPAR ATOMIC POWER PROJECT
KAKRAPAR, DIST. SURAT, STATE- GUJARAT.**

VOLUME I - TECHNICAL BID

THIS TENDER SPECIFICATION CONSISTS OF:

Notice Inviting Tender	
Volume-IA	Technical Conditions of Contract
Volume-IB	Special conditions of Contract
Volume-IC	General conditions of Contract
Volume-ID	Forms & Procedures
	Additional Drawings
Volume II	Price Bid



Bharat Heavy Electricals Limited
(A Government of India Undertaking)
Power Sector - Western Region
345-Kingsway, Nagpur-440001

CONTENTS		
Volume No	Description	Hosted in website bhel.com (Briefly) and detailed in BHEL e-Procurement Portal as files titled
NIL	Tender Specification Issue Details	(Part of <u>Vol-IA-2507</u>)
NIL	Notice Inviting Tender	(Part of <u>Vol-IA-2507</u>)
I-A	Technical Conditions of Contract	Vol-I-A-2507
I-B	Special Conditions of Contract	Vol-I-BCD-2507
I-C	General Conditions of Contract	(Part of Vol-I-BCD-2507)
I-D	Forms & Procedures	(Part of Vol-I-BCD-2507)
	Additional Drawings	Drawings Part 1 & Part 2
II	Price Bid Specification as specified in E-Procurement Portal	Volume-II-2507

E-TENDER SPECIFICATION

BHE/PW/PUR/KKRN TG PIPING/2507

COLLECTION OF MATERIALS FROM BHEL/CLIENT'S STORES/STORAGE YARD, TRANSPORTATION OF MATERIALS TO SITE, ERECTION, TESTING, COMMISSIONING, APPLICATION OF FINAL PAINTING INCLUDING SUPPLY OF PAINTS & PRIMERS, ERECTION AND COMMISSIONING OF TG PIPINGWITH HANGERS& SUPPORTS, ASSOCIATED VALVES, FITTINGS, INSTRUMENTS ETC. FOR UNIT-4 OF 2X700 MWe NPCIL KAKRAPAR ATOMIC POWER PROJECT AS PER TENDER SPECIFICATIONS

AT

NPCIL (NUCLEAR POWER CORPORATION OF INDIA) KAKRAPAR ATOMIC POWER PROJECT KAKRAPAR, DIST. SURAT, STATE- GUJARAT

EARNEST MONEY DEPOSIT: Refer Notice Inviting Tender

LAST DATE FOR Refer Notice Inviting Tender
TENDER SUBMISSION

THESE TENDER SPECIFICATION DOCUMENTS CONTAINING VOLUME-I AND VOLUME- II ARE ISSUED TO:

M/s.

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PLEASE NOTE:
THESE TENDER SPECS DOCUMENTS ARE NOT TRANSFERABLE.

For Bharat Heavy Electricals Limited

AGM (Purchase)

Place: Nagpur

Date:

2507

NOTICE INVITING TENDER

Bharat Heavy Electricals Limited



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Ref: BHE/PW/PUR/KKRN TG PIPING/2507

Date: 03/11/2021

NOTICE INVITING E-TENDER (NIT)

NOTE: BIDDER MAY DOWNLOAD/ UPLOAD THE TENDER/ OFFER FROM/ON BHEL E-PROCUREMENT PORTAL → <https://eprocurebhel.co.in>

To,

Dear Sir/Madam,

Sub : NOTICE INVITING E-TENDER

Sealed offers in two part bid system (National competitive bidding (NCB) or International Competitive Bidding (ICB) are invited from reputed & experienced bidders (meeting [PRE QUALIFICATION CRITERIA](#) as mentioned in Annexure-1) 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.

1.0 Salient Features of NIT

S No.	ISSUE	DESCRIPTION
i	E-TENDER NUMBER	BHE/PW/PUR/KKRN TG PIPING/2507
ii	Broad Scope of job	<p>COLLECTION OF MATERIALS FROM BHEL/CLIENT'S STORES/STORAGE YARD, TRANSPORTATION OF MATERIALS TO SITE, ERECTION, TESTING, COMMISSIONING, APPLICATION OF FINAL PAINTING INCLUDING SUPPLY OF PAINTS & PRIMERS, ERECTION AND COMMISSIONING OF TG PIPING WITH HANGERS & SUPPORTS, ASSOCIATED VALVES, FITTINGS, INSTRUMENTS ETC. FOR <u>UNIT-4</u> OF 2X700 MWe NPCIL KAKRAPAR ATOMIC POWER PROJECT AS PER TENDER SPECIFICATIONS</p> <p style="text-align: center;">AT</p> <p style="text-align: center;">NPCIL (NUCLEAR POWER CORPORATION OF INDIA) KAKRAPAR ATOMIC POWER PROJECT KAKRAPAR, DIST. SURAT, STATE- GUJARAT</p>
iii	DETAILS OF TENDER DOCUMENT	
A	Volume-IA	<i>Technical Conditions of Contract (TCC) consisting of Scope of work, Technical Specification, Drawings, Procedures, Bill of Quantities, Terms of payment, etc</i> <i>Applicable</i>
B	Volume-IB	<i>Special Conditions of Contract (SCC)</i> <i>Applicable</i>
C	Volume-IC	<i>General Conditions of Contract (GCC)</i> <i>Applicable</i>
D	Volume-ID	<i>Forms and Procedures</i> <i>Applicable</i>
F	Volume-II	<i>Price Bid as specified in E-Procurement Portal</i> <i>Applicable</i>
iv	Issue of Tender Documents	<p>Tender documents will be available for downloading from BHEL website (www.bhel.com) or e-procurement portal (https://eprocurebhel.co.in) as per schedule below:</p> <p>Start :03/11/2021 , Time :17:00</p> <p>Closes : 17/11/2021 , Time : 13:00</p> <p style="text-align: right;"><i>Applicable</i></p>

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S No.	ISSUE	DESCRIPTION	
		Brief information of the tenders shall also be available at central public procurement portal. (https://eprocure.gov.in/epublish/app)	
v	DUE DATE & TIME OF OFFER SUBMISSION	Date: 17/11/2021, Time: 13.00 Hrs • Place: on E-Tender Portal https://eprocurebhel.co.in	Applicable
vi	OPENING OF TENDER (Techno-Commercial Bid)	Date: 17/11/2021, Time: 17.00 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. (2) Bidder may depute representative to witness the opening of tender. For e-Tender, Bidder may witness the opening of tender through e-Procurement portal only.	Applicable
vii	EMD AMOUNT	EMD Waived Important Note: Bidders kindly to take note that EMD (Earnest Money Deposit) shall be furnished by MSE bidders as well, as per the amount and procedure indicated in the NIT/GCC. Please Submit Bid Security Declaration Form (Annexure-13)	Applicable
viii	COST OF TENDER	Free	
ix	LAST DATE FOR SEEKING CLARIFICATION	One day before due date of offer submission. Along with soft version also, addressing to undersigned & to others as per contact address given below: 1) Name: P R Chiwarkar Designation: GM Deptt: Purchase Address: Floor no. 5 & 6, Shree Mohini Complex, 345 Kingsway, Nagpur-440001 Phone: Landline: +91-712-2858-633 Email :prchiwarkar@bhel.in Fax: +91-712-2858600 2) Name: Tapish Kumar Designation: Dy Manager Deptt: Purchase Address: Floor no. 5 & 6, Shree Mohini Complex, 345 Kingsway, Nagpur-440001 Phone: Land Line: +91-712-2858732 Email :tapishkhandelwal@bhel.in Fax: +91-712-2858600	Applicable
x	SCHEDULE OF Pre Bid Discussion (PBD)	---	Not Applicable
xi	INTEGRITY PACT & DETAILS OF	Sh. Arun Chandra Verma, IPS (Retd.) and	Applicable

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S No.	ISSUE	DESCRIPTION
	INDEPENDENT EXTERNAL MONITOR (IEM)	Sh Virendra Bahadur Singh, IPS (Retd.)
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 Corrigendum), Central Public Procurement portal (https://eprocure.gov.in/epublish/app) & on e-tender portal https://eprocurebhel.co.in and not in the newspapers. Bidders to keep themselves updated with all such information.

- 2.0 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, duly signed digitally using Class III DSC & uploaded in E-Procurement Portal, as part of offer. **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.**
- 3.0 Not Used
- 4.0 Unless specifically stated otherwise, bidder shall deposit EMD as per clause 1.9 of General Conditions of Contract.

For Electronic Fund Transfer the details are as below:-

NAME OF THE BENEFICIARY	BHARAT HEAVY ELECTRICALS LTD
ADDRESS OF THE COMPANY	5 th Floor, SHREE MOHINI COMPLEX 345, KINGSWAY, NAGPUR
NAME OF BANK	STATE BANK OF INDIA
NAME OF BANK BRANCH AND BRANCH CODE	SBI, NAGPUR MAIN BRANCH , CODE-00432
CITY	NAGPUR
ACCOUNT NUMBER	40227423158
ACCOUNT TYPE	MC-C C Clean (C&I)
IFSC CODE OF THE BENEFICIARY BANK BRANCH	SBIN0000432
MICR CODE OF THE BANK BRANCH	440002002

(Note -: In case of E-Tenders, proof of remittance of EMD should be uploaded in the E-Procurement Portal and originals, as applicable, shall be sent to the officer inviting tender within a reasonable time, failing which the offer is liable to be rejected.

5.0 Procedure for Submission of Tenders:

This is an E-tender floated online through our E-Procurement Site (<https://eprocurebhel.co.in>). The bidder should respond by submitting their offer online only in our e-Procurement platform at (<https://eprocurebhel.co.in>). Offers are invited in two-parts only.

Documents Comprising the e-Tender

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

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a. Technical Tender (UN priced Tender)

All Technical details (e.g. 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. Earnest Money Deposit (EMD) furnished in accordance with NIT Clause 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.

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).

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:-

NIC PORTAL (<https://eprocurebhel.co.in>)

For E-PROCUREMENT ASSISTANCE & TRAINING, NIC PORTAL HELPDESK CONTACTS AS PER FOLLOWING:

For any technical related queries, please call at 24 x 7 Help Desk Number

0120-4001 002

0120-4200 462

0120-4001 005

0120-6277 787

1. Peter Raj, NIC, Ph: 9942069052

Email Support: support-eproc@nic.in

Other details/update yourself from : <https://eprocurebhel.co.in>

The process of utilizing e-procurement necessitates usage of **DSC (Digital Signature Certificate)**

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(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.

The contact details of the DSC certifying authority:-
please refer <http://www.mca.gov.in/> → MCA SERVICES → DSC SERVICES

Vendors are requested to go through seller manual available on <https://eprocurebhel.co.in>.

Procedure for Submission of Tenders (To be used in case of Paper bid only): The Tenderers must submit their Tenders to Officer inviting Tender, as detailed below:

- ~~PART I consisting of 'PART I A (Techno Commercial Bid)' & 'PART I B (EMD)' in two separate sealed and superscribed envelopes (ENVELOPE-I & ENVELOPE-II)~~
- ~~PART II (Price Bid) in sealed and superscribed envelope (ENVELOPE-III)~~
- ~~One set of tender documents shall be retained by the bidder for their reference~~

6.0 The contents for ENVELOPES and the superscription for each sealed cover/Envelope are as given below. **(All pages to be signed and stamped) (To be used in case of Paper bid only):**

Sl.no.	Description	Remarks
	Part-I A	
	<u>ENVELOPE – I superscribed as:-</u> PART I (TECHNO COMMERCIAL BID) TENDER NO:- NAME OF WORK:- PROJECT:- DUE DATE OF SUBMISSION:- <u>CONTAINING THE FOLLOWING:-</u>	
i.——	Covering letter/Offer forwarding letter of Tenderer.	
ii.——	Duly filled in 'No Deviation Certificate' as per prescribed format to be placed after document under sl no (i) above. <u>Note:</u> a. In case of any deviation, the same should be submitted separately for technical & commercial parts, indicating respective clauses of tender against which deviation is taken by bidder. The list of such deviation shall be placed after document under sl no (i) above. It shall be specifically noted that deviation recorded elsewhere shall not be entertained. b. BHEL reserves the right to accept/reject the deviations without assigning any reasons, and BHEL decision is final and binding. i). In case of acceptance of the deviations, appropriate loading shall be done by BHEL ii). In case of unacceptable deviations, BHEL reserves the right to reject the tender	
iii.——	Supporting documents/ annexure/ schedules/ drawing etc. as required in line with Pre-Qualification criteria. It shall be specifically noted that all documents as per above shall be indexed properly and credential certificates issued by clients shall distinctly bear the name of organization, contact ph. no, FAX no, etc.	
iv.——	All	

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	Amendments/Correspondences/Corrigenda/Clarifications/Changes/Errata etc. pertinent to this NIT.	
v.——	Integrity Pact Agreement (Duly signed by the authorized signatory)	If applicable
vi.——	Duly filled in annexures, formats etc. as required under this Tender Specification/NIT	
vii.——	Notice inviting Tender (NIT)	
viii.——	Volume — I A : <u>Technical</u> Conditions of Contract (TCC) consisting of Scope of work, Technical Specification, Drawings, Procedures, Bill of Quantities, Terms of payment, etc.	
ix.——	Volume — I B : Special Conditions of Contract (SCC)	
x.——	Volume — I C : General Conditions of Contract (GCC)	
xi.——	Volume — I D : Forms & Procedures	
xii.——	Volume — II (UNPRICED — without disclosing rates/price, but mentioning only 'QUOTED' or 'UNQUOTED' against each item	
xiii.——	Any other details preferred by bidder with proper indexing.	

	PART-I-B	
	<u>ENVELOPE — II superscribed as:</u> PART-I (EMD) TENDER NO: NAME OF WORK: PROJECT: DUE DATE OF SUBMISSION: <u>CONTAINING THE FOLLOWING:-</u>	
	Earnest Money Deposit (EMD) in the form as indicated in this Tender	

	PART-II	
	<u>PRICE BID</u> consisting of the following shall be enclosed	
	<u>ENVELOPE-III</u> superscribed as: PART - II (PRICE BID) TENDER NO: NAME OF WORK: PROJECT: DUE DATE OF SUBMISSION: <u>CONTAINING THE FOLLOWING</u>	
i	Covering letter/Offer forwarding letter of Tenderer enclosed in Part-I	
ii	Volume II — PRICE BID (Duly Filled in Schedule of Rates — rate/price to be entered in words as well as figures)	

	OUTER COVER	
	<u>ENVELOPE-IV</u> (MAIN ENVELOPE / OUTER ENVELOPE) superscribed as: TECHNO-COMMERCIAL BID, PRICE BID & EMD TENDER NO: NAME OF WORK: PROJECT: DUE DATE OF SUBMISSION:	

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	CONTAINING THE FOLLOWING:	
i	<ul style="list-style-type: none">○ Envelopes I○ Envelopes II○ Envelopes III	

- **SPECIAL NOTE: All documents/ annexures to be submitted should be uploaded in respective places in the E-Tender portal as per the list mentioned given in this NIT. BHEL shall not be responsible for any in-complete documents.**

7.0 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.

8.0 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).

9.0 **Assessment of Capacity of Bidders:**
Bidder's 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 cut off month for reckoning 'Load' shall be the 3rd Month preceding the month corresponding to the 'latest date of bid submission', in the following manner -
(Note: For example, if latest bid submission is in Jan 2017, then the 'load' shall be calculated up to and inclusive of Oct 2016)

Total number of Packages in hand = Load (P)

Where 'P' is the sum of all unit wise identified packages (refer table-1) under execution with BHEL Regions as on the cut off month defined above, including packages yet to be commenced, excepting packages which are on Long Hold.

- II. **PERFORMANCE:** Here 'Monthly Performance' of the bidder for all the packages (under execution/ executed during the 'Period of Assessment' in all 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 and including the cut off month. The cut off month for reckoning 'Period of Assessment' shall be the 3rd Month preceding the month corresponding to 'latest date of bid submission', in the following manner:

(Note: For example, if 'latest date of bid submission' is in Jan 2017, then the 'performance' shall be assessed for a 6 months' period up to and inclusive of Oct 2016 (i.e. from May 2016 to Oct 2016), 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) P₁, P₂, P₃, P₄, P₅, P_N etc. be the packages (under execution/ executed during the 'Period of Assessment' in all Regions of BHEL) **SIMILAR** to the packages covered under the

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tendered scope, excepting packages not commenced. Total number of similar packages for all Regions = P_T (i.e. $P_T = P_1 + P_2 + P_3 + P_4 + \dots P_N$)

- 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 ' T_T ' for total similar Packages ' P_T ' for all Regions (i.e. $T_T = T_1 + T_2 + T_3 + T_4 + \dots T_N$)
- c) Sum ' S_1 ' of 'Monthly Performance Evaluation' Scores ($S_{1-1}, S_{1-2}, S_{1-3}, S_{1-4}, S_{1-5} \dots S_{1-T1}$) for similar package P_1 , for the 'period of assessment' ' T_1 ' (i.e. $S_1 = S_{1-1} + S_{1-2} + S_{1-3} + S_{1-4} + S_{1-5} + \dots S_{1-T1}$). 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 ' P_T ' for all Regions (i.e. ' $S_T = S_1 + S_2 + S_3 + S_4 + S_5 + \dots S_N$ ')
- d) **Overall Performance Rating ' R_{BHEL} ' for the Similar Package/Packages** (under execution/ executed during the 'Period of Assessment') in all the Power Sector Regions of BHEL

Aggregate of Performance scores for all similar packages in all the Regions

= -----

Aggregate of months for each of the similar packages 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 = P_T i.e. 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 the 'period of assessment' for corresponding Similar Packages (as in row 1)	T_1	T_2	T_3	T_4	T_5	...	T_N	Sum (Σ) of columns (iii) to (ix) = T_T

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Sl. No.	Item Description	Details for all Regions							Total
(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)	(x)
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) = S _T

- ii). Calculation of Overall 'Performance Rating' (R_{BHEL}) in case at least 6 evaluation scores for '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:

- 'Period of Assessment' i.e. 6 months preceding and including the cut-off month
- 12 months preceding and including the cut-off month
- 24 months preceding and including 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:

- 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
- For $R_{BHEL} = 60$, $P_{Max} = '1'$
- For $R_{BHEL} \geq 80$, there will be no upper limit on P_{Max}

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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 'I' above)

IV. Explanatory note:

i). Similar package means Boiler or ESP or Piping or Turbine or Civil or Structure or Electrical or C&I 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, C&I, 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 (i.e. Boiler, ESP and Power Cycle Piping) and finally the Bidder's capacity to execute the tendered scope is assessed in line with III above.

ii). Identified Packages (Unit wise)

Table-1

Civil	Electrical and C&I	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). C&I iii). Others (Elect. and C&I)	i). Boiler & Aux (All types including CW Piping if applicable) ii). Power Cycle Piping/Critical Piping iii). ESP iv). LP Piping 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 Management x). FGD xi). ACC xii). Others (Mechanical)

iii). Bidders who have not been evaluated for at least six package months in the last 24 months preceding and including the Cut-off month in the online BHEL system for contractor performance evaluation in BHEL PS Regions, 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 from BHEL.

The "FIRST TIMER" tag shall remain till completion of all the contracts against which vendor has been tagged as First Timer or availability of 6 evaluation scores within last 24 months preceding and including the Cut-off month in the online BHEL system for contractor performance evaluation in BHEL PS Regions.

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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 'Assessment of Capacity of Bidders'.

- iv). Consequent upon applying the criteria of 'Assessment of Capacity of Bidders' detailed above on all the bidders qualified against Technical and Financial Qualification criteria, if the number of qualified bidders reduces to less than minimum no. of bidders required for conducting RA as per extant RA Guidelines, then for further processing of the Tender, BHEL at its discretion reserves the right to also consider the bidders who are "not qualified" as per criteria of 'Assessment of Capacity of Bidders' and for this, procedure described in following three options shall be followed:
- a) All the bidders having Overall Performance Rating (' R_{BHEL} ') ≥ 60 shall be considered qualified against criteria of 'Assessment of Capacity of Bidders'.
 - b) If even after using option "a", the number of qualified bidders remains less than minimum no. of bidders required for conducting RA as per extant RA Guidelines, then in addition to bidders considered as per option "a", "First timer" bidders having average of available performance scores ≥ 60 upto and including the Cut Off month shall also be considered qualified against criteria of 'Assessment of Capacity of Bidders'.
 - c) If even after using option "a" and "b", the number of qualified bidders remains less than minimum no. of bidders required for conducting RA as per extant RA Guidelines, then in addition to bidders considered as per option "a" and "b", "First timer" bidders for whom no performance score is available in the system upto and including the Cut Off month, shall also be considered qualified against criteria of 'Assessment of Capacity of Bidders'.

Note:- In case, the number of bidders qualified against Technical and Financial Qualification criteria itself is less than minimum no. of bidders required for conducting RA as per extant RA Guidelines, then all bidders (a)- having Overall Performance Rating (' R_{BHEL} ') ≥ 60 , (b)- First timer" bidders having average of available performance scores ≥ 60 upto and including the Cut Off month, (c)- "First timer" bidders for whom no performance score is available in the system upto and including the Cut Off month, shall be considered qualified against criteria of 'Assessment of Capacity of Bidders' for further processing of tender.

- v). 'Under execution' shall mean works in progress as per the following:
- a. Up to execution of 90% of anticipated Contract Value in case of Civil, MM, Structural and Turbo Blower Packages
 - b. Up to Steam Blowing in case of Boiler/ESP/Piping Packages
 - c. Up to Synchronization in all Balance Packages

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

- vi). Contractor shall provide the latest contact details i.e. mail-ID and Correspondence Address to SCT Department, so that same can be entered in the Contractor Performance Evaluation System, and in case of any change/discrepancy same shall be informed immediately. Login Details for viewing scores in Contractor Performance Evaluation System shall be provided to the Contractor by SCT Department.
- vii). Performance Evaluation for Activity Month shall be completed in Evaluation Month (i.e. month next to Activity Month) or in rare cases in Post Evaluation Month (i.e. month next to

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Evaluation Month) after approval from Competent Authority. In case scores are not acceptable, Contractor can submit Review Request to GM Site/ GM Project latest by 27th of Evaluation Month or 5 days after approval of score, whichever is later. However, acceptance/rejection of 'Review Request' solely depends on the discretion of GM Site/GM Project. After acceptance of Review Request, evaluation score shall be reviewed at site and the score after completion of review process shall be acceptable and binding on the contractor.

viii). Project on Hold due to reasons not attributable to bidder -

- a. **Short hold:** Evaluation shall not be applicable for this period, however Loading will be considered.
- b. **Long hold:** Short hold for continuous six months and beyond or hold on account of Force Majeure shall be considered as Long Hold. Evaluation as well as Loading shall not be considered for this period.

ix). Performance evaluation as specified above in this clause is applicable to Prime bidder and Consortium partner (or Technical tie up partner) for their respective scope of work.

- 10.0 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.
- 11.0 For any clarification on the tender document, the bidder may seek the same in writing or through e-mail and/or through 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.
- 12.0 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.
- 13.0 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.
- 14.0 Unless specifically mentioned otherwise, bidder's quoted price shall deemed to be in compliance with tender including PBD.
- 15.0 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) above.**

"Integrity Pact (IP)"

- (a) 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. Following Independent

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External Monitors (IEMs) on the present panel have been appointed by BHEL with the approval of CVC to oversee implementation of IP in BHEL.

Sl. No.	IEM	Email
1.	Shri Arun Chandra Verma, IPS (Retd.)	acverma1@gmail.com
2.	Shri Virendra Bahadur Singh, IPS (Retd.)	vbsinghips@gmail.com

(b) T

he IP as enclosed with the tender is to be submitted (duly signed by authorized signatory) along with techno-commercial bid (Part-I, in case of two/ three part 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.

(c) Please refer Section-8 of IP for Role and Responsibilities of IEMs. In case of any complaint arising out of the tendering process, the matter may be referred to any of the above IEM(s). All correspondence with the IEMs shall be done through email only.

Note:

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's officials whose contact details are provided below:

Details of contact person(s):

Name: (1) P R Chiwarkar/ GM (Purchase) 2) Tapish kumar / Dy Manager (Purchase)
Dept.: Purchase Department
Address: Floor No. 5 & 6, Shreemohini Complex, 345 Kingsway, Nagpur-440001
Phone: (LL/ Mobile) (1) 0712-2858633 0712-2858732
Email: prchiwarkar@bhel.in tapishkhandelwal@bhel.in
Fax: 0712-2858699

16.0 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.

17.0 In case BHEL decides on a 'Public Opening', the date & time of opening of the sealed PRICE BID shall be intimated to the qualified bidders and in such a case, bidder may depute one authorized representative to witness the price bid opening. BHEL reserves the right to open 'in-camera' the 'PRICE BID' of any or all Unsuccessful/Disqualified bidders under intimation to the respective bidders.

18.0 Validity of the offer shall be for **six months** from the latest due date of offer submission (including extension, if any) unless specified otherwise.

19.0 **Reverse Auction:** Applicable. "BHEL shall be resorting to Reverse Auction (RA) (Guidelines as available on www.bhel.com on "supplier registration page".) for this tender. RA shall be conducted among all the techno-commercially qualified bidders.

Price Bids of all the techno-commercially qualified bidders shall be opened and same shall be considered as initial bids of bidders in RA. In case any bidder(s) do(es) not participate in online

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Reverse Auction, their sealed envelope price bid along with applicable loading, if any, shall be considered for ranking.

