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T E N D E R S P E C I F I C A T I O N

TENDER NO. BHEL/ NR/SCT/ TISHREEN-3&4/ TG/ 851

FOR

"ERECTION, TESTING, COMMISSIONING, TRIAL OPERATION AND HANDING OVER OF STEAM TURBINE, TURBO GENERATOR WITH AUXILIARIES INCLUDING FINAL PAINTING FOR UNIT 3&4 AT 2X200 MW TISHREEN, THERMAL POWER PLANT EXT. PROJECT OF PEEGT, SYRIA."

PART I – TECHNICAL BID

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

ISO 9001, ISO 14001, OHSAS 18001 & SA 8000 certified company
SubContract and Purchase Deptt.

Bharat Heavy Electricals Limited
(A Govt. Of India Undertaking)
Power Sector – Northern Region,
Plot No. 25 , Sector - 16A ,
Distt. Gautam Budh Nagar, NOIDA – 201 301(INDIA)
Phone: 0091-0120- 2416286 / 2416296
Fax 091-0120-2416528
Email: vkg@bhelpsnr.co.in / pdas@bhelpsnr.co.in

TENDER NO. BHEL/ NR/SCT/ TISHREEN-3&4/ TG/ 851

IMPORTANT NOTE

PURCHASER OF THIS TENDER DOCUMENT IS ADVISED TO CHECK AND ENSURE COMPLETION OF ALL PAGES OF TENDER DOCUMENT AND REPORT ANY DISCREPANCY TIMELY FOR CORRECTIVE ACTION, IF ANY, TO THE ISSUING AUTHORITY BEFORE THE BIDS ARE SUBMITTED. ORIGINAL COPY OF TENDER DOCUMENT COMPLETE IN ALL RESPECTS MUST BE SUBMITTED BACK AS PART OF THE BID WITHOUT WHICH THE SAME IS LIABLE TO BE REJECTED BY BHEL.

THIS TENDER SPECIFICATION ISSUED TO:

M/S----------

Rev 00
6th July 2010

NOTICE INVITING TENDER

(Document No PS:MSX:NIT)

Bharat Heavy Electricals Limited

NOTICE INVITING TENDER (NIT)
NOTE: BIDDER MAY DOWNLOAD FROM WEB SITES
OR
PURCHASE TENDERS FROM THIS OFFICE ALSO

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To

Dear Sir/Madam,

Sub: NOTICE INVITING TENDER

Sealed offers in two part bid system are invited from reputed & experienced bidders 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

SL NO	ISSUE	DESCRIPTION	
i	TENDER NUMBER	**TENDER NO. BHEL/ NR/SCT/ TISHREEN-3&4/ TG/ 851**	
ii	Broad Scope of job	**"ERECTION, TESTING, COMMISSIONING, TRIAL OPERATION AND HANDING OVER OF STEAM TURBINE, TURBO GENERATOR WITH AUXILIARIES INCLUDING FINAL PAINTING FOR UNIT 3&4 AT 2X200 MW TISHREEN, THERMAL POWER PLANT EXT. PROJECT OF PEEGT, SYRIA."**	
iii	DETAILS OF TENDER DOCUMENT		
a	Volume-IA	*Technical Conditions of Contract (TCC) consisting of Scope of work, Technical Specification, Drawings, Procedures, Bill of Quantities, Terms of payment, etc*	*Applicable*
b	Volume-IB	*Special Conditions of Contract (SCC)*	*Applicable*
c	Volume-IC	*General Conditions of Contract (GCC)*	*Applicable*
d	Volume-ID	*Forms and Procedures*	
e	Volume-II	*Price Schedule (Absolute value).*	*Applicable*
iv	Issue of Tender Documents	1. *Sale from BHEL PS Regional office at :* *Start : 02/01/ 2012 , Time : 11.00 hrs (IST)* *Closes: 22/01/2012, Time : 15.00 hrs (IST)* 2. From BHEL website (www.bhel.com) Tender documents can however be downloaded from website till due date of submission	*Applicable*
v	DUE DATE & TIME OF OFFER SUBMISSION	*Date : 22/01/2012, Time : 15.00 HRS(INDIAN STD TIME)* *Place : NOIDA(UP)--INDIA*	*Applicable*
vi	OPENING OF TENDER	*1/2 hour after the latest due date and time of Offer submission* *Notes:* *(1) In case the due date of opening of tender becomes a non-working day, tenders shall be opened on next working day at the same time.* *(2) Bidder may depute representative to witness the opening of tender*	*Applicable*