- 20.0 On submission of offer, further consideration will be subject to compliance to tender & qualifying requirement and customer's acceptance, as applicable.
- 21.0 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.
- 22.0 The bidders shall not enter into any undisclosed M.O.U. or any understanding amongst themselves with respect to tender.
- 23.0 ~~Consortium Bidding (or Technical Tie up) shall be allowed only if specified in Pre-Qualifying Requirement (PQR) criteria, and in such a case the following shall be complied with:~~
- ~~23.1 Prime Bidder and Consortium Partner or partners are required to enter into a consortium agreement for the said contract with a validity period of six months initially. In case bidder becomes L1, Consortium Agreement valid till contractual completion period shall be submitted to BHEL before signing the contract. Consortium Agreement shall be kept valid till scope of work awarded to consortium partner(s) as per contract is completed.~~
- ~~23.2 'Standalone' bidder cannot become a '**Prime Bidder**' or a '**Consortium bidder**' or '**Technical Tie up bidder**' in a consortium (or Technical Tie up) bidding. Prime bidder shall neither be a consortium partner to other prime bidder nor take any other consortium partners. However, consortium partner may enter into consortium agreement with other prime bidders. In case of non-compliance, consortium bids of such Prime bidders will be rejected.~~
- ~~23.3 Number of partners for a Consortium Bidding (or Technical Tie up) including Prime Bidder shall be NOT more than 3 (three).~~
- ~~23.4 Prime Bidder shall be as specified in the Pre-Qualification Requirement, else the bidder who has the major share of work.~~
- ~~23.5 In order to be qualified for the tender, Prime Bidder and Consortium partner or partners shall satisfy (i) the Technical 'Pre Qualifying Requirements' specified for the respective package, (ii) "Assessment of Capacity of Bidder" as specified in clause 9.0.~~
- ~~23.6 Prime Bidder shall comply with additional 'Technical' criteria of PQR as defined in 'Explanatory Notes for the PQR'.~~
- ~~23.7 Prime Bidder shall comply with all other Pre Qualifying criteria for the Tender unless otherwise specified~~
- ~~23.8 In case customer approval is required, then Prime Bidder and Consortium Partner or partners shall have to be individually approved by Customer for being considered for the tender.~~
- ~~23.9 Prime Bidder shall be responsible for the overall execution of the contract.~~
- ~~23.10 In case of award of job, Performance shall be evaluated for Prime Bidder and Consortium Partner or partners for their respective scope of work(s) as per prescribed formats.~~

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~~23.11 In case the Consortium partner or partners back out, their SDs shall be encashed by BHEL and BHEL shall take necessary action as per extant guidelines. In such a case, other consortium partner or partners meeting the PQR have to be engaged by the Prime Bidder, and if not, the respective work will be withdrawn and executed on risk and cost basis of the Prime Bidder. The new consortium partner or partners shall submit fresh SDs as applicable.~~

~~23.12 In case Prime Bidder withdraws or insolvency / liquidation / winding up proceedings have been initiated / admitted against the Prime Bidder, BHEL reserves the right to cancel, terminate or short close the contract or take any other action to safeguard BHEL's interest in the Project / Contract. This action will be without prejudice to any other action that BHEL can take under Law and the Contract to safeguard interests of BHEL.~~

~~23.13 After execution of work, the work experience shall be assigned to the Prime Bidder and the consortium partner or partners for their respective scope of work. After successful execution of one work with a consortium partner under direct order of BHEL, the Prime Bidder shall be eligible for becoming a 'standalone' bidder for works similar to that for which consortium partner was engaged, for subsequent tenders.~~

~~23.14 The consortium partner shall submit SD equivalent to 1% of the total contract value in addition to the SD to be submitted by the Prime Bidder for the total contract value. In case there are two consortium partners, then each partner shall submit SD equivalent to 0.5% of the total contract value in addition to the SD to be submitted by the Prime Bidder for the total contract value. However, Prime Bidder has also option for submission of SD on behalf of consortium partner (s).~~

~~SD submitted by Consortium Partner(s) may be released in case corresponding scope of work of the respective Consortium partner(s) has been completed upto the extent of 80% based on certification by Construction Manager and concurrence by the prime bidder.~~

~~23.15 In case of a Technical Tie up, all the clauses applicable for the Consortium partner shall be applicable for the Technical Tie up partner also.~~

24.0 The bidder shall submit/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.

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

26.0 The consultant / firm (and any of its affiliates) shall not be eligible to participate in tender(s) for the related works or services for the same project, if they were engaged for the consultancy services.

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

28.0 The offers of the bidders who are on the banned/ hold list and 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.

28.1 Integrity commitment, performance of the contract and punitive action thereof:

28.1.1 **Commitment by BHEL:**

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BHEL commits to take all measures necessary to prevent corruption in connection with the tender Process and execution of the contract. BHEL will during the tender process treat all Bidder(s) in a transparent and fair manner, and with equity.

28.1.2 Commitment by Bidder/ Supplier/ Contractor:

- (i) The bidder/ supplier/ contractor commit to take all measures to prevent corruption and will not directly or indirectly influence any decision or benefit which he is not legally entitled to nor will act or omit in any manner which tantamount to an offence punishable under any provision of the Indian Penal Code, 1860 or any other law in force in India.
- (ii) The bidder/ supplier/ contractor will, when presenting his bid, disclose any and all payments he has made, and is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract and shall adhere to relevant guidelines issued from time to time by Govt. of India/ BHEL.
- (iii) The bidder/ supplier/ contractor will perform/ execute the contract as per the contract terms & conditions and will not default without any reasonable cause, which causes loss of business/ money/ reputation, to BHEL.

If any bidder/ supplier/ contractor during pre-tendering/ tendering/ post tendering/ award/ execution/ post-execution stage indulges in mal-practices, cheating, bribery, fraud or and other misconduct or formation of cartel so as to influence the bidding process or influence the prices or acts or omits in any manner which tantamount to an offence punishable under any provision of the Indian Penal Code, 1860 or any other law in force in India, then, action may be taken against such bidder/ supplier/ contractor as per extent guidelines of the company available on www.bhel.com and / or under applicable legal provisions.

29.0 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	Women-owned	Others (excluding SC/ ST & Women)
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.~~

~~a) MSE suppliers can avail the intended benefits in respect of the procurements related to the Goods and Services only (Definition of Goods and Services as enumerated by Govt. of India vide Office Memorandum F. No. 21(8)/2011-MA dtd. 09/11/2016 office of AS & DC, MSME) only if they submit along with the offer, attested copies of either Udyam Registration Certificate or EM-II certificate having deemed validity (five years from the date of issue of acknowledgement in EM-II) or valid NSIC certificate or Udyog Aadhar Memorandum (UAM) & Acknowledgement 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 (latest audited). Date to be reckoned for determining the deemed validity will be the last date of Technical Bid submission. 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 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. Documents submitted by the bidder may be verified by BHEL for rendering the applicable benefits.~~

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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 PREFERENCE TO MAKE IN INDIA:

For this procurement, the local content to categorize a supplier as a Class I local supplier/ Class II local Supplier/Non-Local Supplier and purchase preferences to Class I local supplier, is as defined I Public Procurement (Preference to Make in India), Order 2017 dated 04.06.2020 issued by DPIIT. In case of subsequent orders issued by the nodal ministry, changing the definition of local content for the items of the NIT, the same shall be applicable even if issued after issue of this NIT, but before opening of Part-II bids against this NIT.

31.1 Compliance to Restrictions under Rule 144 (xi) of GFR 2017

- I. Any bidder from a country which shares a land border with India will be eligible to bid in this tender only if the bidder is registered with the Competent Authority. The Competent Authority for the purpose of this Clause shall be the Registration Committee constituted by the Department for Promotion of Industry and Internal Trade (DPIIT).
- II. "Bidder" (including the term 'tenderer', 'consultant' or 'service provider' in certain contexts) means any person or firm or company, including any member of a consortium or joint venture (that is an association of several persons, or firms or companies), every artificial juridical person not falling in any of the descriptions of bidders stated hereinbefore, including any agency branch or office controlled by such person, participating in a procurement process.
- III. "Bidder from a country which shares a land border with India" for the purpose of this Clause means: -
 - a. An entity incorporated established or registered in such a country; or
 - b. A subsidiary of an entity incorporated established or registered in such a country; or
 - c. An entity substantially controlled through entities incorporated, established or registered in such a country; or
 - d. An entity whose beneficial owner is situated in such a country; or
 - e. An Indian (or other) agent of such an entity; or
 - f. A natural person who is a citizen of such a country; or
 - g. A consortium or joint venture where any member of the consortium or joint venture falls under any of the above
- IV. The beneficial owner for the purpose of (III) above will be as under:
 1. In case of a company or Limited Liability Partnership, the beneficial owner is the natural person(s), who, whether acting alone or together or through one or more juridical person, has a controlling ownership interest or who exercises control through other means.

Explanation

- a. "Controlling ownership interest" means ownership of or entitlement to more than twenty-five per cent of shares or capital or profits of the company.
- b. "Control" shall include the right to appoint majority of the directors or to control the management or policy decisions

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including by virtue of their shareholding or management rights or shareholders agreements or voting agreements.

- 2. In case of a partnership firm, the beneficial owner is the natural person(s) who, whether acting alone or together, or through one or more juridical person, has ownership of entitlement to more than fifteen percent of capital or profits of the partnership.*
 - 3. In case of an unincorporated association or body of individuals, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person has ownership of or entitlement to more than fifteen percent of the property or capital or profits of the such association or body of individuals.*
 - 4. Where no natural person is identified under (1) or (2) or (3) above, the beneficial owner is the relevant natural person who holds the position of senior managing official;*
 - 5. In case of a trust, the identification of beneficial owner(s) shall include identification of the author of the trust, the trustee, the beneficiaries with fifteen percent or more interest in the trust and any other natural person exercising ultimate effective control over the trust through a chain of control or ownership.*
- V. An Agent is a person employed to do any act for another, or to represent another in dealings with third person.*
- VI. The successful bidder shall not be allowed to sub-contract works to any contractor from a country which shares a land border with India unless such contractor is registered with the Competent Authority.*

Note:

- (i) The bidder shall provide undertaking for their compliance to this Clause, in the Format provided in Annexure-11.*
- (ii) Registration of the bidder with Competent Authority should be valid at the time of submission as well as acceptance of the bids.*

32.0 Bid should be free from correction, overwriting, using corrective fluid, etc. Any interlineation, cutting, erasure or overwriting shall be valid only if they are attested under full signature(s) of person(s) signing the bid else bid shall be liable for rejection.

All overwriting/cutting, etc., will be numbered by bid opening officials and announced during bid opening.

33.0 In the course of evaluation, if more than one bidder happens to occupy L-1 status, effective L-1 will be decided by soliciting discounts from the respective L-1 bidders.

In case more than one bidder happens to occupy the L-1 status even after soliciting discounts, the L-1 bidder shall be decided by a toss/ draw of lots, in the presence of the respective L-1 bidder(s) or their representative(s).

Ranking will be done accordingly. BHEL's decision in such situations shall be final and binding.

34.0 The Bidder declares that they will not enter into any illegal or undisclosed agreement or understanding, whether formal or informal with other Bidder(s). This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process.

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In case, the Bidder is found having indulged in above activities, suitable action shall be taken by BHEL as per extant policies/ guidelines.

35.0 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

It may please be noted that guidelines/ circulars/ amendments/ govt. directives issued from time to time shall also be applicable.

For BHARAT HEAVY ELECTRICALS LTD

(Addl. General Manager - Purchase)

Enclosure:

01. Annexure-1: Pre Qualifying Requirements.
02. Annexure-2: Check List.
- ~~03. Annexure-3: Certificate by Chartered Accountant~~
04. Annexure-4: Reverse Auction Process Compliance Form
05. Annexure-5: Authorization of representative who will participate in the online Reverse Auction Process
06. Annexure-6: RA Price Confirmation and Breakup
07. Annexure-7: Integrity Pact
08. Annexure-8: Undertaking as per PQR C4 of Annexure-1 i.e. PQR
09. Annexure-9: Declaration reg. Related Firms & their areas of Activities
010. Annexure-10: DECLARATION REGARDING MINIMUM LOCAL CONTENT IN LINE WITH REVISED PUBLIC PROCUREMENT (PREFERENCE TO MAKE IN INDIA), ORDER 2017 DATED 04TH JUNE, 2020 AND SUBSEQUENT ORDER(S)
011. Annexure 11: DECLARATION REGARDING COMPLIANCE TO RESTRICTIONS UNDER RULE 144 (xi) OF GFR 2017
012. Annexure 12: Important information
013. Annexure-13: Bid Security Declaration Form

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ANNEXURE - 1

PRE QUALIFYING CRITERIA

JOB	COLLECTION OF MATERIALS FROM BHEL/CLIENT'S STORES/STORAGE YARD, TRANSPORTATION OF MATERIALS TO SITE, ERECTION, TESTING, COMMISSIONING, APPLICATION OF FINAL PAINTING INCLUDING SUPPLY OF PAINTS & PRIMERS, ERECTION AND COMMISSIONING OF TG PIPINGWITH HANGERS& SUPPORTS, ASSOCIATED VALVES, FITTINGS, INSTRUMENTS ETC. FOR <u>UNIT-4</u> OF 2X700 MWe NPCIL KAKRAPAR ATOMIC POWER PROJECT AS PER TENDER SPECIFICATIONS		
	AT		
	NPCIL (NUCLEAR POWER CORPORATION OF INDIA) KAKRAPAR ATOMIC POWER PROJECT KAKRAPAR, DIST. SURAT, STATE- GUJARAT		
TENDER NO	BHE/PW/PUR/KKRN TG PIPING/2507		
SL NO	PRE QUALIFICATION CRITERIA	Bidders claim in respect of fulfilling the PQR Criteria	
		Applicability	
A	Submission of Integrity Pact duly signed (if applicable) (Note: To be submitted by Prime Bidder & Consortium /Technical Tie-up partner jointly in case Consortium bidding is permitted, otherwise by the sole bidder)	APPLICABLE	
B	<u>Technical PQR</u> B.1) Not Applicable B.2.1) Executed Boiler*/ Power Cycle Piping of > 100 MW TPP. Or B.2.2) Executed STG for at least one Unit > 190 MW. Or B.2.3) Executed at least 60 MT of “LP Piping work/ Critical piping work /Power-Cycle piping work /any combination of these” and at least 15 MT of Power-Cycle piping work as per tender scope in Power/Industrial Project. Note: *Consisting of Pressure Parts/ Power Cycle Piping	APPLICABLE	
C.1	<u>FINANCIAL TURNOVER:</u> Bidders must have achieved an average annual financial turnover (audited) of Rs 68.40 Lakh or more over last three Financial Years (FY) i.e. ‘2018-19 , 2019-20 & 2020-2021’.	APPLICABLE	
C.2	<u>NETWORTH</u> (only in case of Companies) Net worth of the Bidder based on the latest Audited Accounts as furnished for ‘C-1’ above should be positive.	APPLICABLE	
C.3	<u>PROFIT</u> Bidder must have earned profit in any one of the three Financial Years as applicable in the last three Financial Years as furnished for ‘C-1’ above.	APPLICABLE	

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C-4	Bidder must not be under Bankruptcy Code Proceedings (IBC) by NCLT or under Liquidation / BIFR, which will render him ineligible for participation in this tender, and shall submit undertaking (Annexure-8) to this effect.	APPLICABLE	
D	Assessment of Capacity of Bidder: The "Assessment of Capacity of Bidders" for this Tender shall be carried out by considering the identified similar packages as " Civil Works including Foundations ".	NOT APPLICABLE	
E	Approval of Customer (if applicable) Note: Names of bidders (including consortium/Technical Tie up partners in case consortium bidding is permitted) who stand qualified after compliance of criteria A to D shall be forwarded to customer for their approval	APPLICABLE	
F	Price Bid Opening Note: Price Bids of only those bidders shall be opened who stand qualified after compliance of criteria A to E		BY BHEL
G	Consortium tie-ups	NOT APPLICABLE	
<p><u>Explanatory Notes for the PQR (unless otherwise specified in the PQR):</u></p> <p><u>Explanatory Notes for PQR B.1 (Technical)</u></p> <ul style="list-style-type: none"> For the criteria (B.1), actual executed value shall be considered. Value of work is to be updated with indices for "All India Avg. Consumer Price index for industrial workers" and "Monthly Whole Sale Price Index for All Commodities" with base month as per last month of work execution and indexed up to three (3) months prior to the month of latest due date of bid submission as per following formula- $P = R + 0.425 \times R \times \frac{(X_N - X_0)}{X_0} + 0.425 \times R \times \frac{(Y_N - Y_0)}{Y_0}$ <p>Where P = Updated value of work R = Value of executed work X_N = All India Avg. Consumer Price index for industrial workers for three months prior to the month of latest due date of bid submission (e.g. If latest bid submission date is 02-Mar-17, then bid submission month shall be reckoned as March'17 and index for Dec'2016 shall be considered). X₀ = All India Avg. Consumer Price index for industrial workers for last month of work execution Y_N = Monthly Whole Sale Price Index for All Commodities for three months prior to the month of latest due date of bid submission (e.g. If latest bid submission date is 02-Mar-17, then bid submission month shall be reckoned as March'17 and index for Dec'2016 shall be considered). Y₀ = Monthly Whole Sale Price Index for All Commodities for last month of work execution</p> <ul style="list-style-type: none"> The evaluation currency for this tender shall be INR. <p><u>Explanatory Notes for Technical Criteria (B2):</u></p> <ol style="list-style-type: none"> VOID Unless otherwise specified, for the purpose of "B2 Technical Criteria", the word 'EXECUTED' means achievement of milestones as defined below - <ol style="list-style-type: none"> "ACHIEVEMENT OF PHYSICAL QUANTITIES" as per PQRs. "READINESS FOR COAL FILLING" of at least one Bunker, in respect of Mill Bunker Structure. "CHARGING" in respect of Power Transformers/ Bus Ducts/ "HT/LT Switchgears" / "HT/LT Cabling". 			

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- d. For C&I works: "SYNCHRONISATION" in case of power project / "WORK EXECUTION of the value as defined in PQR" in case of industry.
 - e. "BOILER LIGHT UP" in respect of Boiler / CFBC / ESP.
 - f. "CHARGING OF ATLEAST ONE PASS" in respect of ESP(R&M)
 - g. "GAS IN" in respect of HRSG.
 - h. "STEAM BLOWING" in respect of Power Cycle Piping.
 - i. "HYDRAULIC TEST"/ ANY OTHER EQUIVALENT TEST LIKE "100% RT/UT OF WELDED JOINTS" of the system in respect of Pressure parts/ LP Piping/CW Piping.
 - j. "FULL LOAD OPERATION OF THE UNIT" in respect of Insulation work.
 - k. "SYNCHRONISATION" in respect of STG / GTG.
 - l. "SPINNING" in respect of HTG.
 - m. "GAS IN" in respect of FGD
3. Boiler means HRSG or WHRB or any other types of Steam Generator.
 4. Power Cycle piping means Main Steam, Hot Reheat, Cold Reheat, HP Bypass.
 5. For the purpose of evaluation of the PQR, one MW shall be considered equivalent to 3.5 TPH where ever rating of HRSG/BOILER is mentioned in MW. Similarly, where ever rating of Gas Turbine is mentioned in terms of Frame size, ISO rating of the same in terms of MW shall be considered for evaluation.

Explanatory Notes for PQR -C (Financial):

C-1:

- i. Bidder to submit Audited Balance Sheet and Profit and Loss Account for the respective years as indicated against C-1 above.
- ii. Evaluation of Turnover criteria shall be calculated from the Audited Balance Sheet and Profit & Loss Account for the three Financial Years (FY).
- iii. In case audited Financial statements have not been submitted for all the three years as indicated against C-1 above, then the applicable audited statements submitted by the bidders against the requisite three years, will be averaged for three years.
- iv. If financial statements are not required to be audited statutorily, then instead of audited financial statements, financial statements are required to be certified by Chartered Accountant.

C-2: 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

C-3: Bidder must have earned profit in any one of the three financial years as applicable in the last three financial years as furnished for 'C-1' above.

Note: PROFIT shall be PBT earned during any one year of last three financial years as in 'C-1' above.

C-4: Bidder must not be under Bankruptcy Code Proceedings (IBC) by NCLT or under Liquidation / BIFR, which will render him ineligible for participation in this tender, and shall submit undertaking to this effect.

Common Explanatory Notes:

1. For evaluation of PQR, in case Bidder alone does not meet the pre-qualifying technical criteria B1 above, bidder may utilize the experience of its Parent/ Subsidiary Company along with its own experience, subject to following:
 - a. The parent company shall have a controlling stake of $\geq 50\%$ in the subsidiary company (as per Format-1).
 - b. The Parent Company/ Subsidiary Company of which experience is being utilized for bidding shall submit Security Deposit(SD) equivalent to 1% of the total contract value
 - c. The parent/ subsidiary company and bidder shall provide an undertaking that they are jointly or severally responsible for successful performance of the contract (as per Format-2).

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- | | |
|--|---|
| | <ul style="list-style-type: none">d. In case Bidder is submitting bid as a Consortium Partner, option of utilizing experience of parent/subsidiary Company can be availed by Prime Bidder only.e. Parent Company/ Subsidiary Company of which experience is being used for bidding, cannot participate as a 'Standalone Bidder' or as a 'Consortium bidder'. <p>2. Completion date for achievement of the technical criteria specified in the 'B' above should be in the last 7 years ending on the 'latest date of Bid Submission' of Tender irrespective of date of the start of work. Completion date shall be reckoned from the "Financial Year quarter of bid submission". (for e.g. -Work completed on 01.01.2014 shall be considered even if latest date of bid submission is 20.03.2021).</p> <p>3. "Executed" means the bidder should have achieved the technical criteria specified in the Common QR even if the Contract has not been completed or closed.</p> <p>4. In case the Experience/PO/WO certificate enclosed by bidders do not have separate break up of prices for the E&C portion for Electrical and C&I works (i.e. the certificates enclosed are for composite order for supply and erection of Electrical and C&I and other works if any), then value of Erection & Commissioning for the Electrical and C&I portion shall be considered as 15% of the price for supply & erection of Electrical and C&I.</p> <p>5. Following shall be complied with in case of consortium:</p> <ul style="list-style-type: none">a. The Prime Bidder and Consortium Partner(s) are required to enter in to a consortium agreement and certify to BHEL regarding existence and validity of their consortium agreement in line with validity period mentioned in NIT.b. Prime Bidder and Consortium partners shall be approved by Customer for being considered for the tender (applicable if customer approval is required).c. Number of partners including prime Bidder shall be NOT more than 3 (three).d. Prime Bidder alone shall necessarily comply with "B1Technical Criteria" except for mechanical package where B1 criteria is not applicable.e. Prime Bidder and Consortium Partner shall together comply with the 'Pre-Qualification Requirements' specified for the respective category of technical requirement as per "B2 technical criteria".f. Prime Bidder shall comply with all other Pre Qualifying criteria for the Tender unless otherwise specified.g. All other conditions shall be read in conjunction with clause no 23.0 of NIT.h. Prime Bidder shall be the Bidder who has a major share of work.i. Prime Bidder shall be responsible for the overall execution of the Contract.j. Performance shall be evaluated for Prime Bidder and the Consortium partner for their respective scope of work.k. In case the Consortium partner backs out, another consortium partner meeting the QRs, has to be engaged by Prime Bidder and if not, the respective work will be withdrawn and executed on risk and cost basis of the prime bidder.l. In case Prime Bidder withdraws or insolvency / liquidation / winding up proceedings have been initiated / admitted against the Prime Bidder, BHEL reserves the right to cancel, terminate or short close the contract or take any other action to safeguard BHEL's interest in the Project / Contract. This action will be without prejudice to any other action that BHEL can take under Law and the Contract to safeguard interests of BHELm. After successful execution of one work with a consortium partner under direct orders of BHEL, the Prime Bidder shall be eligible for becoming a 'standalone' bidder for works similar to that for which consortium partner was engaged, for subsequent tenders.n. The Consortium partner shall submit SD equivalent to 1% of the total contract value in addition to the SD to be submitted by the Prime Bidder for the total contract value. |
|--|---|

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.

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Credentials submitted by the bidder against “PRE QUALIFYING CRITERIAS” shall be verified for its authenticity. In case, any credential (s) is/are found unauthentic, offer of the bidder is liable to the rejection. BHEL reserves the right to initiate any further action as per extant guidelines for Suspension of Business Dealings.

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Format-1

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Format-2

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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 GST & PAN Card	Applicable/ Not Applicable	YES/NO
9	Whether all pages of the Tender documents including annexures, appendices etc. are read understood and signed	Applicable/ Not Applicable	YES/NO
10	Integrity Pact	Applicable/ Not Applicable	YES/NO
11	Offer Forwarding Letter / Tender Submission Letter	Applicable/ Not Applicable	YES/NO
12	Declaration by Authorized Signatory	Applicable/ Not Applicable	YES/NO
13	No Deviation Certificate	Applicable/ Not Applicable	YES/NO
14	Declaration confirming knowledge about Site Conditions	Applicable/ Not Applicable	YES/NO
15	Declaration for relation in BHEL	Applicable/ Not Applicable	YES/NO
16	Non-Disclosure Certificate	Applicable/ Not Applicable	YES/NO

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17	Bank Account Details for E-Payment	Applicable/ Not Applicable	YES/NO
18	Capacity Evaluation of Bidder for current Tender	Applicable/ Not Applicable	YES/NO
19	Tie Ups/Consortium Agreement are submitted as per format	Applicable/ Not Applicable	YES/ NO
20	Power of Attorney for Submission of Tender/Signing Contract Agreement Power of Attorney of Consortium Partner.	Applicable/ Not Applicable	YES/NO
21	Analysis of Unit rates	Applicable/ Not Applicable	YES/NO
22	Annexure-5: Authorization of representative who will participate in the online Reverse Auction Process	Applicable/ Not Applicable	YES/NO
23	Annexure-8: Undertaking as per PQR C4 of Annexure-1 i.e. PQR	Applicable/ Not Applicable	YES/NO
24	Annexure-9: Declaration reg. Related Firms & their areas of Activities (x) Other Tender documents as per this NIT.	Applicable/ Not Applicable	YES/NO
25	Annexure-10 Declaration regarding minimum local content	Applicable/ Not Applicable	YES/NO
26	Annexure-11: Declaration regarding compliance to restrictions under rule 144 (xi) of GFR 2017	Applicable/ Not Applicable	YES/NO
27	Annexure-13: Bid Security Declaration Form	Applicable/ Not Applicable	YES/NO

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)

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ANNEXURE-3

Certificate by Chartered Accountant on letter head

(applicable upto 31st March 2021 in line with MSME notification no. S.O. 2119 (E), dated 26th June 2020)

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)/ Udyam Registration Certificate No.
..... dtd:, Category: (Micro/Small/Medium)).
(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:
RsLaacs
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:
RsLaacs
3. ~~For Enterprises (having EM-II Certificate/ valid NSIC Certificate or Udyog Aadhar Memorandum):~~ Investment in plant and machinery or equipment is Rs Laacs and turnover is Rs. Laacs (as notified in MSME notification no. S.O. 2119 (E) dated 26.06.2020)
4. ~~For Enterprises (having EM-II Certificate/ valid NSIC Certificate or Udyog Aadhar Memorandum):~~ Investment in plant and machinery or equipment is Rs Laacs and turnover is Rs. Laacs (as notified in MSME notification no. S.O. 2119 (E) dated 26.06.2020)

~~(Strike off whichever is not applicable)~~

~~The above investment of RsLaacs is within permissible limit of RsLaacs forMicro / Small/ Medium (Strike off which is not applicable) Category under MSMED Act 2006.~~

Or

~~The enterprise has been graduated upward from its original category (micro/small/medium) (strike off which is not applicable), the enterprise shall maintain its prevailing status till expiry of one year from the close of year of registration, as notified vide S.O. No. 2119 (E) dated 26.06.2020 published in the gazette notification dated 26.06.2020 by Ministry of MSME.~~

Or

~~The enterprise has been reverse graduated from its original category (micro/small/medium) (strike off which is not applicable), the enterprise will continue in its present category till the closure of the financial year and it will be given the benefit of the changed status only with effect from 1st April of the financial year following the year in which such change took place, as notified vide S.O. No. 2119 (E) dated 26.06.2020 published in the gazette notification dated 26.06.2020 by Ministry of MSME.~~

~~Date:~~

~~(Signature)~~

~~Name:~~

~~Membership Number:~~

~~Seal of the Chartered Accountant~~

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ANNEXURE-4

Reverse Auction Process Compliance Form

(The bidders are required to print this on their company's letterhead and sign, stamp before RA)

To

- M/s. {Service provider}
- Postal address}

Sub: Agreement to the Process related Terms and Conditions

Dear Sir,

This has reference to the Terms & Conditions for the Reverse Auction mentioned in the RFQ document for {Items} against BHEL enquiry/ RFQ no.{ BHE/PW/PUR/KKRN TG PIPING/2507} dt. {.....}
This letter is to confirm that:

- 1) The undersigned is authorized official/ representative of the company to participate in RA and to sign the related documents.
- 2) We have studied the Reverse Auction guidelines (as available on www.bhel.com), and the Business rules governing the Reverse Auction as mentioned in your letter and confirm our agreement to them.
- 3) We also confirm that we have taken the training on the auction tool and have understood the functionality of the same thoroughly.
- 4) We also confirm that, in case we become L1 bidder, we will FAX/ email the price confirmation & break up of our quoted price as per Annexure - 6 within **two** working days (of BHEL) after completion of RA event, besides sending the same by registered post/ courier both to M/s. BHEL and M/s. {Service provider.}

We, hereby confirm that we will honor the Bids placed by us during the auction process.

With regards

Signature with company seal

Name:

Company / Organization:

Designation within Company / Organization:

Address of Company / Organization:

Sign this document and FAX/ email it to M/s {Service provider} at {.....} prior to start of the Event.

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ANNEXURE – 5

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

1	NAME OF THE BIDDER	
2	NAME & DESIGNATION OF OFFICIAL	
3	POSTAL ADDRESS (COMPLETE)	
4	TELEPHONE NOS. (LAND LINE & MOBILE BOTH)	
5	E-MAIL ADDRESS	
6	NAME OF PLACE/ STATE/ COUNTRY, WHEREFROM S/HE WILL PARTICIPATE IN THE REVERSE AUCTION	

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ANNEXURE - 6

**Reverse Auction price confirmation and breakup
(To be submitted by L1 bidder after completion of Reverse Auction)**

To

- M/s. Service provider
- Postal address

CC: M/s BHEL POWER SECTOR WESTERN REGION, Nagpur

Sub: **Final price quoted during Reverse Auction and price breakup**

Dear Sir,

We confirm that we have quoted.

Rs. _____ (in value) &
_____ (in words)

for item(s) covered under tender enquiry No. BHE/PW/PUR/KKRN TG PIPING/2507

~~Total price of the items covered under above cited enquiries is inclusive of {Packing & forwarding, GST, E.D., C.S.T., freight and insurance charges up to {.....} District, {.....} State and Type Test Charges etc., (exclusive of service tax), other as per NIT}~~

as our final landed prices as quoted during the Reverse Auction conducted today {date _____} which will be valid for a period of {**in nos. & in words** _____} days. as mentioned in the subject tender.

Yours sincerely,

For _____

Name:

Company:

Date:

Seal:

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ANNEXURE – 7

INTEGRITY PACT

Between

Bharat Heavy Electricals Ltd. (BHEL), a company registered under the Companies Act 1956 and having its registered office at "BHEL House", Siri Fort, New Delhi - 110049 (India) hereinafter referred to as "The Principal", which expression unless repugnant to the context or meaning hereof shall include its successors or assigns of the ONE PART

and

_____, (description of the party along with address), hereinafter referred to as "The Bidder/ Contractor" which expression unless repugnant to the context or meaning hereof shall include its successors or assigns of the OTHER PART

Preamble

The Principal intends to award, under laid-down organizational procedures, contract/s for

_____. The Principal values full compliance with all relevant laws of the land, rules and regulations, and the principles of economic use of resources, and of fairness and transparency in its relations with its Bidder(s)/ Contractor(s).

In order to achieve these goals, the Principal will appoint Independent External Monitor(s), who will monitor the tender process and the execution of the contract for compliance with the principles mentioned above.

Section 1- Commitments of the Principal

1.1 The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles:-

1.1.1 No employee of the Principal, personally or through family members, will in connection with the tender for, or the execution of a contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to.

1.1.2 The Principal will, during the tender process treat all Bidder(s) with equity and reason. The Principal will in particular, before and during the tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential/ additional information through which the Bidder(s) could obtain an advantage in relation to the tender process or the contract execution.

1.1.3 The Principal will exclude from the process all known prejudiced persons.

1.2 If the Principal obtains information on the conduct of any of its employees which is a penal offence under the Indian Penal Code 1860 and Prevention of Corruption Act 1988 or any other statutory penal

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enactment, or if there be a substantive suspicion in this regard, the Principal will inform its Vigilance Office and in addition can initiate disciplinary actions.

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

- 2.1 The Bidder(s)/ Contractor(s) commit himself to take all measures necessary to prevent corruption. He commits himself to observe the following principles during his participation in the tender process and during the contract execution.
- 2.1.1 The Bidder(s)/ Contractor(s) will not, directly or through any other person or firm, offer, promise or give to the Principal or to any of the Principal's employees involved in the tender process or the execution of the contract or to any third person any material, immaterial or any other benefit which he/ she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the tender process or during the execution of the contract.
- 2.1.2 The Bidder(s)/ Contractor(s) will not enter with other Bidder(s) into any illegal or undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process.
- 2.1.3 The Bidder(s)/ Contractor(s) will not commit any penal offence under the relevant Indian Penal Code (IPC) and Prevention of Corruption Act; further the Bidder(s)/ Contractor(s) will not use improperly, for purposes of competition or personal gain, or pass on to others, any information or document provided by the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.
- 2.1.4 Foreign Bidder(s)/ Contractor(s) shall disclose the name and address of agents and representatives in India and Indian Bidder(s)/ Contractor(s) to disclose their foreign principals or associates. The Bidder(s)/ Contractor(s) will, when presenting his bid, disclose any and all payments he has made, and is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract.
- 2.2 The Bidder(s)/ Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.
- 2.3 The Bidder(s)/ Contractor(s) shall not approach the Courts while representing the matters to IEMs and will await their decision in the matter.

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

If the Bidder(s)/ Contractor(s), before award or during execution has committed a transgression through a violation of Section 2 above, or acts in any other manner such as to put his reliability or credibility in question, the Principal is entitled to disqualify the Bidder(s)/ Contractor(s) from the tender process or take action as per the separate "Guidelines on Banning of Business dealings with Suppliers/ Contractors", framed by the Principal.

Section 4 - Compensation for Damages

- 4.1 If the Principal has disqualified the Bidder from the tender process prior to the award according to Section 3, the Principal is entitled to demand and recover the damages equivalent Earnest Money Deposit/ Bid Security.

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4.2 If the Principal has terminated the contract according to Section 3, or if the Principal is entitled to terminate the contract according to section 3, the Principal shall be entitled to demand and recover from the Contractor liquidated damages equivalent to 5% of the contract value or the amount equivalent to Security Deposit/ Performance Bank Guarantee, whichever is higher.

Section 5 - Previous Transgression

5.1 The Bidder declares that no previous transgressions occurred in the last 3 years with any other company in any country conforming to the anti-corruption approach or with any other Public Sector Enterprise in India that could justify his exclusion from the tender process.

5.2 If the Bidder makes incorrect statement on this subject, he can be disqualified from the tender process or the contract, if already awarded, can be terminated for such reason.

Section 6 - Equal treatment of all Bidders/ Contractors / Sub-contractors

6.1 The Principal will enter into agreements with identical conditions as this one with all Bidders and Contractors. In case of sub-contracting, the Principal contractor shall be responsible for the adoption of IP by his sub-contractors and shall continue to remain responsible for any default by his sub-contractors.

6.2 The Principal will disqualify from the tender process all bidders who do not sign this pact or violate its provisions.

Section 7 - Criminal Charges against violating Bidders/ Contractors /Subcontractors

If the Principal obtains knowledge of conduct of a Bidder, Contractor or Subcontractor, or of an employee or a representative or an associate of a Bidder, Contractor or Subcontractor which constitutes corruption, or if the Principal has substantive suspicion in this regard, the Principal will inform the Vigilance Office.

Section 8 -Independent External Monitor(s)

8.1 The Principal appoints competent and credible Independent External Monitor for this Pact. The task of the Monitor is to review independently and objectively, whether and to what extent the parties comply with the obligations under this agreement.

8.2 The Monitor is not subject to instructions by the representatives of the parties and performs his functions neutrally and independently. He reports to the CMD, BHEL.

8.3 The Bidder(s)/ Contractor(s) accepts that the Monitor has the right to access without restriction to all contract documentation of the Principal including that provided by the Bidder(s)/ Contractor(s). The Bidder(s)/ Contractor(s) will grant the monitor, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his contract documentation. The same is applicable to Sub-contractor(s). The Monitor is under contractual obligation to treat the information and documents of the Bidder(s)/ Contractor(s) / Sub-contractor(s) with confidentiality in line with Non- disclosure agreement.

8.4 The Principal will provide to the Monitor sufficient information about all meetings among the parties related to the contract provided such meetings could have an impact on the contractual relations between the Principal and the Contractor. The parties offer to the Monitor the option to participate in such meetings.

8.5 The role of IEMs is advisory, would not be legally binding and it is restricted to resolving issues raised by an intending bidder regarding any aspect of the tender which allegedly restricts competition or bias towards some bidders. At the same time, it must be understood that IEMs are not consultants to the

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Management. Their role is independent in nature and the advice once tendered would not be subject to review at the request of the organization.

- 8.6 For ensuring the desired transparency and objectivity in dealing with the complaints arising out of any tendering process, the matter should be examined by the full panel of IEMs jointly as far as possible, who would look into the records, conduct an investigation, and submit their joint recommendations to the Management.
- 8.7 The IEMs would examine all complaints received by them and give their recommendations/ views to CMD, BHEL, at the earliest. They may also send their report directly to the CVO and the Commission, in case of suspicion of serious irregularities requiring legal/ administrative action. IEMs will tender their advice on the complaints within 10 days as far as possible.
- 8.8 The CMD, BHEL shall decide the compensation to be paid to the Monitor and its terms and conditions.
- 8.9 IEM should examine the process integrity; they are not expected to concern themselves with fixing of responsibility of officers. Complaints alleging mala fide on the part of any officer of the organization should be looked into by the CVO of the concerned organisation.
- 8.10 If the Monitor has reported to the CMD, BHEL, a substantiated suspicion of an offence under relevant Indian Penal Code/ Prevention of Corruption Act, and the CMD, BHEL has not, within reasonable time, taken visible action to proceed against such offence or reported it to the Vigilance Office, the Monitor may also transmit this information directly to the Central Vigilance Commissioner, Government of India.
- 8.11 The number of Independent External Monitor(s) shall be decided by the CMD, BHEL.
- 8.12 The word 'Monitor' would include both singular and plural.

Section 9 - Pact Duration

- 9.1 This Pact shall be operative from the date IP is signed by both the parties till the final completion of contract for successful bidder and for all other bidders 6 months after the contract has been awarded. Issues like warranty / guarantee etc. should be outside the purview of IEMs.
- 9.2 If any claim is made/ lodged during currency of IP, the same shall be binding and continue to be valid despite the lapse of this pact as specified above, unless it is discharged/ determined by the CMD, BHEL.

Section 10 - Other Provisions

- 10.1 This agreement is subject to Indian Laws and jurisdiction shall be registered office of the Principal, i.e. New Delhi.
- 10.2 Changes and supplements as well as termination notices need to be made in writing. Side agreements have not been made.
- 10.3 If the Contractor is a partnership or a consortium, this agreement must be signed by all partners or consortium members.
- 10.4 Should one or several provisions of this agreement turn out to be invalid, the remainder of this agreement remains valid. In this case, the parties will strive to come to an agreement to their original intentions.

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10.5 Only those bidders / contractors who have entered into this agreement with the Principal would be competent to participate in the bidding. In other words, entering into this agreement would be a preliminary qualification.

For & On behalf of the Principal

(Office Seal)

Place-----

Date-----

Witness: _____

(Name & Address) _____

For & On behalf of the Bidder/ Contractor

(Office Seal)

Witness: _____

(Name & Address) _____

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ANNEXURE - 8

UNDERTAKING

(To be typed and submitted in the Letter Head of the Company/Firm of Bidder)

To,

(Write Name & Address of Officer of BHEL inviting the Tender)

Dear Sir/Madam,

Sub: DECLARATION REGARDING INSOLVENCY/ LIQUIDATION/ BANKRUPTCY PROCEEDINGS

Ref: NIT/Tender Specification No: BHE/PW/PUR/KKRN TG PIPING/2507

I/We, _____ declare that, I/We
am/are not under insolvency resolution process or liquidation or Bankruptcy Code Proceedings (IBC) as
on date, by NCLT or any adjudicating authority/authorities, which will render us ineligible for
participation in this tender.

**Sign. of the AUTHORISED SIGNATORY
(With Name, Designation and Company seal)**

Place:

Date:

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Annexure-9

DECLARATION

Date: _____

To _____

BHEL, _____

Email: _____

Sub: Details of related firms and their area of activities

Dear Sir/ Madam,

Please find below details of firms owned by our family members that are doing business/ registered for same item with BHEL, _____ (NA, if not applicable).

1	Material Category/ Work Description	
	Name of Firm	
	Address of Firm	
	Nature of Business	
	Name of Family Member	
	Relationship	
2	Material Category/ Work Description	
	Name of Firm	
	Address of Firm	
	Nature of Business	
	Name of Family Member	
	Relationship	
.....		

Note: I certify that the above information is true and I agree for penal action from BHEL in case any of the above information furnished is found to be false.

Regards,

(_____)

From:
Supplier Code:
Address:

M/s _____

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Annexure-10

**DECLARATION REGARDING MINIMUM LOCAL CONTENT IN LINE WITH
REVISED PUBLIC PROCUREMENT (PREFERENCE TO MAKE IN INDIA), ORDER 2017 DATED 04TH JUNE,
2020 AND SUBSEQUENT ORDER(S)**

(To be typed and submitted in the Letter Head of the Entity/Firm providing certificate as applicable)

To,

(Write Name & Address of Officer of BHEL inviting the Tender)

Dear Sir,

Sub: Declaration reg. minimum local content in line with Public Procurement (Preference to Make in India), Order 2017-Revision, dated 04th June, 2020 and subsequent order(s).

Ref : 1) NIT/Tender Specification No:
2) All other pertinent issues till date

We hereby certify that the items/works/services offered by..... *(specify the name of the organization here)* has a local content of _____ % and this meets the local content requirement for '**Class-I local supplier**' / '**Class II local supplier**' ** as defined in Public Procurement (Preference to Make in India), Order 2017-Revision dated 04.06.2020 issued by DPIIT and subsequent order(s).

The details of the location(s) at which the local value addition is made are as follows:

- | | |
|----------|----------|
| 1. _____ | 2. _____ |
| 3. _____ | 4. _____ |
| ... | |
| ... | |
| ... | |

Thanking you,
Yours faithfully,

**(Signature, Date & Seal of
Authorized Signatory of the Bidder)**

**** - Strike out whichever is not applicable.**

Note:

1. Bidders to note that above format Duly filled & signed by authorized signatory, shall be submitted along with the techno-commercial offer.
2. In case the bidder's quoted value is in excess of Rs. 10 crores, the authorized signatory for this declaration shall necessarily be the statutory auditor or cost auditor of the company (in the case of companies) or a practising cost accountant or practicing chartered accountant (in respect of suppliers other than companies).
3. In the event of false declaration, actions as per the above order and as per BHEL Guidelines shall be initiated against the bidder.)

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Annexure-11

DECLARATION REGARDING COMPLIANCE TO RESTRICTIONS UNDER RULE 144 (xi) OF GFR 2017
(To be typed and submitted in the Letter Head of the Entity/Firm providing certificate as applicable)

To,

(Write Name & Address of Officer of BHEL inviting the Tender)

Dear Sir,

Sub: Declaration regarding compliance to Restrictions under Rule 144 (xi) of GFR 2017

Ref : 1) NIT/Tender Specification No:
2) All other pertinent issues till date

I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India and on sub-contracting to contractors from such countries. I certify that _____ *(specify the name of the organization here),*

(a) is not from such a country / ☐

(b) has been registered with the Competent Authority *(attach valid registration by the Competent Authority, i.e., the Registration Committee constituted by the Dept. for Promotion of Industry and Internal Trade (DPIIT));* ☐

and will not sub-contract any work to a contractor from such countries unless such contractor is registered with the Competent Authority. *(attach relevant valid registration, if applicable)*

I hereby certify that we fulfil all requirements in this regard and is eligible to be considered.

Thanking you,
Yours faithfully,

**(Signature, Date & Seal of
Authorized Signatory of the Bidder)**

Note: Bidders to note that in case above certification given by a bidder, whose bid is accepted, is found to be false, then this would be a ground for immediate termination and for taking further action in accordance with law and as per BHEL guidelines.

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ANNEXURE-12

IMPORTANT INFORMATION

E -Tender for this work is invited by BHEL PSWR NAGPUR and offer shall be submitted through BHEL e-procurement portal only. All correspondences regarding this tender shall be through E-procurement portal.

Postal Address:

GM /Purchase BHEL PSWR,
SRIMOHINI COMPLEX, Floor No. 5 & 6, 345 KINGSWAY, NAGPUR 440001, INDIA

Following are the concerned BHEL officials to whom bidders can contact in case of any difficulty:

AGM Purchase, Email: prchiwarkar@bhel.in. Ph: +91 – 712 – 2858 – 633

Dy Manager Purchase, Email: tapishkhandelwal@bhel.in Ph: +91-712 – 2858 –732

Dy Manager Purchase, Email: vivekjha@bhel.in Ph: +91-712 – 2858 –713

1. **Refer Chapter XII of Volume IB Special Conditions of Contract regarding Suspension of Business Dealings: The abridged version of extant 'Guidelines for suspension of business dealings with suppliers/ contractors' has now been uploaded on www.bhel.com on "supplier registration page" at the following link: http://www.bhel.com/vender_registration/pdf/Suspension_guidelines_abridged.pdf**
2. **All Statutory Requirements as applicable for this project shall be complied with.**
3. **Following clause shall form part of the HSE documents issued under Chapter IX of Volume IB 'Special Conditions of Contract'**

"In case of any financial deduction made by Customer for lapses of safety other than what is provided elsewhere in the contract, the same shall be charged on back-to-back basis on the defaulting contractor without prejudice to any other right spelt anywhere in the tender /contract"

4. ~~**"Pradhan Mantri Kaushal Vikas Yojna: The contractor shall, at all stages of work deploy skilled/semi-skilled tradesmen who are qualified and possess certificate in particular trade from CPWD Training Institute/Industrial Training Institute/ National Institute of Construction Management and Research (NICMAR), National Academy of Construction, CIDC or any similar reputed and recognized Institute managed/ certified by State/ Central Government. The number of such qualified tradesmen shall not be less than 20% of total skilled/semi-skilled workers required in each trade at any stage of work. The contractor shall submit number of man days required in respect of each trade, its scheduling and the list of qualified tradesmen along with requisite certificate from recognized Institute to Engineer-in-Charge for approval. Notwithstanding such approval, if the tradesmen are found to have inadequate skill to execute the work of respective trade, the contractor shall substitute such tradesmen within two days of written notice from Engineer-in-Charge. Failure on the part of contractor to obtain approval of Engineer-in-Charge or failure to deploy qualified tradesmen will attract a compensation to be paid by contractor at the rate of Rs.100 per such tradesman per day. Decision of Engineer-in-Charge as to whether particular tradesman possesses requisite skill and amount of compensation in case of default shall be final and binding".**~~
5. **The clause 2.7.9.1 below is added under the heading "Rights of BHEL" of General Conditions of Contract Volume-IC GCC.**
2.7.9.1 Provision of Penalty in case of slippage of Intermediate Milestones:

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- i) Two major Intermediate Milestones are mentioned as M1 & M2 in Chapter VI: Time Schedule of Vol IA Technical Conditions of Contract.
- ii) In case of slippage of these identified Intermediate Milestones, Delay Analysis shall be carried out on achievement of each of these two Intermediate Milestones in reference to Form 14.
- iii) In case delay in achieving M1 Milestone is solely attributable to the contractor, 0.5% per week of Executable Contract Value*, limited to maximum 2% of Executable Contract Value, will be withheld.
- iv) In case delay in achieving M2 Milestone is solely attributable to the contractor, 0.5% per week of Executable Contract Value*, limited to maximum 3% of Executable Contract Value, will be withheld.
- v) Amount already withheld, if any against slippage of M1 milestone, shall be released only if there is no delay attributable to contractor in achievement of M2 Milestone.
- vi) Amount required to be withheld on account of slippage of identified intermediate milestone(s) shall be withheld out of respective milestone payment and balance amount (if any) shall be withheld @10% of RA Bill amount from subsequent RA bills.
- vii) Final deduction towards LD (if applicable as per clause 2.7.9 above), on account of delay attributable to contractor shall be based on final delay analysis on completion / closure of contract. Withheld amount, if any due to slippage of identified intermediate milestone(s) shall be adjusted against LD or released as the case may be.
- viii) In case of termination of contract due to any reason attributable to contractor before completion of work, the amount already withheld against slippage of intermediate milestones shall not be released and be converted into recovery.

* **Executable Contract Value** - Value of work for which inputs/ fronts were made available to contractor and were scheduled for execution till the date of achievement of that milestone.

6. The following clause is added under clause 1.10 Security Deposit in Vol-1C:

Clause No 1.10.8 of Vol-IC General Conditions of Contract: Timely Submission of Security Deposit for Execution of the contract: "Bidder agrees to submit Security Deposit required for execution of the contract within the time period mentioned. In case of delay in submission of Security Deposit, enhanced Security Deposit which would include interest (Base rate of SBI +6%) for the delayed period, shall be submitted by the bidder. Further, if Security Deposit is not submitted till such time the first bill becomes due, the amount of Security Deposit due shall be recovered as per terms defined in NIT/contract, from the bills along with due interest."

7. Acceptance of Bank Guarantee (BG)

Revision in Acceptance of Bank Guarantee (BG) Clause no. 1.10.3 (iii) of Vol I C GCC:

Clause No. 1.10.3 (iii) of Vol IC GCC is revised as below: -

"Bank Guarantee issued by:

- a. Any of the BHEL consortium bank listed below:

State Bank of India
ABN Amro Bank N.V.
Bank of Baroda
Canara Bank
Citi Bank N.A.
Corporation Bank
Deutsche Bank
HDFC Bank Ltd.

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The Hongkong and Shanghai Banking Corporation Ltd
ICICI Bank Ltd.
IDBI Ltd.
Punjab National Bank
Standard Chartered Bank
State Bank of Travancore
State Bank of Hyderabad
Syndicate Bank

- b. Any public sector Bank (other than consortium banks) with a clause in the text of Bank Guarantee that **"It is enforceable at Nagpur, Maharashtra"**.
- c. Any private sector banks, with a clause in the text of Bank Guarantee that **"It is enforceable by being presented at any branch of the bank"**.

Note: "Bank Guarantees issued by Co-operative Banks are not acceptable".

8. Broad Terms & Conditions of Reverse Auction:

In continuation to Clause 19.0 of NIT (Notice Inviting Tender) following are the broad terms and conditions of Reverse Auction:

"BHEL shall be resorting to Reverse Auction (RA) (Guidelines as available on www.bhel.com) (<https://www.bhel.com/guidelines-reverse-auction-2021>) for this tender. RA shall be conducted among the techno-commercially qualified bidders.

Price bids of all techno-commercially qualified bidders shall be opened and same shall be considered for RA. In case any bidder(s) do(es) not participate in online Reverse Auction, their sealed envelope price bid along with applicable loading, if any, shall be considered for ranking."

Note:-

1. No benefits to MSE bidders w.r.t Reverse Auction Guidelines as available on www.bhel.com against works contract.

2. In case of enquiry through e-procurement the sealed electronic price bid (e-bid) is to be treated as sealed envelope price bid.

~~9. Bidders kindly to take note that EMD (Earnest Money Deposit) shall be furnished by MSE bidders as well, as per the amount and procedure indicated in the NIT/GCC~~

10. Clause no. 2.24 of GCC PERFORMANCE GUARANTEE FOR WORKMANSHIP: The guarantee period of Twelve months shall commence from the date of Completion of contract as certified by BHEL Engineer.

11. Clause no. 2.17 (Price Variation Compensation) of GCC: Not Applicable.

12. Clause no. 2.12 (Overrun Compensation) of GCC: Applicable.

13. IMPORTANT NOTE:

Unit 4 TG E&C is being executed by other agency . The balance work of Unit 4 TG Piping and Support at 2X700 MW NPCIL KAKRAPAR is being withdrawn from existing agency on "as is where is" basis.

However, bidder should visit the site for actual assessment of work & understand the actual physical situation before bidding.

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14. The contractor (*Who is executing Unit 4 TG and Auxiliaries E&C contract, which included the tendered works*) shall not be eligible to participate in this tender.**

i). In case Previous contractor/supplier is The Sole Proprietorship Firm, any Sole Proprietorship Firm owned by same Sole Proprietor.

ii). In case Previous contractor/supplier is The Partnership Firm, any firm comprising of same partners/ some of the same partners (but not including any new partner); or sole proprietorship firm owned by any partner(s) as a sole proprietor.

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ANNEXURE-13

Bid Security Declaration Form

(To be typed and submitted in the Letter Head of the Company/Firm of Bidder)

To,

(Write Name & Address of Officer of BHEL inviting the Tender)

Dear Sir/Madam,

Sub: Bid Security Declaration

Ref: NIT/Tender Specification No: BHE/PW/PUR/KKRN TG PIPING/2507

SCOPE OF WORK: COLLECTION OF MATERIALS FROM BHEL/CLIENT'S STORES/STORAGE YARD, TRANSPORTATION OF MATERIALS TO SITE, ERECTION, TESTING, COMMISSIONING, APPLICATION OF FINAL PAINTING INCLUDING SUPPLY OF PAINTS & PRIMERS, ERECTION AND COMMISSIONING OF TG PIPINGWITH HANGERS& SUPPORTS, ASSOCIATED VALVES, FITTINGS, INSTRUMENTS ETC. FOR UNIT-4 OF 2X700 MWe NPCIL KAKRAPAR ATOMIC POWER PROJECT AS PER TENDER SPECIFICATIONS

AT

**NPCIL (NUCLEAR POWER CORPORATION OF INDIA)
KAKRAPAR ATOMIC POWER PROJECT
KAKRAPAR, DIST. SURAT, STATE- GUJARAT.**

1. I/We Mr/ Ms..... authorised person to sign the bid documents for tender pertaining to the captioned scope do hereby declare that I/We have gone through the entire tender documents including terms and condition mentioned in the tender documents and undertake to comply with them.
2. I/We further declare that we will not withdraw our bid or modify our offer during the period of validity of the bid after the deadline for submission of such documents.
3. If I/we withdraw or modify the bids during the period of validity, or if I/We are awarded the contract and fail to sign the contract, if applicable or to submit security deposit as defined in the tender document/LOA, we will be suspended for the period of time as specified in the tender document from being eligible to submit bids/proposals to BHEL.

**Signature of the Authorised Signatory
(With Name, Designation and Company seal)**

Place:

Date:

2507

TECHNICAL CONDITIONS OF CONTRACT (TCC)

BHARAT HEAVY ELECTRICALS LIMITED



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Sl No	DESCRIPTION	Chapter
Volume-IA	Part-I: Contract specific details	
1	Project Information	Chapter-I
2	Scope of Works	Chapter-II
3	Facilities in the scope of Contractor/BHEL (Scope Matrix)	Chapter-III
4	T&Ps and MMEs to be deployed by Contractor	Chapter-IV
5	T&Ps and MMEs to be deployed by BHEL on sharing basis	Chapter-V
6	Time Schedule	Chapter-VI
7	Terms of Payment	Chapter-VII
8	Taxes and other Duties	Chapter-VIII
9	Bill Of Quantities	Chapter-IX
10	Specific Inclusion	Chapter-X
11	Specific Exclusion	Chapter-XI
	Estimated weight for various systems in scope of work (ERECTION, TESTING AND COMMISSIONING)	Annexure -I
	Painting scheme	Annexure -II
12	General (E&C)	Chapter-XII
13	STG and Auxiliaries	Chapter-XIII
14	Void	Chapter-XIV
15	Welding, Radiography, NDT, PWHT	Chapter-XV
16	Void	Chapter-XVI
17	Hydrostatic Testing, Preservation and other tests	Chapter-XVII
18	Painting	Chapter-XVIII
19	Testing, Pre-Commissioning, Commissioning	Chapter-XIX
20	Preservation and protection of components	Chapter-XX
21	ACID CLEANING/ALKALI FLUSHING/STEAM BLOWING/OIL FLUSHING	Chapter-XXI
22	Tools And Tackles, Measuring And Monitoring Devices For Hrsg & Gtg	Chapter-XXII
23	INDUSTRIAL SAFETY	Chapter-XXIII

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter - I: Project Information

1.0 PROJECT INFORMATION

1.1 INTRODUCTION

Nuclear Power Corporation of India (NPCIL) is setting up (2) nos. of 700 MWe PHWR type Nuclear Power Plants (KAPP-3 and KAPP-4) at Kakrapar near Surat, Gujarat, India. **Unit-3 Synchronised in January '21 & Unit-4 erection work is in various stages** The Kakrapar site is situated on the left bank of the river Tapi, in Mandvi Taluka of Surat District of Gujarat state. The site is accessible by road from Surat from Mumbai-Ahmedabad National Highway (NH-8) and is about 86 km from NH-8. Nearest seaport is Kandla (about 665 km away) but loading and unloading barge facility is available at Hazira which is about 90 km from site. Nearest railway station, Vyara, is about 20 km from Site, on Surat Bhusawal broad gauge section. The nearest airports are at Surat, Vadodara and Mumbai which are about 90 km, 190 km and 300 km away from the respective sites, by road.

1.2 SITE INFORMATION

a)	Location	Kakrapar, Dist. Surat, Gujarat-394651
b)	Nearest Railway Station	Vyara and Madhi (Western Railway)
c)	Nearest Air port	Surat
d)	Elevation (RL)	Varies from +47m to +50m

1.3 CLIMATIC CONDITION

1)	Seismic data	
	Seismic Intensity	Acc to BIS- 1893-2002, Part-1
	Zone	III
2)	Ambient Air Temperature	
	Maximum dry bulb temperature with corresponding relative humidity	43.8 deg C – 2%
	Minimum dry bulb temperature with corresponding relative humidity	4.5 deg C – 98%
	Design temperature for electrical equipment/devices	50 deg C
3)	Relative Humidity	
	Maximum during monsoon	98%
	Minimum during Dec-Jan	2%
4)	Wind Pressures	

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter - I: Project Information

	Height above mean Retarding Surface, m	Design Wind Speed m/sec
	@ 10m	69.26
	@ 30m	76.26
5)	Rain fall	
	Annual Average	1941 mm
	Maximum intensity for 1 hour	90 mm
	Maximum intensity sustained for 24 hours	482 mm (max rainfall in a day of 24 hours)
	Period	Year 1994 year 2002
6)	Wind data	
	Wind code	IS-875-1964
	Base wind pressure	150 kg/m ²
	Wind load Upto 30 M	150 kg/m ²

1.4

The bidder is advised to visit and examine the site of WORKS and its surroundings and obtain for himself on his own responsibility all information that may be necessary for preparing the bid and entering into the CONTRACT. All costs for and associated with site visits shall be borne by the bidder.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – II: Scope of Work

2.0 SCOPE OF WORK

The work to be carried out under the scope of these specifications is broadly as under:

1. Identification and development of erection and construction procedures for all piping, valves, hangers and supports etc as specified therein.
2. Receipt/collection/loading/ unloading/ transportation of materials from BHEL/client's stores /storage yards, transportation to site of work /erection at site of TG piping, valves, hangers & supports material broadly mentioned in BOQ(Refer Sl No 7.2 Annexure-A.)
3. Pre-assembly, Assembly and Post-assembly checks as applicable.
4. Lifting, pre-assembly, placement, fit-up, alignment, erection, welding, Non Destructive examination, stress relieving Heat treatment etc of piping including integral piping of STG& auxiliaries etc.
5. Erection, Alignment, Fit-up and welding/bolting/fastening, Pre-heat treatment/Post weld Heat treatment etc. of Field piping & Integral Piping with supports etc. including primer of site weld joints with Chlorinated based Zinc Phosphate primer of pipin getc.
6. The piping involved includes HRH Piping, HP Inlet piping, LP Extraction piping, Gland Seal Steam piping, GSC Extractor Fan Piping (Suction and discharge), Steam & drain piping, LP Spray Control valve, Orifices, LP Spray Filter and Orifice, Turbine Auxiliaries piping control fluid (Supply + Return), GFR Isolating Valves, Protection System Piping, Safety and Return Circuit Valves for LP accumulators, Control Fluid Piping Supports (Structural&Hanger Supports) , Protection Piping Supports (Structural & Hanger Supports) , Gas Piping, Waste Gas Piping, Waste Fluid Piping, Valves and Supports for Generator Piping (Gas Piping, Waste Fluid Piping & Waste Gas Piping) etc. All corresponding valves, fasteners, supports erection is in the scope of contractor.
7. LP Extraction piping work inside Condenser C is not in scope of agency. LP Extraction piping work inside Condenser A & B is in scope of agency.
8. Non Destructive Examination (Dye-Penetrant testing, Radiography) etc.
9. Piping interconnection with equipments/auxiliaries shall be in scope of contractor. All interface work with in Unit-4 shall be completed by agency as per instructions of BHEL Engineers to meet Unit-4 progress and commissioning schedule of Unit-4 and

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – II: Scope of Work

related equipments. Contractor shall carry out the hook up work as per instruction of BHEL engineers.

6. The contractor shall carry out necessary repairs/modifications on erected piping without any additional cost on BHEL which are due to the contractor's own defects/faults.
7. Testing, Pre-commissioning, Commissioning, Hydraulic Testing, ~~Chemical cleaning/ Air Blowing/ Flushing, Alkali Boil out, Steam Blowing, Safety Valve~~ etc.
8. Non Destructive Examination (Dye-Penetrant testing, Radiography) etc. of golden joints after hydraulic testing/ pneumatic testing.
9. Erection, Laying, Welding, NDE/Radiography of temporary Piping, Valves, Supports etc. for Air Blowing, Chemical Cleaning/ Flushing etc. and their subsequent dismantling after completion of work, levelling, cold pulling, adjusting, heat treatment, hydraulic test, chemical pickling, passivation, steam blowing, oil flushing, water flushing, air flushing, pre-commissioning tests, trial running of auxiliaries, final painting of piping covered under these specifications and all other activities till synchronization.
10. Handling and filling of Chemicals, Lubricants/gas/ preservatives during, erection, preservation, Chemical cleaning / flushing / blasting, pre-commissioning, Commissioning and subsequent topping up till Synchronization. Commissioning/ Air Tightness test of Gas piping in agency scope.
11. Supply of Paints(Intermediate & Final) /Primer and application of paints for intermediate & final painting including surface preparation, cleaning, marking of identification marks, colour bands, direction of rotation / flow marks, legends etc. as per NPCIL/ BHEL site requirement/site approved procedure of Piping with valves, fittings, supports etc.
12. Shifting of control fluid oil drums, control fluid system, gas system, steam & drain system commissioning are in scope of work.
13. Gas filling (H2 and Co2) inside generator are in scope of work. Generator gas piping air tightness test are in scope of work.
14. Condensate Spray piping system commissioning.
15. Completion of facility/pending points as per scope of work (as applicable).
16. Final protocol readiness as per applicable approved QAPs/ FQPs, as built drawing (hand sketch) preparation for piping and supports etc.

NOTE: BHEL SHALL PROVIDE SUITABLE CAPACITY CRANE AS PER TERMS AND CONDITIONS INDICATED IN TCC CHAPTER-5, AT STORAGE YARD, FOR LOADING OF HEAVY CONSIGNMENTS ON CONTRACTOR'S TRAILER

TECHNICAL CONDITIONS OF CONTRACT (TCC)

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

Sl.No	Description PART I	Scope / to be taken care by		Remarks
		BHEL	Bidder	
3.1	ESTABLISHMENT			
3.1.1	FOR CONSTRUCTION PURPOSE:			
a	Open space for office (as per availability)	Yes		Location will be finalized after joint survey with owner
b	Open space for storage (as per availability)	Yes		Location will be finalized after joint survey with owner
c	Construction of bidder's office, canteen and storage building including supply of materials and other services		Yes	
d	Bidder's all office equipments, office / store / canteen consumables		Yes	
e	Canteen facilities for the bidder's staff, supervisors and engineers etc		Yes	
f	Fire fighting equipments like buckets, extinguishers etc		Yes	
g	Fencing of storage area, office, canteen etc of the bidder		Yes	
3.1.2	FOR LIVING PURPOSES OF THE BIDDER			
a	Open space for labor colony (as per availability)		Yes	There may be space constraint; contractor shall manage/adjust his requirements within the space area as provided by NPCIL.
b	Labor Colony with internal roads, sanitation, complying with statutory requirements		Yes	Hygienic labour colony with proper sanitation, access road, electricity, water arrangement as per BHEL/NPCIL requirements.
3.2.0	ELECTRICITY			

TECHNICAL CONDITIONS OF CONTRACT (TCC)

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

Sl.No	Description PART I	Scope / to be taken care by		Remarks
		BHEL	Bidder	
3.2.1	<i>Electricity for construction purposes 3 Phase 415/440 V (To be specified whether chargeable or free)</i>	Yes		Free
a	Single point source	Yes		BHEL/NPCIL will provide 3 phase, 4 wire, 415/440 V cable supply point at one single point at a distance of approx 500m.
b	Further distribution including all materials, Energy Meter, Protection devices and its service		Yes	To be taken care by bidder
c	Duties and deposits including statutory clearances if applicable		Yes	
3.2.2	<i>Electricity for the office, stores, canteen etc of the bidder.</i>			Free
a	Single point source	Yes		
b	Further distribution including all materials, Energy Meter, Protection devices and its service		Yes	
c	Duties and deposits including statutory clearances if applicable		Yes	
3.2.3	<i>Electricity for living accommodation of the bidder's staff, engineers, supervisors etc</i>			Free
a	Single point source	Yes		
b	Further distribution including all materials, Energy Meter, Protection devices and its service		Yes	
c	Duties and deposits including statutory clearances if applicable		Yes	
3.3.0	<i>WATER SUPPLY</i>			
3.3.1	<i>For construction purposes:(to be specified whether chargeable or free)</i>			chargeable

TECHNICAL CONDITIONS OF CONTRACT (TCC)

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

Sl.No	Description PART I	Scope / to be taken care by		Remarks
		BHEL	Bidder	
a	Making the water available at single point	Yes		Construction water will be on chargeable basis on charges as charged by NPCIL. At present, the charges are Rs. 12.10 per 1000 litres and this rate is subject to revision from time to time. The charges as charged by NPCIL shall be charged to contractor.
b	Further distribution as per the requirement of work including supply of materials and execution		Yes	
3.3.2	Water supply for bidder's office, stores, canteen etc			Chargeable
a	Making the water available at single point	Yes		
b	Further distribution as per the requirement of work including supply of materials and execution		Yes	
3.3.3	Water supply for Living Purpose			
a	Making the water available at single point		Yes	
b	Further distribution as per the requirement of work including supply of materials and execution		Yes	
3.4.0	LIGHTING			
a	For construction work (supply of all the necessary materials) 1. At office/storage area 2. At the preassembly area 3. At the construction site /area		Yes	Contractor has to make his own arrangement.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

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

Sl.No	Description PART I	Scope / to be taken care by		Remarks
		BHEL	Bidder	
b	For construction work (execution of the lighting work/ arrangements) 1. At office/storage area 2. At the preassembly area 3 At the construction site /area		Yes	Contractor has to make his own arrangement.
c	Providing the necessary consumables like bulbs, switches, etc during the course of project work		Yes	Contractor has to make his own arrangement.
d	Lighting for the living purposes of the bidder at the colony / quarters		Yes	
3.5.0	COMMUNICATION FACILITIES FOR SITE OPERATIONS OF THE BIDDER			
a	Telephone, fax, internet, intranet, e-mail etc		Yes	
3.6.0	COMPRESSED AIR wherever required for the work		Yes	
3.7.0	Demobilization of all the above facilities		Yes	
3.8.0	TRANSPORTATION			
a	For site personnel of the bidder		Yes	
b	For bidder's equipments and consumables (T&P, Consumables etc)		Yes	

Sl.No	Description PART II	Scope / to be taken care by		Remarks
		BHEL	Bidder	
	3.9.0 ERECTION FACILITIES			
3.9.1	Engineering works for construction:			

TECHNICAL CONDITIONS OF CONTRACT (TCC)

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

Sl.No	Description PART II 3.9.0 ERECTION FACILITIES	Scope / to be taken care by		Remarks
		BHEL	Bidder	
a	Providing the erection/constructions drawings for all the piping, valves, hangers and supports covered under this scope	Yes		
b	Drawings for construction methods	Yes	Yes	In consultation with BHEL
c	As-built drawings – where ever deviations observed and executed and also based on the decisions taken at site- example – routing of small bore pipes		Yes	Changes are to be marked in drawing & handover to BHEL on completion of work.
d	Shipping lists etc for reference and planning the activities	Yes		
e	Preparation of site erection schedules and other input requirements		Yes	In consultation with BHEL
f	Review of performance and revision of site erection schedules in order to achieve the end dates and other commitments	Yes	Yes	In consultation with BHEL
g	Weekly erection schedules based on Sl No. e		Yes	In consultation with BHEL
h	Daily erection / work plan based on Sl No. g		Yes	In consultation with BHEL

TECHNICAL CONDITIONS OF CONTRACT (TCC)

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

Sl.No	Description PART II 3.9.0 ERECTION FACILITIES	Scope / to be taken care by		Remarks
		BHEL	Bidder	
i	Periodic visit of the senior official of the 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 months.		Yes	
j	Preparation of preassembly bay		Yes	
k	Arranging the materials required for preassembly		Yes	

3.10

The contractor shall use the construction power in the most efficient and judicious manner so as to avoid any wastage. It is to be clearly understood that the construction power shall not be misused by the contractor for any activity other than construction purpose. If at any time it is found that the construction power is being misused, BHEL reserves the right to suspend the supply of construction power. In such cases as they may arise, contractor has to make his own arrangement of diesel generators to meet the requirement of power without causing any delay to project activities. No compensation in time or money shall be applicable to contractor in any such cases.

3.11

It is to be clearly understood that the disruption in power supply or non-availability of electricity shall not entitle the contractor for any claim for compensation either in time or money. **The contractor should make his own arrangement of diesel generators to meet his requirement of electrical power during interruptions in power supply and keep electrically operated equipment to the minimum in view of uncertainty of 24 hours power supply.** Temporary power as arranged by the contractor on his own shall be provided for bonafide construction purposes limited to the extent required for the job.

3.12

BHEL/NPCIL shall meter the supply of power to the contractor at the points at which the supply is given. For this purpose, the **energy meter will be installed by the Contractor**

TECHNICAL CONDITIONS OF CONTRACT (TCC)

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

on their distribution panel. Contractor shall also install the actual **Maximum Demand Meter** on the incoming panel. In case of any dispute on the accuracy of meter, the meter in dispute shall be checked in the standard laboratory of the State Government and the meter will be replaced if required. The fees levied by the Standard laboratory for testing the meter shall be charged to the contractor. The Engineer may at his discretion replace any meter installed at the cost of contractor, if found defective/faulty. It would be the contractor's responsibility to ensure the safety of the meter and to ensure protection so that the meter is not tampered with. In case, it is found that the meter has been tampered with, the supply will be disconnected and re-connection charges at State Electricity Board rates per BHP will be charged. In case the meter is found faulty, the charges will be recovered on the basis of average consumption for the preceding 6 months.

3.13

The contractor shall make his own arrangements for the distribution of power to all his works from the point (s) of supply. The contractor shall supply and install control panel, distribution board, switch control, cables, energy meters, protection devices with ELCB etc. of adequate rating/capacity as per safety and quality approval by NPCIL/BHEL.

3.14

It shall be the responsibility of the contractor to provide and maintain complete installation on the load side of the supply with due regard to safety requirements at site. All cabling and installation shall be subject to the approval of the Engineer/Safety Engineer and shall comply in all respects to the appropriate statutory requirements given in the following:

- Indian Electricity Act, 1910 (as amended)
- Electricity Supply Act, 1910 (as amended)
- Indian Electricity Rules, 1956 (as amended)
- Latest State Electricity Board regulations

3.15

The contractor shall maintain a power factor of not less than 0.9 by installing if necessary at his own cost suitable correction devices/ capacitor banks of suitable capacity. The contractor's failure in this regard within a period as stipulated by the Engineer-in-charge shall lead to disconnection of Power Supply. The individual, single-phase loads shall be suitably connected so that the total load at the supply point balances as much as possible.

3.16

BHEL will not be liable for any loss or damage to the contractor's equipment as a result of variations in voltage or frequency or interruptions planned or unplanned in power supply. The Purchaser will also not be liable for any loss to the contractor arising from any interruption, failure or stoppage of works and any attendant delays consequent on such failure, interruption or stoppage of power supply or variation voltage or frequency. The contractor shall install all safety devices for such purpose as deemed fit by him.

3.17

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

After completion of the works, the contractor shall at his own cost promptly dismantle the distribution and other facilities he may have erected

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – IV: T&Ps and MMEs to be deployed by Contractor

A: TOOLS AND PLANTS TO BE DEPLOYED BY CONTRACTOR

SN	DESCRIPTION	CAPACITY (MINIMUM)	MINIMUM QUANTITY	DEPLOYMENT PERIOD	REMARKS
1	MOBILE HYDRA CRANE	14/15 MT	1 No	AS PER REQUIREMENT	FOR E&C
2	TRAILER WITH TROLLEY	AS PER REQUIREMENT	1 No	AS PER REQUIREMENT	
3	AIR COMPRESSOR (ELECTRIC/DIESEL OPERATED)	140 CFM, 7 KG/CM2	1 No	AS PER REQUIREMENT	
4	TIG WELDING SET	AS REQUIRED	5 NOS. AND FURTHER AS PER REQUIREMENT	AS PER REQUIREMENT	
7	3-PHASE DISTRIBUTION BOARD WITH COMPLETE SET UP FOR DRAWL OF CONSTRUCTION POWER & FITTED WITH ENERGY METER	600 AMP	AS PER REQUIREMENT	AS PER REQUIREMENT	
8	POWER CABLE FOR DRAWL OF CONSTRUCTION POWER	AS REQUIRED	AS REQUIRED	AS PER REQUIREMENT	
9	PRE HEATING / STRESS RELIEVING SET (HEATING CONTROL PANEL, CABLES, HEATING ELEMENTS, THERMOMETERS ETC.)	AS REQUIRED	1 SET	AS PER REQUIREMENT	
10	RADIOGRAPHY ARRANGEMENT WITH RADIOACTIVE ISOTOPE SOURCE	IRIDIUM-192	AS PER REQUIREMENT	AS PER REQUIREMENT	
13	CHEMICAL CIRCULATION PUMPS TO HANDLE ACID SOLUTION FOR CHEMICAL CLEANING, WITH DRIVE MOTORS, STARTER PANEL, CABLE, SWITCH FUSE UNIT ETC.	CONTRACTOR SHALL DEPLOY THE REQUIRED CAPACITY PUMP WITH ACCESSORIES AFTER OBTAINING WRITTEN APPROVAL OF BHEL.	01 SET	AS PER REQUIREMENT	
14	WELDING GENERATOR/ AUTOMATIC WELDING MACHINE (ELECTRICAL)	300 AMPERE RATING	8 Nos WITH REMOTE	AS PER REQUIREMENT	

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – IV: T&Ps and MMEs to be deployed by Contractor

SN	DESCRIPTION	CAPACITY (MINIMUM)	MINIMUM QUANTITY	DEPLOYMENT PERIOD	REMARKS
15	WELDING GENERATOR (DIESEL OPERATED)	300 AMPERE RATING	AS REQUIRED	AS PER REQUIREMENT	
16	RADIOGRAPHY FILM VIEWER	AS REQUIRED	1	AS PER REQUIREMENT	
18	PIPE BENDING MACHINE- HAND OPERATED	UP TO 2" /4" PIPES	1 NO.	AS PER REQUIREMENT	
20	BAKING OVEN AND HOLDING OVEN WITH THERMOSTAT AND TEMPERATURE GAUGE FOR WELDING ELECTRODES	AS PER REQUIREMENT	1 No.	AS PER REQUIREMENT	
21	PORTABLE OVEN FOR COATED WELDING ELECTRODES	AS PER REQUIREMENT	5 NOS. WITH TEMPERATURE INDICATOR & CUT-OFF	AS PER REQUIREMENT	
22	HYDRAULIC TEST PUMP OF SUITABLE CAPACITY	150 KG/CM2	1 Set	AS PER REQUIREMENT	1. Including temporary arrangement for hydro test of piping (temporary pipes, gaskets, valves, SRV, pressure gauges, supports etc) 2. Further as required
23	SCAFFOLDING MATERIALS (SCAFFOLDING PIPES WITH CLAMPS ETC.)	ADEQUATE TO SUIT THE REQUIREMENT	1200 nos.	AS PER REQUIREMENT	
25	HAND TOOLS, CUTTING TOOLS GRINDING MACHINES ETC	AS PER REQUIREMENT	AS REQUIRED	AS PER REQUIREMENT	
28	PORTABLE GRINDING M/C	AS PER REQUIREMENT	AS REQUIRED	AS PER REQUIREMENT	

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – IV: T&Ps and MMEs to be deployed by Contractor

SN	DESCRIPTION	CAPACITY (MINIMUM)	MINIMUM QUANTITY	DEPLOYMENT PERIOD	REMARKS
29	PORTABLE DRILLING M/C	AS PER REQUIREMENT	1 NOS.	AS PER REQUIREMENT	
30	CHAIN PULLEY BLOCKS	ASSORTED CAPACITIES	AS REQUIRED	AS PER REQUIREMENT	
32	SLINGS OF VARIOUS CAPACITY AND QUANTITIES FOR HANDLING OF MATERIALS	AS PER REQUIREMENT	AS REQUIRED	AS PER REQUIREMENT	
33	VACCUUM CLEANER (INDUSTRIAL)	AS PER REQUIREMENT	AS REQUIRED	AS PER REQUIREMENT	
34	FIRE EXTINGUISHER	AS PER REQUIREMENT	AS REQUIRED	AS PER REQUIREMENT	
35	ENERGY METER	-	1	From Start of work	-
36	MAXIMUM DEMAND METER	-	1	From start of work	-
38	TORQUE WRENCH	AS PER REQUIREMENT	AS PER REQUIREMENT	AS PER REQUIREMENT	
40	MEGGER	1KV	1NOS.	AS PER REQUIREMENT	
41	ULTRASONIC THICKNESS GAUGE	For measurement upto 8NB pipe bend thickness	1 No.	AS PER REQUIREMENT	
42	HI-LO GAUGE	AS PER REQUIREMENT	1NO.	AS PER REQUIREMENT	

B: MEASURING AND MONITORING EQUIPMENT (MME) TO BE DEPLOYED BY CONTRACTOR AS PER REQUIREMENT TO BE FINALIZED AT SITE.

NOTE:

- 1) THIS LIST ABOVE IS ONLY INDICATIVE AND NEITHER EXHAUSTING NOR LIMITING. ALL THE TOOLS AND PLANTS REQUIRED FOR THIS SCOPE OF WORK, EXCEPT THE TOOLS & PLANTS PROVIDED BY BHEL ARE TO BE ARRANGED BY CONTRACTOR WITHIN THE QUOTED RATES. THE LIST IS SUGGESTIVE IN

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Chapter – IV: T&Ps and MMEs to be deployed by Contractor

NATURE. ANY ADDITIONAL T&P REQUIRED TO BE ARRANGED BY THE CONTRACTOR WITHIN THE QUOTED RATES.

- 2) IF ABOVE MENTIONED T & P ARE NOT DEPLOYED WHENEVER AND WHEREVER REQUIRED, BHEL WILL ARRANGE THE ALTERNATIVE ARRANGEMENT AT THE RISK AND COST OF AGENCY AS PER RELAVANT CLAUSE OF GCC/SCC.
- 3) IF THE WORKS GET DELAYED DUE TO NON-AVAILABILITY OF T&P, BHEL RESERVES THE RIGHT TO GET THE WORK DONE AT THE RISK AND COST OF CONTRACTOR WITHIN PREJUDICE TO RIGHTS OF BHEL AS IN GCC.
- 4) THE MANUFACTURING YEAR OF ALL MAJOR T&PS DEPLOYED BY THE CONTRACTOR (15/14 MT Hydra Crane) SHOULD NOT BE MORE THAN 10 YEARS AS ON THE DATE OF DEPLOYMENT. IF AT ANY MOMENT OF TIME DURING THE EXECUTION OF WORK, ANY CRANE IS FOUND TO BE NOT IN A GOOD WORKING CONDITION AND NON-PERFORMING AT DESIRED MINIMUM CAPACITY, AS CERTIFIED BY BHEL ENGINEER, THE CONTRACTOR SHALL DEPLOY ANOTHER CRANE IN GOOD WORKING CONDITION WITH MINIMUM DESIRED CAPACITY. IF CONTRACTOR FAILS TO DEPLOY THE SAME WITH IN 10 DAYS, BHEL WILL ARRANGE THE ALTERNATIVE ARRANGEMENT AT THE RISK AND COST OF AGENCY AS PER RELAVANT CLAUSE OF GCC/SCC.
- 5) THE VARIOUS LIFTING / HANDLING EQUIPMENT AND RIGGING TOOLS PROPOSED TO BE USED BY THE CONTRACTOR SHALL BE TESTED AS PER STATUTORY AND SAFETY REGULATIONS AND THE LATEST TEST CERTIFICATES SHALL BE FURNISHED TO THE SATISFACTION OF BHEL/NPCIL. IF BHEL/NPCIL FEELS THAT THE TOOLS AND TACKLES ARE INADEQUATE OR UNSUITABLE, THE CONTRACTOR SHALL ARRANGE TO PROVIDE SUCH TOOLS AND TACKLES CONSIDERED SUITABLE BY BHEL/NPCIL IN SUFFICIENT QUANTITIES ACCEPTABLE TO BHEL/NPCIL.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – V: T&Ps and MMEs to be Provided by BHEL

5: LIST OF T&P TO BE PROVIDED BY BHEL ON SHARING BASIS:

S.No.	DESCRIPTION AND CAPACITY OF T&P	QUANTITY	REMARKS
1	EOT CRANE (125/25 MT) IN TG HALL	01	FOR HANDLING AND ERECTION WITHIN TG HALL ON SHARING BASIS AS AVAILABLE AND SUBJECT TO THEIR ACCESSIBILITY AND APPROACHABILITY

NOTE:

- EOT crane of capacity 125/25 MT will be provided inside the TG hall for erection purposes subject to its availability, approachability and safe working load limit. EOT crane will be used on sharing basis by other agencies working within the TG hall under the instruction of BHEL.**
- Consignments within the capacity of contractor's crane shall be handled by contractor's crane only.
- Cranes deployed by BHEL shall be owned or hired by BHEL.
- Operator and O&M for BHEL owned cranes (except EOT Crane) shall be arranged by BHEL free of charges.
- Fuel for BHEL cranes (owned/hired) shall be provided by contractor for his scope of operations within the quoted rates.
- Contractor has to provide EOT crane operator for his operations within quoted rates.
- EOT crane will be used on sharing basis by other agencies working within the TG hall under the instruction of BHEL. The contractor shall extend the services of his operator to such other agencies as well on mutually agreed mode of cost sharing.
- Above T&Ps will be provided on sharing basis only. Contractor has to plan his activities well in advance and inform BHEL engineer in charge/ construction manager the date of actual use.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – VI: Time Schedule

TIME SCHEDULE & MOBILIZATION

6.1 Initial Mobilization

After receipt of fax **Letter of Intent (LOI)**, Contractor shall discuss with Project Manager / Construction Manager regarding initial mobilization. Contractor shall mobilize necessary resources **within two weeks** of issue of fax letter of intent and shall further augment his manpower and T&P resources as per the directive of Project Manager / Construction Manager. Such resources shall be progressively augmented to match the schedule of milestones and commissioning.

6.2 Mobilization for Erection, Testing, Commissioning etc.

The activities for Erection, Testing etc. shall be started within two weeks / as per directions of BHEL Engineer at site. Contractor shall mobilize further resources (in addition to those required for activities under clause no. 6.2) as per requirement to commence the work of erection, testing etc. of Piping, valves, hangers & supports, instruments and augment the manpower and T&P resources to achieve the below mentioned milestone activities and overall commissioning schedule of the project.

SL No.	Activities/ Milestones	Tentative completion Schedule (Total 10 Month from Start of contract Period ref. Clause No.-6.3 of TCC)
1	LP Extraction piping fit up, alignment and welding (Inside Condenser A&B)	1 st to 3 rd month
2	Control oil & protection piping	3 rd to 5 th month
3	Other piping	1 st to 5 th month
4	Turbine on barring gear	6 th month
5	Rolling and synchronization with Nuclear Steam	9 th Month
6	Pending points /leakages if any	Upto 10 th Month (completion with-in 1 month of 1 st Synchronization)

In order to meet above schedule in general, and any other intermediate targets set to meet customer/ project schedule requirements, contractor shall make note of above and mobilize his manpower and resources from time to time on instructions of BHEL to achieve the desired progress of work and project commissioning schedule. Other milestones/ activities like completion of painting, Area Cleaning, material reconciliation, completion of Contractual

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Chapter – VI: Time Schedule

Obligation etc to be completed within Contract schedule as per Tender condition and in consultation with Site engineer.

6.3 Commencement of Contract Period

Commencement of contract period will be based on mutual agreement between BHEL site Engineer and Agency Site In-charge.

6.4 Contract Period

The contract period for erection, testing and commissioning shall be **10 Months** from start of contract period as defined under 6.3.

6.5

In order to meet above schedule and other intermediate targets/activities as set **by BHEL Engineer in charge** at site & to meet customer requirements/project schedule, contractor shall arrange all necessary resources and work force in consultation with BHEL Engineer at site to undertake works concurrently in all possible fronts as made available to contractor.

Contractor shall note that individual milestones as above shall be achieved as per schedule furnished above

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Chapter – VII: TERMS OF PAYMENT

PAYMENT TERMS

7.1 The progressive payment for “Erection, Testing and Commissioning of piping #4 Package”

on accepted price of contract value will be released as per the break up given hereinafter:

1	Piping: HRH Piping, HP Inlet piping, LP Extraction piping, Gland Seal Steam piping, GSC Extractor Fan Piping (Suction and discharge), Steam & drain piping, LP Spray Control valve, Orifices, LP Spray Filter and Orifice, Turbine Auxiliaries piping control fluid (Supply + Return), GFR Isolating Valves, Protection System Piping, Safety and Return Circuit Valves for LP accumulators, Control Fluid Piping Supports (Structural & Hanger Supports), Protection Piping Supports (Structural & Hanger Supports) , Gas Piping, Waste Gas Piping, Waste Fluid Piping, Valves and Supports for Generator Piping (Gas Piping, Waste Fluid Piping & Waste Gas Piping) etc. including all accessories like thermowells etc on pro-rata basis.	85%
1.1	PRE-ASSEMBLY	10%
1.2	PLACEMENT IN POSITION	10%
1.3	ALIGNMENT	15%
1.4	WELDING/BOLTING/FIXING	20%
1.5	COMPLETION OF NON DESTRUCTIVE EXAMINATION AND STRESS RELIEVING/HEAT TREATMENT , INSULATION WHEREVER APPLICABLE	15%
1.6	HANGERS AND SUPPORTS ETC. WHEREVER NECESSARY AS PER DRAWING	5%
1.7	HYDRAULIC TEST/PNEUMATIC TEST WHEREVER APPLICABLE	6%
1.8	INSULATION AND CLADDING OF RELATED PIPING AND EQUIPMENTS	2%
1.9	SATISFACTORY SUBMISSION OF ALL NECESSARY DOCUMENTATION	2%
	SUB TOTAL FOR INTEGRAL PIPING (90%)	85%
2	FINAL PAINTING (3%)	
2.1	PROGRESSIVE PAYMENT FOR SUPPLY AND APPLICATION OF PAINTS FOR FINAL PAINTING OF EQUIPMENTS UNDER SCOPE	3%
	TOTAL FOR FINAL PAINTING (3%)	3%
3	STAGE/MILESTONE PAYMENTS (12%)	
3.1	OIL FLUSHING COMPLETION	2%
3.2	BARRING GEAR	2%
3.4	SYNCHRONIZATION WITH NUCLEAR STEAM	2%
3.5	AREA CLEANING AFTER WORK COMPLETION	2%
3.6	MATERIAL RECONCILIATION	2%
3.7	COMPLETION OF CONTRACTUAL OBLIGATION	2%

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Chapter – VII: TERMS OF PAYMENT

	TOTAL FOR STAGE/MILESTONE PAYMENTS (11%)	12%
	TOTAL OF 1,2&3	100%

*** Considering very essential safety requirements, 2% of RA bill will be released only after certification from BHEL engineer that all safety related rules and requirements have been followed by the contractor.**

Note: The terms of payment is only for enabling release of payments through RA bills and is not indicative of the actual quantum or value of work.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – VIII : Taxes and Duties

8.0 TAXES, DUTIES, LEVIES (Rev 14 dated 09/10/2020)

1. All taxes excluding GST, GST Cess & BOCW Cess but including, Royalties, fees, license, deposits, commission, any State or Central Levy and other charges whatsoever, if any, shall be borne by you and shall not be payable extra.
2. Any increase of the taxes excluding GST, GST Cess & BOCW Cess, at any stage during execution including extension of the contract shall have to be borne by the contractor. Quoted/ accepted rates/ price shall be inclusive of all such requirements. Please note that since GST on output will be paid by BHEL separately as enumerated below, your quoted rates/ price should be after considering the Input Credit under GST law at your end.
3. **GST** :
The successful bidder shall furnish proof of GST registration .GST along with Cess (as applicable) legally leviable & payable by the successful bidder as per GST Law, shall be paid by BHEL. Hence Bidder shall not include GST along with Cess (as applicable) in their quoted price.
4. GST charged in the Tax Invoice/Debit note by the contractor shall be released separately to the contractor only after contractor files the outward supply details in GSTR-1 on GSTN portal and input tax credit of such invoice is matched with corresponding details of outward supply of the contractor and has paid the GST at the time of filing the monthly return
5. E-invoicing under GST has been implemented with effect from 1st October 2020 for all the taxable persons having turnover more than the threshold limit in any preceding financial year from 2017-18 onwards. Therefore, for all the taxable persons falling under the purview of E-invoice, it is mandatory to mention a valid unique Invoice Reference No. (IRN) and QR code as generated from E-Invoicing portal of the Government for the purpose of issuing a valid Tax Invoice. Only an E-invoice issued in the manner prescribed under rule 48(4) of CGST Rules shall be treated as valid invoice for reimbursement of GST amount.
If the successful Bidder is not falling under the purview of E-Invoicing then he has to submit a declaration in that respect along with relevant financial statements.
6. Bidder shall note that the GST Tax Invoice complying with GST Invoice Rules (Section 31 of GST Act & Rules referred there under) wherein the 'Bill To' details will as below:
BHEL GSTN – As per **Annexure -1**
NAME -- Bharat Heavy Electricals Limited
ADDRESS -- Site address

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – VIII : Taxes and Duties

7. Bidder to immediately intimate on the day of removal of Goods (in case of any supply of goods) to BHEL along with all relevant details and a scanned copy of Tax Invoice to below email ids to enable BHEL to meet its GST related compliances :-

Email id ---- to be intimated later on.

In case of delay in submission of the abovementioned documents on the date of dispatch, BHEL may incur penalty /interest for not adhering to Invoicing Rules under GST Law. The same will be liable to be recovered from the successful bidder, if such delay is not attributable to BHEL.

8. In case of raising any Supplementary Tax Invoice (Debit / Credit Note) Bidder shall issue the same containing all the details as referred to in Section 34 read with Rule 53.
9. Bidder shall note that in case GST credit is delayed/ denied to BHEL due to delayed / non receipt of goods and /or tax invoice or expiry of the timeline prescribed in GST Law for availing such ITC, or any other reasons not attributable to BHEL, GST amount shall be recoverable from the vendor along with interest levied / leviable on BHEL, as the case may be.
10. Bidder shall upload the Invoices raised on BHEL in GSTR-1 within the prescribed time as given in the GST Act. Bidder shall note that in case of delay in declaring such invoice in your return and GST credit availed by BHEL is denied or reversed subsequently as per GST Law , GST amount paid by BHEL towards such ITC reversal as per GST law shall be recoverable from the bidder along with interest levied / leviable on BHEL.
11. Way Bill: Successful Bidder to arrange for way bill / e-waybill for any transfer of goods for the execution of the contract.

The Bidder has to make their own arrangement at their cost for completing the formalities, if required, with Issuing Authorities, for bringing materials, plants & machinery at site for execution of the works under this contract, Road Permit/ Way Bill, if required, shall be arranged by the contractor and BHEL will not supply any Road Permit/ Way Bill for this purpose.

12. **New taxes and duties:-**Any New taxes & duties, if imposed subsequent to due date of offer submission as per NIT & TCN, by statutory authority during contract period including extension, if the same is not attributable to you, shall be reimbursed by BHEL on production of relevant supporting document to the satisfaction of BHEL. However, you shall obtain prior approval from BHEL before depositing new taxes and duties.

Benefits and/or abolition of all existing taxes must be passed on to BHEL against new Taxes, if any, proposed to be introduced at a later date.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – VIII : Taxes and Duties

In case any new tax/levy/duty etc. becomes applicable after the date of bidder's offer but before opening of the price bid, the bidder must convey its impact on his price duly substantiated by documentary evidence in support of the same before opening of the price bids. Claim for any such impact after opening the price bid will not be considered by BHEL for reimbursement of tax or reassessment of offer.

13. For transportation work, bidder shall declare in his quotation whether he is registered under GST, if yes, whether he intends to claim GST on forward charge basis. In absence of this declaration, BHEL will proceed further with the assumption that bidder intends not to claim GST on forward charge basis. However, in case of GST registered transporter, the amount to the extent of goods and service tax will be retained till BHEL avails the credit of GST. Further, transporter shall issue tax invoice which inter alia includes gross weight of the consignment, name of the consigner and the consignee, registration number of vehicle in which the goods are transported, details of goods transported, details of place of origin and destination, GSTIN of the person liable for paying tax whether as consigner, consignee or goods transport agency, and also containing other information as mentioned under rule 46.
14. **TDS under Income Tax shall be deducted at prevailing rates on gross invoice value from the running bills unless exemption certificate from the appropriate authority/ authorities is furnished.**
15. **TDS under GST shall be deducted at prevailing rates on applicable value from the running bills.**
16. **TCS under Income Tax 1961 has been implemented with effect from 1st October 2020 for every seller having turnover more than threshold limit during financial year immediately preceding financial year in which the sale of goods is carried out, who receives any amount as consideration for sale of any goods of the value or aggregate of such value exceeding threshold limit other than export of goods or who is already covered under other provision of section 206C, collect from the buyer, TCS as per applicable rates of the sale consideration exceeding threshold limit subject to following conditions**
 - i. Buyer shall be as per clause (a) of section 206C- (1H)
 - ii. Seller shall be as per clause (b) of section 206C- (1H)

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – VIII : Taxes and Duties

- iii. No TCS is to be collected, if the seller is liable to collect TCS under other provision of section 206C or the buyer is liable to deduct TDS under any provision of the Act and has deducted such amount.

If Successful Bidder is falling under the purview of TCS then he has to submit a declaration in that respect along with relevant financial statements before the start of work or if bidder is falling under preview of TCS during the work in progress then bidder is compulsorily required to submit relevant financial statement in the beginning of the respective FY.

For TCS claim, vendor has to submit relevant documents required as per Income Tax Act.

17. Refer Annexure – 2 for BOCW Act & Cess Act.

ANNEXURE-1

State wise GSTIN no.s of BHEL

Sl. No	Projects under state	GSTIN
1	Andhra Pradesh	37AAACB4146P7Z8
2	Bihar	10AAACB4146P1ZU
3	Chhattisgarh	22AAACB4146P1ZP
4	Gujarat	24AAACB4146P1ZL
5	Jharkhand	20AAACB4146P5ZP
6	Madhya Pradesh	23AAACB4146P1ZN
7	Maharashtra	27AAACB4146P1ZF
8	Orissa	21AAACB4146P1ZR
9	Telangana	36AAACB4146P1ZG

ANNEXURE-2

BOCW Act & Cess Act

Bidder may please note that the sub-contractor/bidder of BHEL engaging building or construction worker in connection with building or other construction work, are required to follow the procedures enumerated below:

1. It shall be the sole responsibility of the contractor as employer to ensure compliance of all the statutory obligations under the Building and other Construction Workers' (Regulation of Employment and Conditions of Service) Act, 1996 and the Building and other Construction Workers' Welfare Cess Act, 1996 and the rules made thereunder.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – VIII : Taxes and Duties

2. It shall be sole responsibility of the contractor engaging Building Workers in connection with the building or other construction works in the capacity of employer to apply and obtain registration certificate specifying the scope of work under the relevant provisions of the Building and Other Construction Workers' (Regulation of Employment and Conditions of Service) Act, 1996 from the appropriate Authorities.
3. It shall be responsibility of the contractor to furnish a copy of such Registration Certificate within a period of one month from the date of commencement of Work.
4. It is responsibility of the contractor to register under the Building and other Construction Workers' Welfare Cess Act, 1996 and deposit the required Cess for the purposes of the Building and other Construction Workers' (Regulation of Employment and Conditions of Service) Act, 1996 at such rate as the Central Government may , by notification in the Official Gazette, from time to time specify. However, before registering and deposit of Cess under the Building and other Construction Workers' Welfare Cess Act, 1996, the contractor will seek written prior approval from the Construction Manager.
5. It shall be sole responsibility of the contractor as employer to get registered every Building Worker, who is between the age of 18 to 60 years of age and who has been engaged in any building or other construction work for not less than ninety days during the preceding twelve months as Beneficiary under the Building and other Construction Workers' (Regulation of Employment and Conditions of Service) Act, 1996.
6. It shall be sole responsibility of the contractor as employer to maintain all the registers, records, notices and submit returns under the Building and other Construction Workers' (Regulation of Employment and Conditions of Service) Act, 1996 and the Building and other Construction Workers' Welfare Cess Act, 1996 and the rules made thereunder.
7. It shall be sole responsibility of the contractor as employer to provide notice of poisoning or occupation notifiable diseases, to report of accident and dangerous occurrences to the concerned authorities under the Building and other Construction Workers' (Regulation of Employment and Conditions of Service) Act, 1996 and the rules made thereunder and to make payment of all statutory payments & compensation under the Employees' Compensation Act, 1923.
8. It shall be the responsibility of the sub-contractor as employer to make payment/deposit of applicable cess amount on the extent of work involving building or construction workers engaged by the sub-contractor within a period of one month from the receipt of payment. It shall also be responsibility of the Contractor to furnish BHEL on monthly basis, Receipts/ Challans towards Deposit of the Cess under the Building and other Construction Workers' Welfare Cess Act, 1996 and the rules made thereunder along with following statistics :

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – VIII : Taxes and Duties

- (i) Number of Building Workers employed during preceding one month.
 - (ii) Number of Building workers registered as Beneficiary during preceding one month.
 - (iii) Disbursement of Wages made to the Building Workers for preceding wage month.
 - (iv) Remittance of Contribution of Beneficiaries made during the preceding month
9. BHEL shall reimburse the contractor the Cess amount deposited for the purposes of the Building and other Construction Workers' (Regulation of Employment and Conditions of Service) Act, 1996 under the Building and other Construction Workers' Welfare Cess Act, 1996 and the rules made thereunder. However, BHEL shall not reimburse the Fee paid towards the registration of establishment, fees paid towards registration of Beneficiaries and Contribution of Beneficiaries remitted.
10. It shall be responsibility of the Building Worker engaged by the Contractor and registered as a beneficiary under the Building and other Construction Workers' (Regulation of Employment and Conditions of Service) Act, 1996 to contribute to the Fund at such rate per mensem as may be specified by the State government by notification in the Official Gazette. Where such beneficiary authorizes the contractor being his employer to deduct his contribution from his monthly wages and to remit the same, the contractor shall remit such contribution to the Building and other construction Workers' Welfare Board in such manner as may be directed by the Board , within the fifteen days from such deduction.
11. Bidders may please note that though the quoted price is exclusive of BOCW (which will be reimbursed by BHEL as per sub-clause 9 above) , however, If at any point of time during the contract period, non-compliance of the provisions of the Building and other Construction Workers' (Regulation of Employment and Conditions of Service) Act, 1996 and the Building and other Construction Workers' Welfare Cess Act, 1996 and the rules made thereunder is observed, BHEL reserves the right to deduct the applicable cess (1%) on the contract value and penalty (if any, imposed by Cess Authorities) from the payables on account of non-compliance.
12. The contractor shall declare to undertake any liability or claim arising out of employment of building workers and shall indemnify BHEL from all consequences / liabilities / penalties in case of non-compliance of the provisions of the Building and other Construction Workers' (Regulation of Employment and Conditions of Service) Act, 1996 and the Building and other Construction Workers' Welfare Cess Act, 1996 and the rules made thereunder.

TECHNICAL CONDITIONS OF CONTRACT (TCC)
Chapter – IX : BILL OF QUANTITIES

TG PIPING: BALANCE PIPING SCOPE OF WORK

HEAD	PKG NO.	ACTUAL WT (KG)	PRE- ASSEMBLY	PLACEMENT	ALIGNMENT	WELDING /BOLTING /FIXING	COMPLETION OF NON DESTRUCTIVE EXAMINATION AND STRESS RELIEVING, HEAT TREATMENT, INSULATION WHEREVER APPLICABLE	HANGERS AND SUPPORTS ETC. WHEREVER NECESSARY AS PER DRAWING	HYDRAULIC /PNEUMATIC TEST WHEREVER APPLICABLE	INSULATION AND CLADDING OF RELATED PIPING AND EQUIPMENTS	SATISFACTORY SUBMISSION OF ALL NECESSARY DOCUMENTS	REMARKS/ MATERIAL DETAIL & PIPE SIZE
			BALANCE (KG)	BALANCE (KG)	BALANCE (KG)	BALANCE (KG)	BALANCE (KG)	BALANCE (KG)	BALANCE (KG)	BALANCE (KG)	BALANCE (KG)	
HRH PIPING (RHS)	453104-A	12165.00	7560.00	12165.00	12165.00	12165.00	12165.00	12165.00	12165.00	12165.00	12165.00	CS/40" to 72"
HRH PIPING (RHS)	453104-B	3008.00	0.00	3008.00	3008.00	3008.00	3008.00	3008.00	3008.00	3008.00	3008.00	
HRH PIPING (RHS)	453105-A	20905.60	12815.60	7750.60	20905.60	20905.60	20905.60	20905.60	20905.60	20905.60	20905.60	
TIE RODS FOR HRH (RHS)	453105-B	3229.50	3229.50	3229.50	3229.50	3229.50	3229.50	3229.50	3229.50	3229.50	3229.50	
MEJ FOR HRH (RHS)	453106	5850.00	0.00	0.00	5850.00	5850.00	5850.00	5850.00	5850.00	5850.00	5850.00	
MEJ FOR HRH (RHS)	453108	2165.00	880.00	880.00	2165.00	2165.00	2165.00	2165.00	2165.00	2165.00	2165.00	
HRH SUPPORTS (RHS)	453110	2000.80	2000.80	2000.80	2000.80	2000.80	2000.80	2000.80	2000.80	2000.80	2000.80	CS/ 24"
HP INLET PIPING- LOWER HALF	452801-A	4491.76	4491.76	4491.76	4491.76	4491.76	4491.76	4491.76	4491.76	4491.76	4491.76	
HP INLET PIPING- UPPER HALF	452801-B	4200.00	4200.00	4200.00	4200.00	4200.00	4200.00	4200.00	4200.00	4200.00	4200.00	
LP EXTRACTION PIPING	452903-A	7845.48	0.00	0.00	7845.48	7845.48	7845.48	7845.48	7845.48	7845.48	7845.48	SS/ 18" TO 26"

BHEL-PSWR (VOL-I-A- TECHNICAL BID SPECIFICATION)

E-Tender Specification No: BHE/PW/PUR/KKRN TG PIPING/2507

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – IX : BILL OF QUANTITIES

HEAD	PKG NO.	ACTUAL WT (KG)	PRE-ASSEMBLY	PLACEMENT	ALIGNMENT	WELDING /BOLTING /FIXING	COMPLETION OF NON DESTRUCTIVE EXAMINATION AND STRESS RELIEVING, HEAT TREATMENT, INSULATION WHEREVER APPLICABLE	HANGERS AND SUPPORTS ETC. WHEREVER NECESSARY AS PER DRAWING	HYDRAULIC /PNUMATIC TEST WHEREVER APPLICABLE	INSULATION AND CLADDING OF RELATED PIPING AND EQUIPMENTS	SATISFACTORY SUBMISSION OF ALL NECESSARY DOCUMENTS	REMARKS/ MATERIAL DETAIL & PIPE SIZE
			BALANCE (KG)	BALANCE (KG)	BALANCE (KG)	BALANCE (KG)	BALANCE (KG)	BALANCE (KG)	BALANCE (KG)	BALANCE (KG)	BALANCE (KG)	
GLAND STEAM PIPING	452903-A	7486.57	7486.57	7486.57	7486.57	7486.57	7486.57	7486.57	7486.57	7486.57	7486.57	CS/ 0.5” TO 12”
GSC EXTRACTOR FAN PIPING	453015	1000.00	1000.00	1000.00	1000.00	1000.00	1000.00	1000.00	1000.00	1000.00	1000.00	
STEAM & DRAIN PIPING	452904	2047.40	1906.20	2047.40	2047.40	2047.40	2047.40	2047.40	2047.40	2047.40	2047.40	SS+P11/ 1.25” TO 4”
LP SPRAY CONTROL VALVE	453017	128.00	128.00	128.00	128.00	128.00	128.00	128.00	128.00	128.00	128.00	SS/ 4”
ORIFICES	452903-B	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	
LP SPRAY FILTER & ORIFICE	452903-C	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00	
TURBINE AUXILIARY PIPING CONTROL FLUID (SUPPLY+RETURN)	452902-A	1100.00	1077.55	1077.55	1077.55	1077.55	1077.55	1077.55	1100.00	1100.00	1100.00	SS/ 0.5” TO 4”
GFR ISOLATING VALVES	453012	160.00	160.00	160.00	160.00	160.00	160.00	160.00	160.00	160.00	160.00	
PROTECTION SYSTEM PIPING	452902-B	450.00	437.50	437.50	437.50	437.50	437.50	437.50	450.00	450.00	450.00	SS/ 0.5” TO 2”

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TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – IX : BILL OF QUANTITIES

HEAD	PKG NO.	ACTUAL WT (KG)	PRE- ASSEMBLY	PLACEME NT	ALIGNME NT	WELDING /BOLTING /FIXING	COMPLETION OF NON DESTRUCTIVE EXAMINATION AND STRESS RELIEVING, HEAT TREATMENT, INSULATION WHEREVER APPLICABLE	HANGERS AND SUPPORTS ETC. WHEREVER NECESSARY AS PER DRAWING	HYDRAULIC /PNUMATIC TEST WHEREVER APPLICABL E	INSULATION AND CLADDING OF RELATED PIPING AND EQUIPMENTS	SATISFACTOR Y SUBMISSION OF ALL NECESSARY DOCUMENTS	REMARKS/ MATERIAL DETAIL & PIPE SIZE
			BALANCE (KG)	BALANCE (KG)	BALANCE (KG)	BALANCE (KG)	BALANCE (KG)	BALANCE (KG)	BALANCE (KG)	BALANCE (KG)	BALANCE (KG)	
SAFETY AND RETURN CIRCUIT VALVES FOR LP ACCUMULATORS	452901-F	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00	SS/ 0.5" TO 2"
CONTROL FLUID PIPING SUPPORTS (STRUCTURAL SUPPORTS) (1 SET)	452905	2000.00	2000.00	2000.00	2000.00	2000.00	2000.00	2000.00	2000.00	2000.00	2000.00	CS
PROTECTION PIPING SUPPORTS (STRUCTURAL SUPPORTS) (1 SET)	452905	640.00	640.00	640.00	640.00	640.00	640.00	640.00	640.00	640.00	640.00	CS
STEAM & DRAIN SYSTEM PIPING SUPPORTS (STRUCTURAL SUPPORTS) (1 SET)	452905	846.00	846.00	846.00	846.00	846.00	846.00	846.00	846.00	846.00	846.00	CS
STEAM & DRAIN SYSTEM PIPING SUPPORTS (HANGERS) (1 SET)	452905	125.00	125.00	125.00	125.00	125.00	125.00	125.00	125.00	125.00	125.00	CS

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TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – IX : BILL OF QUANTITIES

HEAD	PKG NO.	ACTUAL WT (KG)	PRE- ASSEMBLY	PLACEME NT	ALIGNME NT	WELDING /BOLTING /FIXING	COMPLETION OF NON DESTRUCTIVE EXAMINATION AND STRESS RELIEVING, HEAT TREATMENT, INSULATION WHEREVER APPLICABLE	HANGERS AND SUPPORTS ETC. WHEREVER NECESSARY AS PER DRAWING	HYDRAULIC /PNUMATIC TEST WHEREVER APPLICABL E	INSULATION AND CLADDING OF RELATED PIPING AND EQUIPMENTS	SATISFACTOR Y SUBMISSION OF ALL NECESSARY DOCUMENTS	REMARKS/ MATERIAL DETAIL & PIPE SIZE
			BALANCE (KG)	BALANCE (KG)	BALANCE (KG)	BALANCE (KG)	BALANCE (KG)	BALANCE (KG)	BALANCE (KG)	BALANCE (KG)	BALANCE (KG)	
STEAM & DRAIN SYSTEM PIPING SUPPORTS (HANGERS) (1 SET)	452905	210.00	210.00	210.00	210.00	210.00	210.00	210.00	210.00	210.00	210.00	CS
GAS PIPING	BG090	1108.98	760.45	1108.98	1108.98	1108.98	1108.98	1108.98	1108.98	1108.98	1108.98	CS/ 8NB TO 2"
WASTE GAS PIPING	BG090	3400.11	1570.79	3299.17	3299.17	3299.17	3400.11	3400.11	3400.11	3400.11	3400.11	CS/ 0.5" TO 6"
WASTE FLUID PIPING	BG090	159.85	159.85	159.85	159.85	159.85	159.85	159.85	159.85	159.85	159.85	CS/ 0.5" TO 2"
VALVES AND SUPPORTS FOR GENERATOR PIPING (GAS PIPING, WASTE FLUID PIPING & WASTE GAS PIPING)	BG090	9370.96	9370.96	9370.96	9370.96	9370.96	9370.96	9370.96	9370.96	9370.96	9370.96	CS
Total weight (Kgs)		96724 (i.e 96.7 MT)	63687	68453	96588	96588	96689	96689	96724	96724	96724	

Note: Total weight of piping executed during work may vary & any variation in quantities of Piping shall be treated as per the Quantity Variation Clause 2.14 of GCC.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – X: SPECIFIC INCLUSIONS

10. INCLUSIONS

10.1

All terminal connections for equipment & piping covered in this specification.

~~10.2~~

~~10.3~~

~~10.4~~

~~10.5~~

~~10.6~~

~~10.7~~

~~10.8~~

~~10.10~~

10.11 CONSUMABLES

The contractor shall provide all consumables required for carrying out the work covered under these specifications excepting those which are specifically indicated as BHEL scope.

10.12

All consumables to be used for the work shall have prior approval of BHEL engineer with regard to brand and quality specifications. Test reports / certificates in respect of these consumables, wherever applicable, shall be submitted to BHEL engineer.

10.13 WELDING ELECTRODES, FILLER WIRES FOR TIG WELDING AND GASES

All welding consumables including welding electrodes, gases, filler wires etc. are in the contractor's scope.

10.14

All the required welding electrodes as approved by BHEL shall be arranged by contractor at his cost. It shall be the responsibility of the contractor to obtain prior approval of BHEL, before procurement, regarding manufacturer, type of electrodes etc. on receipt of the electrodes at site, it shall be subject to inspection and approval by BHEL regarding type of electrodes, batch number, date of expiry etc. Batch test certificates shall be made available for verification & record before the actual use of the welding consumables.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – X: SPECIFIC INCLUSIONS

BHEL reserves the right to reject the use of any electrodes, if found non-acceptable because of bad quality, deterioration in quality due to improper storage, shelf life expiry, unapproved type / brand etc.

10.15

The contractor shall provide all consumables required for carrying out the work covered under this scope of work including TIG wires for welding of piping joints.

10.16

All the required gases like argon, oxygen, and acetylene etc. shall be arranged by the contractor at his cost.

10.17

It must be expressly noted that the T&P requirement as indicated in the relevant chapter is only indicative and any other T&P required for smooth material handling and erection shall be arranged by the contractor within the quoted rate.

10.18

Supply of temporary gaskets for hydro-test, pneumatic test, flushing, air-blasting etc

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – XI: SPECIFIC EXCLUSIONS

11. EXCLUSIONS

The following works are specific exclusions from the scope of work under erection, testing & commissioning of tender specification.

11.1

Civil works except to the extent specifically indicated elsewhere in this tender.

11.2

Sub-delivery items and electrical components such as push-buttons, junction boxes etc.

11.3

E&C work of cable trays, cables and earthing, control panels, EPMS, MCC etc.

11.4

All electrical and control & instrumentation related to items except those specified elsewhere in these specifications.

11.5

Testing and commissioning of heating elements, thermostats, HV rectifier transformers.

11.6

Pneumatic copper tubing and fittings thereof. Electrical and C&I items of Variable Frequency Drives as provided elsewhere in these specifications.

11.7

All cable connections, except those specified as scope of work.

11.8

Measuring instruments, monitoring, relaying, protection and signaling equipments other than those supplied with the equipments by / on behalf of BHEL and which have been indicated as scope of work.

11.10

Impulse piping and fittings beyond the root wall and nut & tail is excluded from the scope of contractor under these specifications. It is to mention that impulse piping and fitting from tapping point upto nut & tail (including nut & tail) is specifically included under the scope of work of contractor under these tender specifications.

11.11

Supply of materials for temporary piping (pipe, valve, structural steel etc.) required for chemical cleaning, flushing or steam/air blowing of the pipelines.

11.12

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – XI: SPECIFIC EXCLUSIONS

Supply of chemicals and lube oil as required for chemical cleaning and oil flushing operations during pre-commissioning, commissioning and trial operations activities.

11.13

Some sub-delivery items and electrical components such as push-buttons, junction boxes etc.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Annexure-I ESTIMATED WEIGHT FOR VARIOUS SYSTEMS IN SCOPE OF WORK (ERECTION, TESTING AND ASSISTANCE FOR COMMISSIONING)

ESTIMATED WEIGHT OF VARIOUS SYSTEM IN SCOPE OF WORK FOR ERECTION, TESTING AND COMMISSIONING OF UNIT #4 STG PIPING AND AUXILIARIES PACKAGE

NOTE: The weight details shown are only for the purpose of erection, testing and commissioning of Unit #4 STG and auxiliaries package.

A) BHEL-BHOPAL/ALSTOM Supply

A.10 Turbine auxiliaries and piping

S.No.	SYSTEM	QTY	VOL (m³)	TOTAL WT. FOR 1 UNIT(kg)
1	HRH Piping			As per Chapter 9 (BOQ)
2	HP Loop Pipe			
3	Extraction Pipe Inside Condenser (To Heater 1)			
4	Extraction Pipe Inside Condenser (To Heater 2)			
5	Extraction Pipe Inside Condenser (To Heater 3)			
6	Control and protection Oil Piping			
7	Gland seal Steam piping			
8	Steam and drain piping			
TOTAL FOR UNIT #4				As per Chapter 9 (BOQ)
** Other TG and Generator Integral piping systems				
** Other TG and Generator Integral piping systems consists of Condensate Spray, drainage piping, Seal oil Piping, Primary Water piping, Gas Piping etc. Payment of these pipings and other pipings mentioned in A.10 shall be governed as per Notes below				

Note:

HRH piping consists of Carbon Steel material. The outer diameter for these piping varies from 1.1m to 1.8m and thickness varying from 12.5 to 16mm.

Payment for TG/Generator Integral Piping including other Piping Covered under Sl No 7.2 of Annexure A of Volume I A 'TCC' shall be on Pro Rata basis on a per MT Rate. On completion of Piping Works, compensation due to variation of quantities of Piping shall be as per the Quantity Variation Clause 2.14 of GCC.

A.11 Auxiliaries Equipment

TECHNICAL CONDITIONS OF CONTRACT (TCC)
Annexure-I ESTIMATED WEIGHT FOR VARIOUS SYSTEMS IN SCOPE OF
WORK (ERECTION, TESTING AND ASSISTANCE FOR COMMISSIONING)

S.No.	EQUIPMENT	QTY	VOL (m ³)	TOTAL WT. FOR 1 UNIT (kg)
1	LP Valve accumulator and flexible hose	10	nos	3150 Kgs
TOTAL				

TOTAL WEIGHT FOR UNIT #4 BALANCE PIPING ERECTION, TESTING, COMMISSIONING ETC. AS PER TENDER SPECIFICATIONS = 96.724 MT (Approx.)

NOTES:

- The list is for **ONE UNIT** and **tentative** and has been given to enable the contractor to study the nature of work to be done in this contract. There may be variation in size, weight etc. and no claim on this account will be applicable.

Some of the packages may be sent in parts to suit the site conditions/transportation. The same is to be assembled at site without any extra cost. Likewise the package may be assembled together and sent as a single assembly. Contractor may have to dismantle and erect, erect as a single assembly as per the instructions of BHEL engineers without any extra cost.

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Annexure-II PAINTING SCHEME

PAINTING SCHEME:

PAINTING SCHEME AS PER BHEL/NPCIL SPECIFICATION FOR FINAL/ TOUCH UP PAINTING.

(KAPP Painting Scheme shall be issued during execution)

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GENERAL REQUIREMENTS

12.1

The intent of specification is to provide services according to the most modern and proven techniques and codes. The omission of specific reference to any method, equipment or material necessary for proper and efficient execution of this work shall not relieve the Contractor of the responsibility of providing such facilities to complete the work without any extra compensation.

12.2

The terminal points decided by BHEL shall be final and binding on the Contractor for deciding the scope of work and effecting payment for the work done.

12.3

The work shall be executed under the usual conditions affecting major power plant construction and in conjunction with numerous other operations at site. The Contractor and his personnel shall cooperate with personnel of BHEL, BHEL'S Customer, Customer's consultants and other Contractors, coordinating his work with others and proceed in a manner that shall not delay or hinder the progress of work of the project as a whole.

12.4

The work covered under this specification is of highly sophisticated nature, requiring the best quality workmanship, supervision, engineering and construction management. The Contractor should ensure proper planning and successful & timely completion of the work to meet the overall project schedule. The Contractor must deploy adequate quantity of tools & plants, modern / latest construction aids etc. He must also deploy adequate trained, qualified and experienced supervisory staff and skilled personnel.

12.5

The work to be carried out under the scope of these specifications covers the complete work of collection from stores/storage yard, handling, transporting, unloading at erection site, pre-assembly, erection, alignment, hot alignment, bolting, fastening, welding, radiography, leveling, cold pulling, adjusting, Non-destructive testing, Post weld heat treatment, hydraulic test, chemical cleaning, passivation, steam blowing, oil flushing, water flushing, air flushing, pre-commissioning tests, trial running of auxiliaries covered under these specifications, commissioning and all other activities till Unit Synchronization & attending of pending points. The work shall conform to dimensions and tolerances specified in the various drawings, documents etc. that will be provided during the course of installation. If any portion of the work is found to be defective in workmanship or not conforming to drawings or other specifications, the Contractor shall dismantle and re-do the work duly replacing the defective materials at his cost failing which the work will be got done by BHEL at the cost and risk of the contractor. Contractor may please note that the collection, loading of materials at storage yard/Stores in contractor's Trailer / Carriers while collecting materials and transportation to site of work shall be considered as a part of scope of work under Erection, Commissioning scope of contractor.

12.6

During the course of execution of this work, certain rework/ modification/ rectification/ repairs/ fabrication etc. will be necessary on account of feedback from various Nuclear power stations on units already commissioned and/or units under erection and commissioning and also on account of design discrepancies and manufacturing defects and site operation/maintenance requirements. Contractor shall carry out such rework/ modification/ rectification/ fabrication/ repairs etc promptly and expeditiously. Daily log sheets indicating the details of work carried out, man hours; consumables used etc, shall be maintained by the Contractor and got signed by BHEL engineer every day. Claims of contractor, if any, for such works will be dealt as per relevant clauses of General Conditions of Contract.

12.7

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The contractor shall make adequate security arrangements including employment of security personnel and ensure protection from theft, fire, pilferage, damage and loss of materials/equipments issued to him for the work. Special care will have to be taken to guard against pilferage / theft of copper tubing, brass fittings, brass valves and other costly materials.

12.8

All equipments shall be handled very carefully to prevent any damage or loss. No bare wire ropes, slings etc, shall be used for handling of the equipments without the specific permission of the engineer.

12.9

The Contractor shall prepare and submit procedure for each activity and overall programme within the reasonable period to BHEL/NPCIL for their prior approval before commencement of activity in such form as may be required by BHEL/NPCIL, the order of procedure in which he proposes to carry out the works as to erection, testing and commissioning activities. The submission to and approval by BHEL/NPCIL of such programme shall not relieve the Contractor of any of his duties or responsibilities under the contract. Detailed procedure for carrying out erection, testing and commissioning, shall be submitted by Contractor for BHEL/NPCIL's approval prior to start of these activities, in a format and contents to be approved by BHEL/NPCIL.

12.10

After submission to and approval by BHEL/NPCIL of such programme the Contractor shall adhere to the order of procedure and method stated therein unless he obtains the written permission of BHEL/NPCIL to vary such method or order.

12.11

If at any time it should appear to BHEL/NPCIL that the actual progress of the works does not confirm to the programme, the Contractor shall produce, at the written request of BHEL/NPCIL, a revised programme showing modifications to the approved programme necessary to ensure completion of the works within the time for completion.

12.12

The contractor should submit well in advance his scheme for movement/lifting/handling of heavy components also indicating the tools, tackles and equipment with due calibration, testing certificates, which he proposes to employ for the same, for approval by BHEL/NPCIL prior to actual undertaking of such work.

12.13

Contractor shall erect and commission all the TG piping and associated items as per the sequence & methodology prescribed by BHEL depending upon the technical requirements. Availability of materials and fronts will decide this. BHEL Engineer's decision regarding correctness of the work and method of working shall be final and binding on the Contractor. No claims for extra payment from the Contractor will be entertained on the ground of deviation from the methods / sequence adopted in erection of similar sets elsewhere.

12.14

All necessary certificates and licenses, permits & clearances required to carry out this work from the respective statutory/ local authorities are to be arranged by the Contractor at his cost in time to ensure smooth progress of work.

12.15

The work shall conform to dimensions and tolerances specified in the various drawings / documents that will be provided during various stages of erection. If any portion of work is found to be defective in workmanship, not conforming to drawings or other stipulations due to Contractor's fault, the Contractor shall dismantle and

TECHNICAL CONDITIONS OF CONTRACT (TCC)

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re-do the work duly replacing the defective materials at his cost, failing which the work will be got done by BHEL and recoveries will be effected from the Contractor's bills towards expenditure incurred including cost of materials and departmental overheads of BHEL.

12.16

The Contractor shall perform any services, tests etc, which may not be specified but nevertheless, required for the completion of work within quoted rates.

12.17

The Contractor shall execute the work in the most substantial and workman like manner. The stores shall be handled with care and diligence.

12.18

Contractor shall ensure proper housekeeping and remove all scrap materials periodically from various work area covered in the scope and deposit the same at the place earmarked for this purpose. **Agency will engage exclusively 1man power per month for housekeeping for Contract duration including extension period, if any.**In case of contractor's failure to do the same, BHEL reserves the right to remove scrap at contractor's risk& cost.

12.19

BHEL reserves right to recover from the Contractor any loss which arises out of undue delay / discrepancy / shortage / damage or any other causes due to Contractor's lapse during any stage of work. Any loss to BHEL due to Contractor's lapse shall have to be made good by the Contractor.

12.20

All cranes, transport equipment, handling equipment, tools, tackles, fixtures, equipment, manpower, supervisors/engineers, consumables etc, except otherwise specified as BHEL scope of free issue, required for this scope of work shall be provided by the Contractor. All expenditure including taxes and incidentals in this connection will have to be borne by Contractor unless otherwise specified in the relevant clauses. The Contractor's quoted rates should be inclusive of all such contingencies.

12.21

During the course of erection, testing and commissioning certain rework / modification / rectification / repair / fabrication etc may become necessary on account of feedback / revision of drawing etc. This will also include modifications / re-works suggested by BHEL / customer / other inspection group. Contractor shall carry out such rework / modification / rectification / fabrication / repair etc promptly and expeditiously. Daily log sheets signed by BHEL engineer and indicating the details of work carried out, man-hours etc shall be maintained by the Contractor for such reworks. Claim of Contractor if any, for such works will be governed by relevant clauses of 'General Conditions of Contract'.

12.22

All works such as cleaning, leveling, aligning, trial assembly, dismantling of certain equipments / components for checking and cleaning, surface preparation, fabrication of structures, tubes and pipes as per general engineering practice and as per BHEL Engineer's instructions at site, cutting, gouging, weld depositing, grinding, straightening, chamfering, filing, chipping, drilling, reaming, scrapping, lapping, fitting up etc as may be applicable in such erection works and which are treated incidental to the erection works and necessary to complete the work satisfactorily, shall be carried out by the Contractor as part of the work within the quoted rates.

12.23

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The Contractor shall make all fixtures, temporary supports, steel structures required for jigs & fixtures, anchors for load and guide pulleys required for the work. Contractor shall arrange necessary steel for such usage.

12.24

The Contractor shall take delivery of the components, equipments, chemicals, and lubricants etc from the BHEL stores/ storage area after getting the approval of BHEL Engineer on standard indent forms of BHEL. Complete and detailed account of the materials and equipments after usage shall be submitted to the BHEL and reconciled periodically.

12.25

Contractor shall plan and transport equipments, components from storage to erection site and erect them in such a manner and sequence that material accumulation at site does not lead to congestion at site of work. Materials shall be stacked neatly, preserved and stored in the Contractor's shed and at work areas in an orderly manner. In case it is necessary to shift and re-stack the materials kept at work areas/ site to enable other agencies to carry out their work or for any other reason, same shall be done by Contractor most expeditiously as incidental to work.

12.26

Plant materials should not be used for any temporary supports / scaffolding/ preparing pre-assembly bed etc.

12.27

The details of items/piping materials to be erected under this contract are generally as per the schedule given in relevant appendices. These details are approximate and meant only to give a general idea to the bidder about the magnitude of the work involved. Actual quantum and type of items/piping materials will be based on the relevant erection documents which will be furnished to the Contractor in due course of erection and the weight and quantity as per the relevant engineering documents will only be admissible for the billing purpose.

12.28

Hangers & suspensions, supports etc for tubes, piping, & ducts etc will be supplied in running / random lengths / sizes which shall be cut to suitable sizes and adjusted as required.

12.29

Spring suspension / constant load hangers may have to be pre-assembled for required load and erection carried out as per instructions of BHEL. Adjustments, removal of temporary arrests/locks, cutting of excess thread length of hanger tie-rod etc have to be carried out as and when required. Load setting of spring hangers, as per BHEL's documents/instructions, during various stages of erection & testing and after floating of piping/ducting during cold and hot condition will have to be done as part of work. This exercise may have to be repeated till satisfactory results are achieved.

12.30

Contractor shall lay/install the field-routed/small-bore pipelines to suit site condition/ requirement. Before laying/installing such pipelines, the contractor shall prepare necessary sketch for routing these pipe lines and get the same approved by BHEL. Contractor must take care of the location/layout of other systems and equipment before preparing such sketch to avoid interference. There is a possibility of minor change in routing such pipelines even after completion of erection; contractor shall carry out the same without any extra cost to BHEL.

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12.31

Welding of necessary instrumentation tapping points, thermowell, thermocouple pad, metal temp pad and clamps, root valve upto nut & tail including reducer (to suit Control & Instrumentation Impulse Piping requirements), condensing vessel, flow metering & measurement devices, level gauges/ level transmitters and control valves to be provided on main equipments & its auxiliaries and piping are covered within the scope of this specification. The installation of all the above items will be Contractor's responsibility even if:

- a) Items are not specifically indicated under the respective product groups as given in the technical specifications.
- b) Items are supplied by an agency other than BHEL.

Pre-heating, NDE, and Post weld heat treatment for above shall be done as per the specifications as part of work.

12.32

Certain instrumentation like pressure switches, air sets, filters, regulators, pressure gauges, junction boxes, power cylinders, dial thermometers, flow meters, valve actuators, flow indicators, centrifugal/speed switches of motors, accumulators etc are received in assembled condition as integral part of equipments. Contractor shall dismount such instruments for calibration and hand over the same to BHEL. C & I erection agency will do storage / re-erection calibration etc.

12.33

Fixing and seal welding of thermowells & plugs before Hydro test/ steam blowing of equipment or other piping system is within the scope of work. Contractor shall also remove the seal welded plugs by process of grinding and fix and seal weld thermowells after hydro test/steam blowing of lines as part of work.

12.34

Actuators/drives of valves, dampers, gates, powered vanes etc may have to be serviced, lubricated, before erection, during pre-commissioning & commissioning, including carrying out minor adjustments required as incidental to the work.

12.35

~~All electrical motors have to be tested for IR & PI values prior to the trial run. Where required, dry out may have to be carried out by using external heating source. Contractor shall make all arrangements in this regard and complete the work as instructed. BHEL will provide the motorized insulation testers.~~

12.36

In installation of various piping and associated items, it may become necessary to install these on temporary supports/ hanger due to various reasons including non-availability of suspension materials. Contractor shall install such temporary suspensions/hangers and later on shift the relevant equipments to their respective permanent hangers/ suspensions/ supports as incidental to work. Requisite materials for such temporary arrangements will be provided by BHEL on free -returnable basis which shall be returned to BHEL after the use.

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12.37

The work shall be carried out strictly in accordance to the “Field Quality Plan” approved by BHEL/client. Contractor, jointly with BHEL, shall prepare all necessary records of measurements/readings/ protocols etc.

12.38

12.39

Interconnection/ hookup, if any, with the existing system shall form part of work. Such interconnections, hookups may require shut down of running plant and the relevant work have to be completed within such planned shutdowns. This may call for working with enhanced resources and on extended hours. Contractor's offer shall cover all such contingencies.

12.40

Contractor shall regulate flow of material to and from site in such a manner and sequence that material accumulation at site does not lead to congestion at site. In case it is necessary to shift and restack the materials kept at work areas / site to enable other agencies to carry out their work or further any other reason, it shall be done by the Contractor most expeditiously. No claim for extra payment for such work will be applicable.

12.41

It may so happen that certain components like manhole doors, hanger etc may be supplied in loose items. They need to be assembled as per relevant drawings or as per advice of BHEL engineer prior to erection. This forms the part of the scope of work.

12.42

The Contractor shall have total responsibility for all equipment and materials in his custody at Contractor's stores, loose, semi-assembled, assembled or erected by him at site. He shall effectively protect the finished works from action of weather and from damages or defacement and shall also cover the finished parts immediately on completion of work as per BHEL engineer's instructions. The machine surfaces/finished surfaces should be greased and covered.

12.43 COLLECTION AND RETURN OF EQUIPMENTS, MATERIALS & CONSUMABLES

12.43.1

Contractor shall take delivery of the components, equipments, lubricants, chemicals, special consumables, steel etc. from the storage yard/stores/sheds of BHEL/ client. The Contractor should note that the transport of equipments to erection site, assembly yards etc should be done by the prescribed route, without disturbing the other works and contractors and in the most professional manner. Special equipments such as laboratory equipments, measuring and controls equipments, special electrodes, valves, shims, packing materials for joints and seals, lubricants, actuators etc, shall be stored, when taken over by the Contractor, in appropriate manner as per BHEL's instructions.

12.43.2

The contractor shall return all parts, materials, consumables etc. remaining extra over the normal requirement with proper identification tags to BHEL stores. In case of any misuse or use over actual requirement, BHEL reserves the right to recover the cost of parts/materials used in excess or misused, with departmental charges.

12.43.3

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Transportation of control fluid (FRP oil), Chemicals, Gas cylinders etc from stores, is included in the scope of this contract. The contractor shall have to return all the empty and excess drums to the customer/BHEL stores. Similarly, transport of chemicals for various pre-commissioning activities/ processes mentioned in clauses herein from BHEL/customer's stores and charging of chemicals into the system for carrying out various pre-commissioning activities and processes mentioned herein and returning of remaining and/or the empty containers of the chemicals to customer/BHEL stores is the responsibility of contractor. After completion of oil flushing operation, the used oil shall be filled in empty drums and which in turn shall be returned to BHEL/customer's stores.

12.44 TEST TAPPING POINTS

Installation and welding of Tapping Points for taking performance test measurements shall be carried out by the contractor as part of this work for the equipments covered under this tender specification under the guidance of BHEL engineer. The scope will be limited to all the tapping points for which materials are available and their locations identified within the regular contract period and extensions thereof.

12.44.1

All packing and forwarding material shall be returned as soon as the material is unpacked. The location for storage of such materials shall be as indicated by BHEL Engineer.

12.44.2

All Measuring and Monitoring Devices (MMD) used for the work in scope of these tender specifications shall be calibrated by the accredited agencies that are approved by BHEL or calibration tractability is established upto National Physical Laboratory.

12.44.3

Contractor shall furnish the consumption details of chemicals, lubricants, TIG welding filler wire, welding electrodes and other consumables on monthly basis.

12.45

During the course of erection, platforms and floor grills are to be cut at certain places to route steam, oil, water and air piping, cable trays, etc or for accommodating erection, rigging etc, the cutting of platforms and grills should be minimum and as approved by BHEL engineer. After completion of work, the platform/grills cut shall be made good neatly as instructed by BHEL engineer.

12.46

Erection and welding of stainless steel fittings including supply of necessary stainless steel welding electrodes is within the scope of the work/specification.

12.47

No temporary supports should be welded on to the piping.

12.48

Adjustment of spring hangers for piping shall be done by the contractor during initial erection. After initial commissioning trials, it is possible that the spring hangers have to be adjusted

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repeatedly till the correct spring compression is achieved. Contractor shall do the same to the satisfaction of BHEL engineer. The marking of cold and hot positions on the hangers shall be done by the contractor.

12.49

The contractor shall return to BHEL the excess materials left over after completion of work, materials issued for temporary pipelines for HT, chemical cleaning, flushing, blowing etc. and materials issued on returnable basis in neatly dressed condition. Necessary grinding, edge cutting (square facing), edge preparation (vee), painting etc. to the condition similar to the one at the time of issue shall be in scope of work.

12.50

Wherever the equipments are erected by the contractor and connected piping is done by other agency, contractor shall weld / tighten the incoming pipes to either the equipment or the counter flange provided on the equipment.

12.51

The lubricants and chemicals required for chemical cleaning, oil flushing, and the lubricants for trial runs of the equipments and trial operation of the unit will be supplied by BHEL free of charges.

12.52

The Contractor shall make his own arrangements of Gate Pass with photo for his employees as prescribed and instructed by the Security deptt. at his own cost, each gate pass has to be endorsed by the Security Officer of the plant before the pass be used by any employee. In case of termination of the service of any of his employee during the contractual period, the contractor shall have to surrender the Gate Pass issued to the employees to the Security Deptt. At the end of the project all the gate passes endorsed by the Security Deptt. for use of the contractor's employees shall have to be returned.

12.53

The Contractor shall make his own arrangements of Gate Pass for his Vehicle, T&P etc. as prescribed and instructed by the Security dept. at his own cost, each gate pass has to be endorsed by the Security Officer of the plant before the pass be used. In case of termination of the service of any of T&P or Vehicle during the contractual period, the contractor shall have to surrender the Gate Pass to the Security Department. At the end of the project all the gate passes endorsed by the Security Department for use of the contractor's Vehicle, T&P shall have to be returned.

12.54

Where permitted, by Customer/ BHEL, to work beyond normal working hours, the contractor shall arrange necessary work permit for working beyond normal working hours.

12.55

Contractor to note that in addition to BHEL requirements of safety, occupational health and environmental management, contractor shall strictly follow & abide the safety laws/rules & regulation requirements of NPCIL at site and in the event of any deviation/ dispute, the requirements of NPCIL in this regard shall be final and binding on contractor.

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For non-compliances/violation of safety rules and fine/penalty imposed by NPCIL as their rules & regulations shall be to the account of contractor & same shall be paid by contractor. In event of any recovery from BHEL bills by customer on account of contractor against such fine/penalty, BHEL shall recover such amount/payment in addition to departmental overheads from any available bills/payments of contractor which is due for payment from BHEL.

12.56

Periodical reports need to be submitted by the contractor as per format prescribed by BHEL engineer. These reports shall be including but not limited to the following areas of operation:

- Weekly, fortnightly, monthly planning charts
- Consumption of welding electrode and gases
- Detailed Manpower reports
- Daily, weekly and monthly progress reports
- Field calibration reports
- Welders performance and qualification records

Contractor to note that any additional report relating to work progress as desired by BHEL/NPCIL shall be furnished by the contractor in the required format

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Chapter – XIII: STG & AUXILIARIES

DETAILS OF SCOPE OF WORK FOR STG PIPING and associated items

The scope of work is further detailed in the specifications hereinafter.

13.1 PIPING (INCLUDING EXTERNAL / POWER CYCLE / FIELD PIPING, INTEGRAL PIPING, REGENERATIVE PIPING INCLUDING INSTRUMENT AIR & SERVICE AIR PIPING ETC.)

13.1.1

Piping weight indicated in relevant Appendix- with valves/fittings, supports and all other piping schemes like HRH Piping, HP Inlet piping, LP Extraction piping, Gland Steam piping, GSC Extractor Fan Piping, Steam & drain piping, LP Spray Control valve, Orifices, LP Spray Filter and Orifice, Turbine Auxiliaries piping control fluid (Supply + Return), GFR Isolating Valves, Protection System Piping, Safety and Return Circuit Valves for LP accumulators, Control Fluid Piping Supports (As per attached annexure) , Protection Piping Supports (Structural & hanger Supports) , Gas Piping, Waste Gas Piping, Waste Fluid Piping, Valves and Supports for Generator Piping (Gas Piping, Waste Fluid Piping & Waste Gas Piping) etc is indicative only. Contractor shall carry out the erection and complete the piping works of respective system as per sequence, schedule and programme decided by BHEL engineer/customer at site in order to achieve the commissioning schedule of respective equipments/ systems and over all commissioning schedule of project as whole.

13.1.2

The work on various piping systems (~~Except Steam piping HP-MSR-LP piping~~) will include cutting to required length, edge preparation, laying, fixing & welding of the pipes / elbows / fittings/ valves etc. in the pipeline, fixing & adjustment of supports / anchors / shock absorbers and carrying out all other activities / work to complete the erection and also carrying out all pre-commissioning / commissioning operations mentioned in the specification as per BHEL Engineers instructions and / or as per approved drawings / documents.

~~The HP-MSR-LP piping which are steam piping will be supplied in cut to size form at site with duly edge prepared. However some sections of piping adjoining the main equipments / assemblies may be supplied in excess length to facilitate the erection requirement at site. The cutting of such excess length & subsequent edge preparation during erection, pre-commissioning / commissioning & normalization of system shall be part of scope of work of contractor.~~

13.1.3

Laying of pipelines as per the specifications, between equipments constituting terminal point, whether the terminal equipments fall within the scope of the work / specification or not, is within the scope of the work / specification. The contractor shall complete terminal joints at both ends for all the piping schemes covered in the specification.

13.1.4

Aligning, matching and welding of piping to the terminal points (such as stubs, on terminal equipments, stubs on headers, battery limits etc), even if these terminal equipment/point do not form part of this scope of work / specification, and stress relieving and NDE of joints so made is also within the scope of work / specification. Also, where the piping connection to the terminal points involves flanged joints, mounting and welding of flanges on piping as well as terminal equipment matching of flanges as specified elsewhere herein, fixing of gaskets, bolting and tightening as per BHEL engineer's instruction is also in this scope of work / specifications. Required fasteners and gaskets will be supplied by BHEL free of cost.

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Chapter – XIII: STG & AUXILIARIES

13.1.5

Following items of work shall also form part of piping erection:

- 1) Installation & removal, as applicable, of isolating devices/ NRVS and removal & re-fixing of internals required for hydraulic testing, pre-commissioning and commissioning activities. Required gaskets will be supplied by BHEL free of cost.
- 2) Matching of flanges for achieving parallelism and alignment resorting to heat correction or other suitable methods as per instructions of BHEL Engineers.
- 3) To locate the cause of vibrations in pumps or other auxiliaries and to carry out necessary corrections in piping and its supports. This may involve cutting, fresh edge preparation, welding, radiography, stress relieving, etc., of suction, discharge, re-circulating and other connected piping and its supports at number of places.
- 4) Increase or decrease in length of piping including change in layout to suit site conditions.
- 5) Erection, welding, NDE and stress relieving of certain equipments, e.g. flow nozzles, control valves etc, after completion of certain activities e.g. chemical cleaning, steam blowing etc is part of work. This may involve removal of portions from the already erected pipelines in order to introduce these equipments and resultant edge preparation etc shall be incidental to work. No separate/ additional payment is envisaged for cutting, welding and edge preparation in this regard. The removed pieces of pipes shall be returned to BHEL stores with proper cleaning, dressing and identification marking.
- 6) Matching of all fittings like tees, bends, flanges, reducers, valves, socket fittings, etc with pipes for welding. This may involve weld buildup, edge preparation, etc.
- 7) Cleaning of all pipes as prescribed, flushing by compressed air etc.
- 8) Welding of root valves including reducer (to suit Control & Instrumentation Impulse Piping requirements) with small length of piping to the pressure, flow and level tapping points on piping or flow nozzles / orifices / metering elements fixed on piping.
- 9) Welding of weld blanks with due NDE & PWHT, if required, on a temporary basis.
- 10) Opening of valve actuators, dismantling of actuators from the valves, refitting and rendering assistance connected with the electrical and mechanical problems.
- 11) Fixing and welding including due NDE & PWHT etc of carrier plates on the pipes.

13.1.6

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On all steam piping, water piping, oil piping, air piping, etc, where butt welding is involved, root TIG welding and subsequent arc welding shall be adopted as instructed by BHEL engineer. The decision of BHEL engineer regarding welding procedure for welding of above lines will be binding on the contractor.

13.1.7

Pipes / tubes / structural materials, which are issued in running meters, may not be sent in standard lengths. These have to be cut to suit site conditions.

13.1.8

Certain pipe lines of oil, air, steam and water will be field routed as per schemes approved at site or as per the instructions of BHEL engineer, and will be supplied in random lengths / running lengths. The contractor shall lay the piping according to instructions at sites, after carrying out the necessary fabrication, edge preparation, routing, supporting etc, in best professional manner and as per instructions. The supports for field-routed piping shall be fabricated and erected as per the requirement of the work. The steel required for the supports will be provided by BHEL free of cost at their stores.

13.1.9

All weld joints on piping shall be ground or filed on completion of welding and before radiography as per instructions BHEL engineer so as to achieve smooth surface free of notches, ripples, undulations, etc. and to limit the reinforcement as per the codes.

13.1.10

Contractor shall erect the piping by doing pre-assemble on ground if possible at the first instance. The pipe laying shall be carried out from the available terminal point / points or any other area between the terminal points. The erection can be carried out on temporary supports to obtain proper alignment and welding. After fixing the permanent supports, all the temporary supports shall be removed. The alignment, distances and loading of the supports shall be checked and the required spring compression achieved in the case of spring hangers.

13.1.11

Contractor shall carryout edge preparations for welds joints in accordance with BHEL drawings / BHEL standards / BHEL engineer's instruction.

13.1.12

The location of drain headers, valves, stations, steam traps of piping as indicated in the BHEL drawings are suggestive only. The final location and routings shall be decided to suit the site conditions. While routing such lines and fixing the stations, it has to be erected so as to provide easy accessibility and free path for the purpose of easy operation and maintenance. These locations shall be acceptable to the client. Sometimes, the locations of stations and routing of lines may have to be changed as per the site conditions. All such works shall be carried out expeditiously as per the instructions of BHEL engineer. The decision of BHEL engineer is final and binding on the contractor.

13.1.13

The rate quoted in rate schedule is also inclusive of pre-heating, welding, radiography, post heating, post weld heat treatment/ stress relieving and NDE.

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13.1.14

Hanger rods shown in the piping arrangement drawing may have to cut and welded to suit site condition. The contractor shall do cutting and welding of these hanger rods. The NDE& stress relieving required on welded hanger rods shall be carried out. The hanger for piping will be tested for even distribution of load with the help of torque wrench.

13.1.15

The piping may be provided with hand holes. The hand holes will be opened up for inspection and seal welded prior to operation.

13.1.16

Structural materials required for the supporting / operating platforms required for the valves/equipments at various levels for the safe operation will be issued in random sizes to the contractor free of cost. However, the contractor's quoted rate shall include fabrication and erection of all such of platforms at site and no extra payments shall be allowed for this.

13.1.17

Erection of piping systems shall be coordinated by the contractor as required, with the erection of Steam Turbine, Steam Turbine Generators, and other major equipments, approval must be obtained from the concerned BHEL engineer and other agencies concerned prior to making piping interface connections to the aforementioned equipments. Sequence of work shall be carefully planned to minimize interference with other groups working in the same area. Actual sequence to be followed shall be subject to the approval of engineer and engineers may, at time, direct the contractor to reschedule his work as per status of the site work.

13.1.18

While erecting the field run pipes, the contractor shall check the accessibility of valves, instruments tapping points and maintain minimum head room requirement and other necessary clearance from the adjoining work areas to avoid interferences.

13.1.19

All pipelines shall be given proper slope towards the drain points during erection.

13.1.20

All pipe lines must be provided with suitable vent and the drain points with valve (s) on the highest and lower points of the pipe run although may not be specifically mentioned in the drawing as per the instructions of BHEL engineer.

13.1.21

For instrument connections, pipe stubs including the instrument tubing up to the root valves including reducer (to suit Control & Instrumentation Impulse Piping requirements) shall be installed by the contractor. Root valves including reducer (to suit Control & Instrumentation Impulse Piping requirements) shall be located in the convenient location / place as required by the customer to facilitate easy operation as per the decision / instruction of BHEL engineer.

13.1.22

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Chapter – XIII: STG & AUXILIARIES

The contractor shall be responsible for correct orientation of all valves so that flow direction, seats, stem and hand wheel are in desired locations. Information regarding orientation of valves, not fully located on drawings, may be obtained from the BHEL engineers.

13.1.23

All piping works and related requirements shall be done as per requirements of BHEL/NPCIL.

13.1.24

All piping shall be grouped wherever practicable and shall be routed to present a neat appearance.

13.1.25

For field run piping, contractor shall erect all hangers and supports as required with due regard to general arrangement layout of other pipes, hangers, cable trays, ducting, structural members, etc.

13.1.26

For maintaining the slopes as given in the drawings for larger thickness and larger diameter pipelines, edge preparation for welding may have to be altered suitably to achieve the slope.

13.1.27

It may become necessary to make & install temporary spool pieces for certain process requirements. Contractor's scope shall include preparation, erection, fit-up, welding, NDE etc and dismantling of such spool pieces at appropriate stage without any additional payment.

13.1.28

In pipelines like re-heater lines, extraction lines etc the NRVS and valves will also be erected by contractor under this tender specifications. though these NRVS & valves may be supplied from different units / different sources, the erection, alignment, welding, NDE test, heat treatment, radiography, supporting etc. along with their control/ governing oil system piping with tanks, pumps, power cylinders etc. including the oil flushing& commissioning of these valves shall be carried out by contractor as per instruction of BHEL engineer and drawings / documents requirement. Similarly erection / fixing, welding etc. of strainers, dummy devices in various lines, valves and their subsequent removal & re-fixing during pre-commissioning / commissioning stages of steam blowing, flushing etc. shall be carried out by contractor under these tender specifications.

13.1.29

All temporary lines required for chemical cleaning, hydraulic testing, steam blowing, etc., shall be supplied in 'as is where is' condition. The contractor shall arrange to carry out the required fabrication, dressing, grinding, cleaning, cutting, edge preparation etc., while carrying out erection. No extra claim on this account will be entertained. For human protection, temporary insulation over piping to be applied at no extra cost.

13.1.30

Before laying the piping on supports, the coordinates and elevations of all supports shall be checked by the contractor for correctness. Discrepancies from the execution drawings, if any, shall be promptly brought to the notice of BHEL engineer in writing and correction shall be carried out as per his instructions.

13.1.31

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – XIII: STG & AUXILIARIES

Normally, hangers setting in cold condition are done by simulation adding additional temporary weight, which will be roughly equal to the weight of the insulation. Attachment of temporary weights and floating of the joints in the simulation test to be treated as part of job. Hanger settings have to be repeated for achieving free-floating joints. Hanger adjustments to be repeated for steam blowing by resetting hot and cold values if required. This may have to be repeated several times after steam blowing and synchronization. The weights will be supplied by BHEL. Contractor has to transport from BHEL stores and return the same after completion of work. No extra claim on this account will be entertained.

13.1.32

All the instrumentation tap-off points like thermo-wells, root valves including reducer (to suit Control & Instrumentation Impulse Piping requirements), impulse lines, nipples etc., shall also be erected and welded by the contractor irrespective of whether such materials are supplied by BHEL or any other agency.

13.1.33

The weld grooves of MS line, HRH line, CRH line, BFD lines and other pipes will be as per BHEL standard specifications. Further, the edge preparation shall be done as per instruction of BHEL site engineer and same shall be binding on the contractor.

13.1.34

All equipments / works shall be preserved and protected properly during and after erection. Instructions / directions given by BHEL in this connection will have to be observed by the contractor.

13.1.35

The location of tanks, vessels, valves, stations etc in the pipelines indicated in the BHEL drawings may be indicative only. The final location and routings shall be decided to suit the site conditions. While routing such lines and fixing the stations, they have to be erected so as to provide easy accessibility and free path for the purpose of easy operation and maintenance. These locations shall be acceptable to the client. Sometimes, the locations of stations and routing of lines may have to be modified as per the site conditions. All such work shall be carried out expeditiously as per the instructions of BHEL engineer. The decision of BHEL engineer is final and binding on the contractor.

13.1.36

13.1.37

Both male and female threads shall be cleaned of oil, grease etc, with appropriate solvent etc. prior to jointing. Joints shall be sealed by applying teflon tape on male thread. All joints shall be tightened adequately so as to achieve leak-proof joint. Exposed portion of the external threads shall be coated with zinc silicate paint. Contractor shall arrange all consumables for cleaning & sealing.

13.1.38

Pressure testing with compressed air and external application of soap solution or flame or any other BHEL-approved method shall be done on all joints. Such tests may have to be repeated several times to ensure a leak proof system. Leakages if any shall be repaired by the contractor promptly according to the BHEL-approved procedure/method. Any additional expenses for repair attributable to contractor shall be borne by the contractor.

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Chapter – XIV: VOID

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – XV: WELDING, RADIOGRAPHY, NDT, PWHT

15 WELDING, RADIOGRAPHY AND OTHER NON-DESTRUCTIVE TESTING, POST WELD HEAT TREATMENT

15.1 WELDING

Contractor shall carry out field welding of piping as per relevant sections under these specifications in conjunction with NPCIL specifications for Field Welding of Piping as attached in Annexure-4. In case of any conflict between these two, NPCIL specifications for Field Welding of Piping shall be binding on the contractor.

15.1.1

Installation of equipment involves good quality welding, NDE checks, post weld heat treatment etc. Contractor's personnel engaged should have adequate qualification on the above works.

15.1.2

The method of welding (viz) arc, TIG or other method will be indicated in the detailed drawing/documents. BHEL Engineer will have the option of changing the method of welding as per site requirement.

15.1.3

Welding of high pressure joints shall be done by IBR certified high pressure welders who have been permitted by CIB of state concerned for deployment at the site of work.

15.1.4

Welding of all attachments to pressure parts, piping shall be done only by the qualified and approved welders.

15.1.5

Before any welder is engaged on work, he shall be tested and qualified by BHEL/ customer, though they may possess the IBR/other certificate. BHEL reserves the right to reject any welder without assigning any reason. All the expenditure in testing/qualification of the Contractor's welder shall be borne by Contractor.

15.1.6

Unsatisfactory and continuous poor performance may result in discontinuation of concerned welder.

15.1.7

The welded surface shall be cleaned of slag and painted with primer paint to prevent rusting, corrosion.

15.1.8

Before welding of any piping contractor will have to carry out proper fit up of all weld joints and same shall be numbered using engraving machines as per the instruction of NPCIL/BHEL Engineers. All weld joints will have pipe line details and joints details and same shall be numbered on the pipe before weld joints. Records i.e Weld Joint Inspection Cum Acceptance Reports (WJICAR) as per NPCIL format shall have to be made by the contractor before taking up the welding of any joint.

15.1.9

HP joint fit-up, should be protected, where required, by use of tapes/protective paint as may be prescribed by BHEL.

15.1.10

The Contractor shall maintain welding records in the form as prescribed by BHEL containing all necessary details, and submit the same to the BHEL Engineer as required. Interpretation of the BHEL Engineer regarding acceptability of the welds shall be final.

15.1.11

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~~In the case of P-91 pipe welding, Contractor shall deploy welders having experience in welding of P-91 material. The welders engaged by Contractor if not qualified for P-91 welding will be trained by BHEL at BHEL welding research institute (WRI) Trichy and allowed to work only after passing the required test arranged by BHEL. All the expenditure towards such qualification including cost of training, traveling expenses, stay etc., shall be borne by the Contractor.~~

15.1.12

Joint fit up will be a stage of inspection. Where required, joints shall be offered for visual inspection after root run. Subsequent welding should be made only after the approval of root run.

15.1.13

~~SS tubes of OD 6 mm and above shall be joined by single pass automatic gas tungsten arc welding process without using filler material for all positions by means of rotating electrode in an automatic orbital welding machine.~~

15.1.12 SOCKET WELDING:

In execution of this work, considerable number of socket weld joints is involved. The exact quantity of such socket welds or probable variation in the quantum cannot be furnished. The bidder shall take notice of this while quoting as no extra claim on this account will be entertained. The socket welding on HP parts/ HP piping shall be done by the IBR qualified welders. Contractor has to adhere to the procedures/specification as indicated in the drawing for socket welding.

15.1.13

Welding electrodes have to be stored in enclosures having temperature and humidity control arrangements. This enclosure shall meet BHEL specifications.

15.1.14

Welding electrodes, prior to their use, call for baking for specified period and will have to be held at specified temperature for specified period. Also, during execution, the welding electrodes have to be carried in portable ovens.

15.2 HEAT TREATMENT:

15.2.1

For the purpose of temperature recording of stress relieving process, thermocouples have to be attached to the weld joint. The number of temperature measuring points and locations shall be as per the standards of BHEL. Thermocouples have to be attached using capacitor discharge type portable thermocouple attachment unit. Contractor shall arrange sufficient number of thermocouple attachment units.

15.2.2

Contractor should provide temperature indicator / temperature recorder for measuring temperature during pre-heating for welding or for controlling temperature of metal for hot correction etc. The temperature recorders should be preferably of solid state type.

15.2.3

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Heat treatment may be required to be carried out at any time (day or night) to ensure the continuity of the process. The Contractor shall make all necessary arrangements including labourer required for the same as per directions of BHEL.

15.2.4

In certain cases only the pre-heating of weld joints may be called for.

15.2.5

For weld joints of heavy structural sections, if heat treatment is required, the same shall be carried out as part of the work.

15.2.6

Checking effectiveness of stress relieving by hardness tests (by digital hardness tester or other approved test methods as per BHEL Engineer's instruction) including necessary testing equipments is within the scope of the work / specification.

15.2.7

Preheating, inter-pass heating, post weld heating and stress relieving after welding are part of erection work and shall be performed by the Contractor in accordance with BHEL engineer's instructions. Where the electric resistance heating method is adopted Contractor shall make all arrangement including heating equipment with automatic recording devices, all heating elements, thermocouples and attachment units, graph sheets, thermal chinks, & insulating materials like mineral wool, asbestos cloth, ceramic beads, asbestos ropes etc, required for all heating and stress relieving works.

Where ever technically required BHEL will provide the induction heating equipment set for SA 335 P-91 materials piping only. The set will comprise of following:

Main panel

Capacitor panel

Interconnection power & control cables between above panels

185 sq mm special connecting cable from capacitor panel output – 5m length.

Contractor shall provide the input electrical power connection including arrangements such as DB, cables etc, thermocouple pads, thermocouples and compensating cables, induction heating annealing cables (from the capacitor panel to joint and for wrapping around the weld joint) (spec: single core 240 sq mm, 1150a, 3khz), ceramic wool and other consumables etc as may be required. Quantum of annealing cable requirement will depend on many parameters e.g. weld joint size, heat input, type of connection i.e. series or parallel etc.

15.2.8

All the recorded graphs for heat treatment shall be handed over to BHEL and due clearances obtained.

15.2.9

During welding & post weld heat treatment of main steam piping (P-91 material), the induction heating process shall continue un-interrupted. Therefore, contractor shall arrange back-up DG set to take care of power interruptions during the process.

15.2.10

Results of these processes shall be verified/ validated as per requirements of BHEL/client.

15.3 NON DESTRUCTIVE EXAMINATION AND RADIOGRAPHY:

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – XV: WELDING, RADIOGRAPHY, NDT, PWHT

Contractor shall carry out field welding, radiography, NDT, PWHT under these specifications in conjunction with NPCIL specifications for field welding of piping as attached in Annexure-4. In case of any conflict between these two, NPCIL specifications shall be binding on the contractor.

15.3.1

Contractor shall provide all resources and make all arrangements for the radiographic examination of welds for this work. for reasons of safety, invariably the radiography work will be carried out after the normal working hours and close of other site activities only. In this regard, the Contractor has to adhere to the safety rules / regulations laid by BARC authorities from time to time.

15.3.2

Radiography inspection of welds shall be performed in accordance with requirements and recommendation of BHEL Engineer. The minimum quantum of radiographic inspection shall be as per provision of IBR/BHEL's erection documents. They may, however be increased depending upon the performance of the individual welder at the discretion of BHEL Engineer/Boiler inspecting authority. Bidder shall also arrange the UT equipment with recording facility at his own cost. Usage of UT equipment shall be as per direction of BHEL engineer. Records of UT shall be produced as per site requirement.

15.3.3

All X-Ray / Gamma Ray films of weld joints shall be preserved properly and be handed over to BHEL/ IBR authorities and requisite clearances shall be obtained by the Contractor.

15.3.4

The field welded joints shall be subject to Dye-penetrant/MPT/RT/ other non-destructive examination as specified in the respective engineering documents/ as instructed by BHEL. T

15.3.5

Wherever required, surface preparation, like smooth grinding of welded area, prior to Radiography shall be done. It may also become necessary to adopt inter-layer radiography/MPT/UT depending upon the site/ technical requirement necessitating interruptions in continuity of the work and making necessary arrangements for carrying out the above work. The Contractor shall take all this into account in his offer. The required NDT method/procedure will be decided by BHEL engineer at site.

15.3.6

Bidder shall note that 100% radiography shall be taken on all high pressure welding till such time the welders' performance is found by BHEL Engineers to be satisfactory. Subsequently, subject to consistency in welder's performance, the percentage of radiography will be based on BHEL's standard practice/code requirement. The defects shall be rectified immediately and to the satisfaction of BHEL engineer. The decision of BHEL engineer regarding acceptance / rejecting the joints will be final and binding on the Contractor.

15.3.7

100% radiograph of certain sizes in piping have to be taken as per BHEL standards/ drawings.

15.3.8

For carrying out ultrasonic testing of welding joints of large size tubes and pipes, it will be necessary to prepare surface by grinding and buffing a smooth finish and contour as necessary. The Contractor's scope of work includes such preparation as incidental to work.

15.3.9

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Chapter – XV: WELDING, RADIOGRAPHY, NDT, PWHT

After stress relieving 5% of UT for all critical lines and 2% of UT for other alloy steel lines to be taken to ensure soundness of joints particularly stress relieving cracks. No separate payment will be made.

15.3.10

Contractor will have to undertake radiography with Iridium isotope camera in certain cases. For this Contractor has to deploy level-II operator certified by BARC.

15.3.11

15.3.12

For piping of thickness less than 25 mm no radiography plugs will be provided radiography shots to be taken by double wall technique or any other method to be adopted in consultation with BHEL engineer at site.

15.3.13

No separate payment for any NDE activities (including radiography) will be made.

15.3.14

Contractor has to deploy qualified DPT and RT operators (Level-1) as per the requirement

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VOID

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – XVII: HYDROSTATIC TESTING, PRESERVATION & OTHER TESTS

17 HYDROSTATIC TESTING, PRESERVATION & OTHER TESTS

Contractor shall carry out hydrostatic testing, preservation and other tests under these specifications in conjunction with NPCIL specifications for field welding of piping, as attached in Annexure-4. In case of any conflict between these two, NPCIL specifications shall be binding on the contractor.

17.1

Contractor shall carry out the following tests required to complete the erection and commissioning of the TG Set:

- Hydraulic testing of individual equipments like condenser, coolers, heaters, other auxiliaries and equipments. Required capacity Hydraulic test pump/Fill pump and other necessary arrangement shall be provided by contractor to carry out hydraulic testing, chemical cleaning of the equipments and piping as part of scope of work under this tender specification.
- Ultrasonic test
- Dye Penetrate test
- Magnetic Particle Test.

All above facilities (men, materials, equipments, consumables etc) with operating engineer/experienced person and proper approach wherever required shall be provided by the contractor for satisfactory completion of the above tests.

17.2

Contractor shall lay all necessary temporary piping, welding, supports, install pumps, valves, pressure gauges, electric cables and switches etc, required for the Hydro test, Air leak test, Chemical cleaning, Steam blowing etc.. After the test is over, all the temporary piping, pumps, etc will be removed. It may also specifically be noted that servicing, erection and dismantling of piping and equipments for conducting above tests will be done by the contractor. No separate payment shall be made for this purpose.

17.3

All the above tests shall be repeated till all the equipments, piping and systems satisfy the technical and statutory requirements. All related works form part of the scope.

17.4

Suitable welding and stress relieving of temporary blanks or suitably fixing temporary blank flanges with gaskets and fasteners and welding and providing suitable de-aeration/ venting /drain points with valves as per BHEL engineer's instruction, for performing hydro test of piping is within the scope of work. Required valves, fasteners, blank flanges, blanks or steel for blank flanges shall be provided by contractor. After completion of hydraulic test, welded blanks shall be cut and removed and weld burrs ground finished and cavities/scars of cutting weld filled and ground as per BHEL engineers' instruction.

17.5

Hydro test of piping may have to be repeated several times to meet technical and statutory requirements before application of insulation.

17.6

While conducting hydraulic test of steam lines, water lines, oil lines either individually or grouping a few lines or in portions. Blanks/spools may have to be put up at terminal points, strainers, walls, flanges etc. After conducting the tests, the blanks shall be removed and the lines restored. Also interconnecting piping between boiler and turbine, the hydraulic test may have to be done section wise and some-times piping of other agencies may have to be combined. Contractor shall carry out all such incidental work to satisfactorily conduct the hydro test. Wherever work is involved in the terminal points, Contractor shall carryout the same as per instruction of BHEL engineer. The decision of BHEL engineer is final and the same is binding on the contractor.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – XVII: HYDROSTATIC TESTING, PRESERVATION & OTHER TESTS

The contractor shall carry out any other tests as desired by BHEL engineers on erected equipment covered in the scope of this contract during testing and commissioning to demonstrate the satisfactory completion of any part or whole of work performed by the contractor.

17.7

All valves are required to be Hydro Tested at site before they are being finally taken for Erection. Contractor shall make suitable arrangements for Hydro Test of Valve as per instruction of BHEL /NPCIL Engineer. Valves found defective during Hydro Test Contractor has to Service same by Replacing Glands of Valve and also Gaskets etc. Material for Glands and Gaskets shall be supplied by BHEL free of cost.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – XVIII: PAINTING

18.1 PAINTING

BHEL/Customer Specification for Shop & Field Painting with regard to surface preparation and final painting with colour codes / scheme for surface preparation and finish paints coating including primer coating for shop and field painting will be given at site at the time of painting work.

Contractor shall carry out surface preparation and final painting works as per BHEL/Customer specification and instruction of BHEL engineer at site.

Scope of Contractor/BHEL regarding Supply of Paint & Paint application

S No	DESCRIPTION	BIDDER	BHEL	REMARKS
a)	Surface preparation	Yes		
b)	Preservation painting	Yes		Wherever applicable
c)	Touch up painting	Yes		Wherever applicable
d)	Intermediate Coat application	Yes		Wherever applicable
e)	Finish Painting	Yes		
f)	Painting of Insulation cladding sheet	Yes		Wherever applicable
g)	Painting of welded surface	Yes		Wherever applicable
h)	Supply of Thinner	Yes		
i)	Supply of Primer	Yes		
j)	Supply of Paint (intermediate/Finish) including bituminous paint	Yes		
k)	Supply of Preservative/anticorrosive paint/protective paint	Yes		
l)	Supply of scaffoldings, platforms, structures & ropes etc	Yes		
m)	Supply of tools e.g wire brush, paint brush, Spray M/c, cleaning agents etc	Yes		
n)	Supply of Other Consumables	Yes		

18.2

18.3

Painting shall be as per BHEL/NPCIL approved procedure.

18.4 Finish Painting

a) After the primer coat has dried out, the surface shall be cleaned of dust without scratching or in any way damaging the primer coat. Over this, dry surface finish painting shall be carried out.

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Chapter – XVIII: PAINTING

b) Finish painting shall be carried out in two coats. Dry film thickness of each coat shall be as per the recommendation of the primer/paint manufacturer. Minimum thickness including primer and paint coating shall be as per specification.

c) Paint shall be applied either by brushing or spraying. It shall be ensured that brush marks are a minimum and the requirements of workmanship are as specified in IS: 1477 (for site painting works on systems, structures and components).

d) Paint used shall be stirred frequently to keep the pigment in suspension. Paint shall be of ready mixed type in original sealed containers as packed by the paint manufacturer. Addition of thinners shall not be permitted.

e) No painting shall be done in frost/foggy weather or when the humidity is high enough to cause condensation on the surface to be painted. Paint shall not be applied when the temperature of the surface to be painted is 5° C or below.

f) Work of painting of condenser surfaces in various areas and at various stages of work are specified elsewhere in these specifications.

18.5

Components of TG and auxiliaries will in general be supplied painted by BHEL manufacturing units as per their standard applicable painting schemes. Contractor shall carry out primer and finish painting coats and DFT requirement with colour codes & specifications as per requirement of customer.

All exposed metal parts of the equipment including piping, structures, railings etc. wherever applicable, after installation unless otherwise surface protected, shall be first painted with at least one coat of suitable primer which matches the shop primer paint used, after thoroughly cleaning all such parts of all dirt, rust, scales, greases, oils and other foreign materials by wire brushing, scraping or sand blasting, and the same being inspected and approved by BHEL engineer for painting. Afterwards, the above parts shall be finished with two coats of alloyed resin machinery enamel paints.

18.6

Touch-up painting on damaged areas –

a) For coatings damaged up to metal surface

Surface preparation shall be carried out by manual cleaning. Minimum 6 inches adjoining area with existing coating shall be roughened by wire brushing, emery paper rubbing etc., for best adhesion of patch primer. Primer coat of touch-up primer has to be applied by brush immediately after the surface preparation. Over this primer coat, finish coat and final finish coat shall be applied as covered above by brush within maximum seven (7) days of application of touch up primer.

18.7

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – XVIII: PAINTING

Painting of welded areas / painting of areas exposed after removal of temporary supports / touch-up painting on damaged areas of employer's structures, where inter-connection, welding / modification etc. has been carried out by the bidder.

- (a.) Clean the surface to remove flux spatters and loose rust, loose coatings in the adjoining areas of weld seams by wire brush and emery paper.
- (b.) Painting procedure to be followed for touch-up painting on damaged areas.

18.8

The scope of work includes painting (including supply) of colour bands, lettering, marking and signs for direction of flow/rotation, names etc of approved colours as per the standard colour codes and specifications specified in tender specification or as advised by BHEL/Customer engineer at site for the equipments / components covered in these specifications.

18.9

In certain isolated instances where it is not possible to clean the equipments as explained above, cleaning by grinding might have to be resorted to. No damage to the equipment/components should be caused.

18.10

Surface to be painted should be free of oil and grease. It should be removed by using suitable cleaning agents including permitted solvents. Surface cleaned by chemical agent, if required, shall be treated further as prescribed in use of such cleaning agents.

18.11

During the preparation of surface, if the shop coat is damaged by chemical cleaning or by mechanical means, contractor shall repair the same free of cost.

18.12

Specified drying time shall be permitted from one to another coat.

18.13

This work requires working at higher altitudes from ground level to as high as 50 mtr and more. The work spread is also substantial involving substantial run of structures and piping. Contractor shall take sufficient precautions to avoid any accident and hazard in all respects. The ropes, ladders, scaffolding materials, clamps etc and climber used should be of standard quality for safe and smooth execution of work.

18.14

Contractor shall carry out the work in such a way that other erected equipment, structure, civil foundations and other property are not damaged. For damages in any of such cases due to lapses by Contractor, BHEL shall have the right to recover the cost of such damages from the Contractor.

18.15

Contractor shall take due care to cover/protect the equipment which are already painted while carrying out the painting of other adjacent equipment. If so happens, it shall be cleaned and repainted by the Contractor without any extra charges.

18.16

In general, painting of structural parts and colour bands, lettering, marking of direction of flow/rotation etc will be carried out by brush painting. However, areas/equipments inaccessible for manual painting have to be painted by spray painting. The decision of BHEL engineer, in this regard, shall be final and binding on the Contractor. Laying of air hose pipe and any other line required shall be done by Contractor at his cost

18.17

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – XVIII: PAINTING

Final painting work shall be started after obtaining clearance from BHEL engineers and as per his instructions.

18.18

Acceptance of Final Painting for required thickness shall be as per the thickness measured by Alcometer by NPCIL/BHEL Engineer. Contractor shall have to carry out painting till the required thickness is achieved.

18.19 Contractor shall carry out preservation painting on all items taken from stores. The preservation painting has to be carried out on material taken from stores and also on material erected wherever the shop painting has given away. Periodical inspection shall be made as per the instructions of BHEL engineer and the portion of items or the complete items needing painting shall be carried out to the satisfaction of BHEL engineer. This facility shall be provided by the contractor till the commissioning and handing over of the equipment to the customer. Preservative and touch up painting on equipments covered under this specification stored at stores/storage yard shall also be carried out by the contractor

18.20 Prior to application of refractory bituminous painting on the pressure parts and other area is under Contractor scope.

18.21 Painting two coats of bituminous paint on Insulation cladding sheet inner surface.

18.22 PRESERVATIVE PAINTING

18.22.1

Two coats of steam washable paints shall be applied on steam side of LP turbine and condenser components, as advised by BHEL. The steam washable paints, primer and thinner will be provided by contractor as part of scope of work along with other like arrangements for surface preparation and paint application like sand/shot-blasting, consumables like surface cleaning agents, paint brush, brush cleanser, labour and necessary tools and plants as required for completion of work.

18.22.2

The water boxes shall be sandblasted to remove all traces of primer applied at the works. Thereafter apply two coats of primer paint followed by two/three coats of alloyed resin machinery enamel paints as approved by BHEL. Contractor shall submit manufacturer's batch test certificate / test certificate from BHEL approved laboratory for the primers and paints. Prior approval of BHEL for each and every batch of the primer & paints shall be mandatory. In order to achieve a desired minimum paint dry film thickness (DFT) as specified in BHEL drawing, number of coats may be applied and method of application shall be as recommended by the paint manufacturer.

18.22.3

All site weld joints falling in steam side shall be painted with two coats of steam washable paint.

18.22.5

All water side surfaces of water chambers including tube plate shall be thoroughly surface prepared and painted.

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Chapter – XVIII: PAINTING

18.22.6

After the successful completion of hydraulic testing, the interior surfaces of the water boxes, main tube plates shall be painted with suitable anticorrosive paints as per special procedures laid down by BHEL.

18.22.7

Prior to hydraulic testing of water side of condenser, interior surfaces of water boxes shall be painted.

18.22.8

After completion of tubing and tube side hydro test, all water side surfaces of water chambers including tube plate shall be painted.

18.22.9

Preservation of all components/equipments during various stages of erection, commissioning till handing over is in the scope of work. All prescribed methods of surface cleaning prior to application of preservative paint shall be followed by the contractor.

18.22.10

Condenser internal components/parts/surfaces have to be surface protected with steam washable paint as per BHEL standards

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – XIX: TESTING, PRE-COMMISSIONING, COMMISSIONING

19 PRE-COMMISSIONING TESTS, COMMISSIONING, POST COMMISSIONING

19.1

Commissioning of the TG equipments with associated Aux. and other Equipments with auxiliaries shall involve the following tests and activities of the equipments erected:

- (a) Hydraulic Test, Oil flushing of Governing oil system/Control oil system, Air cleaning/blowing of pipelines, closed systems, Control fluid Tanks.
- (b) Flushing of all control fluid pipelines, gas pipeline, and condensate spray piping by air/oil/water/as the case may be.
- (c) Commissioning of governing system, control fluid system, steam and drain system, generator gas and waste fluid system.
- (d) Manual/mechanical cleaning of Control Oil tanks by the contractor. This may have to be repeated several times during the commissioning process.
- (e) Chemical cleaning of piping systems as per requirement. Contractor shall carry out disassembly and reassembly of vulnerable components like spray nozzles, gauges, instruments etc. as instructed by BHEL during this process.
- (f) Putting turbine on barring gear.
- (g) Rolling and synchronization.

The above activities/tests/trial runs may have to be repeated till satisfactory results are obtained and also to meet the technical and statutory requirements.

19.2

Contractor shall lay temporary pipelines with fittings and accessories etc. as instructed by BHEL engineer for the purpose of pre-commissioning and commissioning activities like Hydraulic testing, chemical cleaning, oil flushing, steam blowing etc. of piping and other equipments as part of the scope of work. Temporary installations shall be dismantled by contractor and returned to BHEL stores as specified elsewhere in this technical specification.

19.3

The contractor shall provide necessary assistance to facilitate/enable electrical and instrumentation testing and commissioning of equipments under this scope of work, to BHEL and their Testing & Commissioning agency.

19.4

The contractor shall carry out any other test as desired by BHEL engineer on erected equipments covered under the scope of this contract during testing, pre-commissioning and commissioning, to demonstrate the completion of any part or parts of work performed by the contractor.

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Chapter – XIX: TESTING, PRE-COMMISSIONING, COMMISSIONING

19.5

In case any malfunctioning and / or defect is found during tests / trial runs such as loose components, undue noise or vibrations, strain on connected equipments etc. The contractor shall immediately attend to these defects/ malfunctioning and take necessary corrective measures. If any readjustment and realignments are necessary, the same shall be done as per BHEL engineer's instructions, free of cost.

19.6

19.7

The contractor shall associate for initial and subsequent fillings of gas in generator gas system as and when required till unit is handed over to Customer.

19.8

19.9

19.10

During the stages of commissioning, and till Unit is handed over, if any part of TG and auxiliaries need repair/rectification/rework/replacement, the same shall be done expeditiously and promptly by the contractor. Contractor's claim if any, for such repair/rectification/rework/ replacement etc for reasons not attributable to the contractor will be governed by relevant clauses of 'General Conditions of Contract'. The parts to be replaced shall however, be provided by BHEL free of cost.

19.11

During this period, though BHEL's and customer's engineers will also be associated in the work, the contractor's responsibility will be to make available resources in his scope till such time the commissioned units are taken over by the customer.

19.12

In case any malfunctioning and/or defects are found during tests, trial run such as loose component, undue noise or vibration, strain on connected equipment etc., The contractor shall immediately attend to these defects/ malfunctions and take necessary corrective measures. If any readjustment or realignment is necessary, same shall be done as per BHEL engineer's instruction.

19.13

The pre-commissioning activities will start prior to Governing/ Control oil flushing etc. of the TG and various trials, commissioning operations shall continue till the rolling and synchronization. Simultaneous commissioning checks, activities will be in progress in various areas like trial run of various equipment, checking of equipment erected, making ready for trial runs, filling up of lubricants, chemicals etc. All these works need specialized gangs including electricians, Instrument Technicians, Fitters, in each area to render assistance to BHEL commissioning staff. Contractor shall earmark separate manpower for various commissioning activities. This manpower shall not be disturbed or diverted. The mobilization of these commissioning gangs shall be sufficient so that planned commissioning activities are taken up in time and also completed as per schedule and the work is to be undertaken round the clock if required.

19.14

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – XIX: TESTING, PRE-COMMISSIONING, COMMISSIONING

Contractor shall cut open works if needed as per BHEL engineer's instructions during commissioning for inspection, checking and make good the works after inspection is over, without any extra payment.

19.15

After the start of commercial operation of machine, commissioning activities will continue. It shall be the responsibility of contractor to provide following manpower along with supervisor as part of commissioning assistance till 1st synchronization and completion of pending points

- | | |
|--------------------------------------|------------|
| 1) Supervisor | 1 No. |
| 2) Pipe fitter/Millwright fitter | 1 No. |
| 3) Welder | 1 No. |
| 4) Rigger | 1 No. |
| 5) Electrician/instrument technician | 1 No. each |
| 6) Unskilled worker | 2 Nos. |

19.16

The above figures shows only minimum required over and above labour required for completing pending erection and commissioning works and clearing of punch lists. Contractor has to provide number of personnel and other resources as per work demand.

19.17

It shall be specifically noted that above employees of the contractor may have to work round the clock along with BHEL commissioning engineers.

19.18

During commissioning, opening of valves, changing of gaskets, checking, realigning of rotating and other equipment, attending to leakages in piping, tanks etc and adjustments of erected equipment may arise. Valves shall be serviced and lubricated to the satisfaction of BHEL engineer during the erection and commissioning as per BHEL engineer's instructions.

19.19

It is the responsibility of the contractor to provide for necessary resources till the completion of work under these specifications, even in case erection, testing and commissioning of the TG and other equipments are delayed due to reasons not attributable to the contractor.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – XX: PRESERVATION & PROTECTION OF COMPONENTS

20.1 PRESERVATION & PROTECTION OF COMPONENTS

At all stages of work, equipments/materials in the custody of Contractor, including those erected, will have to be preserved as per the instructions of BHEL. Necessary preservation agents including the primer & paint, for the above work shall be provided by the Contractor.

20.1.1

The Contractor shall make suitable security arrangements including employment of security personnel and ensure protection of all materials/ equipment in their custody and installed equipments from theft/fire/pilferage and any other damages and losses.

20.1.2

Contractor shall collect all scrap materials periodically from various area of work site, deposit the same at one place earmarked at site or shift the same to a place earmarked in BHEL/ client's stores. In case of failure of Contractor in compliance of this requirement, BHEL will make suitable arrangement at Contractor's risk and cost.

20.1.3

The entire surplus, damaged, unused materials, packaging materials / containers, special transporting frames, gunny bags, etc shall be returned to BHEL stores by the Contractor.

20.1.3

The Contractor shall not waste any materials issued to him. In case it is observed at any stage that the wastage/excess utilization of materials is not within the permissible limits, recovery for the excess quantity used or wasted will be effected with departmental charges from the Contractor. Decision of BHEL on this will be final and binding on the Contractor.

20.1.4

For any class of work for which no specifications have been laid down in these specifications, work shall be executed as per the instructions of BHEL

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – XXI: ACID CLEANING/ALKALI FLUSHING/STEAM BLOWING/OIL FLUSHING

21 ACID CLEANING/ ALKALI FLUSHING/ BLASTING/ OIL FLUSHING ETC

21.1

Contractor shall lay and erect temporary pipelines with fittings and accessories. ~~As such no chemical cleaning work in permanent system of piping is involved; however, contractor shall carry chemical pickling of temporary piping work for erection, testing, pre-commissioning, commissioning operation (steam blowing, steam washing, steam flushing, water flushing, water washing, oil flushing of piping) . Contractor shall arrange his own arrangement for such chemical pickling including chemicals etc. as per instructions of customer/BHEL site engineer and shall provide all other arrangements as per requirement as part of scope of work.~~

It shall be specifically noted by the contractor that all pipes for above works shall be supplied in random length and in loose condition. Contractor has to assemble and erect them as per schemes / drawings provided by BHEL. Further, flanges bend etc for completing the scheme shall be machined/ fabricated by the contractor at his own cost. However, plates/ steel etc for the same will be provided by BHEL free of charges.

21.2

After the ~~chemical pickling~~/ flushing have been successfully completed, dismantling of all temporary installations as instructed by BHEL is within the scope of work under this specification. The dismantled materials shall be dressed and returned to BHEL as stated elsewhere in this tender spec.

21.3

Preservation of the cleaned surfaces will be the responsibility of contractor under the guidance of BHEL engineer.

21.4

Hydraulic test of temporary piping is to be carried out as per the instructions of BHEL Engineer. Carrying out repairs, if any, is in the scope of work/specification.

21.5

For chemical cleaning of the piping system, contractor will have to lay temporary piping to connect the entire system irrespective of whether the equipment/system connected is in the scope of contractor or not. Decision of BHEL Engineer in this regard will be final and binding on the contractor.

21.6

During the initial stages of work, trenches for draining water may not be available after alkali flushing or mass flushing for discharging and emptying. Necessary low point drains and temporary piping for this will have to be provided by contractor from materials provided by BHEL.

21.7

Radiographic examination of weld joints on temporary pipes as required by the Engineer In-charge should be carried out.

21.8

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – XXI: ACID CLEANING/ALKALI FLUSHING/STEAM BLOWING/OIL FLUSHING

Contractor shall also carry out the repairs or attend leaks etc., in the temporary piping and equipments for the above operations / activities while carrying out the above activities / operations.

21.9

For chemical pickling of system which consist of temporary piping erected by the contractor, contractor has to arrange for workers and supervisory staff as required supplementing/complimenting the labour and supervisory staff mobilized by other agencies for chemical cleaning of the portion of equipment erected by them in the system. Decision on the strength of gangs and supervisory staff for deployment of labour and allocation of work for them at site by BHEL engineer is final and binding on the contractor.

21.10

Contractors quoted rate shall be inclusive of fabrication, cost of consumables, erection, dismantling of temporary piping and servicing of the equipments and valves and handing over to BHEL. No separate payment on this account shall be entertained.

21.11

21.12

Erection and commissioning of connecting piping – permanent and temporary for oil purification equipments and all operations for cleaning, oil flushing, dismantling of temporary piping during pre and post-commissioning of equipment up to full load shall be the responsibility of contractor as part of scope of work

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – XXII: TOOLS AND TACKLES, MEASURING AND MONITORING DEVICES

22 TOOLS AND TACKLES, MEASURING AND MONITORING DEVICES

22.1

The contractor shall provide all (except those indicated in BHEL scope) required tools and plants, monitoring and measuring devices (MMD) and handling & transportation equipments for the scope of work covered under these specifications. Contractor has to provide suitable cranes for material handling at BHEL/client's stores/storage yard. Please refer relevant appendix for the list of T&P being provided by BHEL free of charges on sharing basis.

22.2

All tools and tackles to be deployed by the contractor for the work shall have the prior approval of BHEL/NPCIL engineer with regard to brand, quality and specification. Indicative list of major T&P to be arranged by contractor has been furnished in relevant appendix. Contractor shall also mobilize all other T&P necessary for timely and satisfactory completion of the work in scope.

22.3

Contractor shall provide all required suitable cranes and trailers for materials handling during collection from BHEL/ client's stores/ storage yard, transportation to site of work and at work site for all materials.

22.4

Contractor has to provide spanners of all sizes for carrying out the complete erection / commissioning works. No spanners will be provided by BHEL to the contractor.

22.5

Contractor has to arrange slings of all sizes for completing the works covered under these specifications except the special slings for generator stator lifting/handling, which will be provided by BHEL free of charges on returnable basis.

22.6

All tools and tackles to be deployed by the contractor for the work shall have the prior approval of BHEL engineer with regard to brand, quality and specification.

22.7

Timely deployment of adequate quantity of T&P is the responsibility of the contractor. The contractor shall be prepared to augment the T&P at short notice to match the planned program and to achieve the milestones.

22.8

22.9

Contractor shall maintain and operate his tools and plants in such a way that major breakdowns are avoided. In the event of major breakdown, contractor shall make alternative arrangements expeditiously so that the progress of work is not hampered.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – XXII: TOOLS AND TACKLES, MEASURING AND MONITORING DEVICES

22.10

In the event of contractor failing to arrange the required tools, plants, machinery, equipment, material or non-availability of the same owing to breakdown, BHEL will make the alternative arrangement at the risk and cost of the contractor.

22.11

The T&P to be arranged by the contractor shall be in proper working condition and their operation shall not lead to unsafe condition. Contractor shall obtain prior approval of BHEL for all the T&P before deploying in actual work. The movement of cranes and other equipment should be such that no damage / breakage occur to foundations, other equipments, material, property and men. All arrangements for the movement of the T&P etc shall be the contractor's responsibility.

22.12

Normally, use of welding generators only is permitted for welding. The use of welding transformers will be subject to prior approval of BHEL.

22.13

The contractor at his cost shall carry out periodical testing of his construction equipments and calibration of measuring & monitoring devices (MMD). Test / calibration certificates shall be furnished to BHEL. MMD shall be calibrated only at accredited laboratory as per the list available with BHEL or any other laboratory approved by BHEL. All calibration shall be traceable to national or international standards.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – XXIII: INDUSTRY SAFETY

23.0 INDUSTRIAL SAFETY

The contractor shall comply with all provisions of “AERB Safety Guide for Works Contract” Document No. AERB/SG/IS-1 (annexure-3) and other safety requirements as applicable to specific site. The Contractor shall meet statutory requirements as well as regulatory requirements applicable to the project, in general and NPCIL in particular, especially the requirements as per Factory Act-1948 (amended in 1987). Atomic Energy Factories Rule-1996 (AEFR-1996 or latest version applicable at the time of work execution), safety guidelines for Job Hazard Analysis (JHA) and AERB notifications on Industrial Fire & Safety. The copies of the same can be obtained from BHEL/NPCIL on request.

23.1 SAFETY GUIDELINES

23.1.1

The contractor shall ensure minimum first aid arrangements available at all times at site and other arrangements in collaboration with local health authorities. The contractor shall establish a first aid center at site with full time ambulance facility with a male nurse/first aider.

23.1.2

The contractor shall provide and maintain all lights, fencing, guards, warning signs and caution board and similar items as required to ensuring safe working conditions at work site.

23.1.3

The contractor shall comply with the instructions given by departmental safety officer or his representative regarding safety precautions, protection measures and housekeeping etc.

23.1.4

The contractor shall comply with all provisions of AERB Safety Guide for Works Contract Document no. AERB/SG/IS-1 and other safety requirements as applicable to specific site, A copy of guide can be requested from BHEL/NPCIL on request.

23.1.5

The contractor shall provide proper access and working platforms for all place of work as per laid down standards or as advised by Engineer –in-charge or Head-IS&F.

23.1.6

The contractor shall ensure that all floor openings in his work are guarded/barricaded during the course of work and at the end of each day's work.

23.1.7

The contractor shall meet statutory requirements applicable to the project in general and NPCIL in particular especially the requirements as per Factory Act-1948 (amended in 1987), Atomic Energy factories rule-1996 (AEFR-1006 or latest version available at the time of work execution) safety guidelines for Job Hazard Analysis (JHA) & AERB notifications on Industrial & Fire safety. The copies of the same can be obtained from BHEL/NPCIL on request.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – XXIII: INDUSTRY SAFETY

23.1.8

The contractor's safety professionals shall be aware about Acts, Rules connected with Industrial Safety and practices particularly applicable to the project and to threat effect they have to undergo an assessment at the project within 15 days of their placement at the project at the cost of the contractor and then only he/she would be given permanent entry pass and considered in required strength of the safety professionals.

23.1.9

All PPE procured and provided to workers shall conform to relevant Indian Standards and should be maintained in healthy condition by suitable storage, maintenance and inspection.

23.1.10

Contractor working at the height of more than 2.5 metres above stable floor or ground floor must acquire height pass as per procedure including the worker's medical fitness certificate by certifying surgeon (having MBBS qualification) and worker's height qualification etc. If in any height work, the worker is found without having height pass, it will be recorded for regulation of payment. The decision of BHEL engineer with regards to the regulation of payment shall be final and binding.

23.1.11

Contractor shall ensure safe movement of man and material as well as vehicles in site premises as per rules/regulations applicable at or issued by plant. In case of violation of the rules/regulation it will be recorded for regulation of payment. The decision of BHEL engineer with regards to the regulation of payment shall be final and binding.

23.2 SAFETY PLAN

23.2.1

Contractor at his cost shall perform following tasks for the job having high risk as identified by Department Safety Group:

- a) Prepare Safe Working Procedures and ensure its implementation in field.
- b) Carry out Job Hazard Analysis (JHA) and implement in field.
- c) Based on JHA, the safe working procedures should be modified especially to include checklists as necessary checkpoints for job safety supervision.
- d) Worker (s) must be trained based on safe working procedure and explained about DOs and DON'Ts prior to assigning him the job.
- e) The workers must adhere to the safe working procedure for the job.
- f) Contractor shall ensure that all Tools, Appliances, erecting equipments and their safe use by the contractor work force shall be meeting Indian Standards. The contractor must ensure that necessary authorization exist with workmen prior to their deployment on a particular appliance/tool/equipment. The workmen would be required to acquire additional authorization for crane operation, crane signaling, blasting operation, welding and cutting operation, electrical work etc. And then only workmen shall be deployed for such job. He shall maintain all record of tools and equipment for their healthiness and safe use with a copy to departmental safety group