vii	EMD AMOUNT	Rs. 2.0 lakhs (Rupees Two lakhs only) / Eq. Euros 3000/ SDG (12500)/ USD 4000	*Applicable*
viii	COST OF TENDER	*Rs 2000/-.*	*Applicable*/~~Not Applicable~~
ix	LAST DATE FOR SEEKING CLARIFICATION	*Date:12 /01/2012* *Along with soft version also, addressing to undersigned & to others as per contact address given below*	*Applicable*
x	SCHEDULE OF Pre Bid Discussion (PBD)	*Date : _ _ /_ _/ _ _ _ _ , Time :* *Place :*	~~*Applicable*~~ / *Not applicable.*
xi	INTEGRITY PACT & DETAILS OF INDEPENDENT EXTERNAL MONITOR (IEM)	**Shri Kanwarjit Singh, IRS (Rtd.)** **D-6/12, Ground Floor,** **Vasant Vihar,** **New Delhi - 110 057** E-mail - (kanwarfeb@gmail.com)	*Applicable*/~~*Not Applicable*~~
xii	Latest updates	Latest updates on the important dates, Amendments, Correspondences, Corrigenda, Clarifications, Changes, Errata, Modifications, Revisions, etc to Tender Specifications will be hosted in BHEL webpage (www.bhel.com -->Tender Notifications →View Corrigendums) 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 & stamped on each page, 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 Unless specifically stated otherwise, bidder shall remit cost of tender and courier charges if applicable, in the form of Demand Draft drawn in favour of Bharat Heavy Electricals Ltd, payable at Power Sector Regional HQ at Noida issuing the Tender, along with techno-commercial offer. Bidder may also choose to deposit the Tender document cost by cash at the Cash Office as stated above against sl no iv of 1, on any working day; and in such case copy of Cash receipt is to be enclosed with the Techno Commercial offer. Sale of tender Documents shall not take place on National Holidays, holidays declared by Central or State Governments and BHEL PS HQ at Noida, Sundays and second/ last Saturdays

4.0 Unless specifically stated otherwise, bidder shall deposit EMD through Demand Draft/Pay Order in favour of Bharat Heavy Electricals Ltd, payable at Noida. For other details and for 'One Time EMD' please refer General Conditions of Contract.

5.0 Procedure for Submission of Tenders: 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/COST of TENDER)' in two separate sealed and superscribed envelopes (ENVELOPE-I & ENVELOPE-II)
- PART-II (Price Bid) – in sealed and superscribed envelope (ENVELOPE-III)

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)

Sl no	Description	Remarks
	Part-I A	
	ENVELOPE – I superscribed as :	

	PART-I (TECHNO COMMERCIAL BID) TENDER NO : NAME OF WORK : PROJECT: DUE DATE OF SUBMISSION: ---------- CONTAINING THE FOLLOWING:-	
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 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/COST of TENDER) TENDER NO : NAME OF WORK : PROJECT: DUE DATE OF SUBMISSION: CONTAINING THE FOLLOWING:-	Applicable
i.	1. Earnest Money Deposit (EMD) in the form as indicated in this Tender <u>OR</u> Documentary evidence for 'One Time EMD' with the Power Sector	Applicable

	Region of BHEL floating the Tender 2. Cost of Tender (Demand Draft or copy of Cash Receipt as the case may be)	

	PART-II	
	PRICE BID consisting of the following shall be enclosed	
	ENVELOPE-III superscribed as: PART-II (PRICE BID) TENDER NO : NAME OF WORK : PROJECT: DUE DATE OF SUBMISSION: CONTAINING THE FOLLOWING	
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	
	ENVELOPE-IV (MAIN ENVELOPE / OUTER ENVELOPE) superscribed as: TECHNO-COMMERCIAL BID, PRICE BID & EMD TENDER NO: NAME OF WORK: PROJECT: DUE DATE OF SUBMISSION: CONTAINING THE FOLLOWING:	
i	o Envelopes I o Envelopes II o Envelopes III	

SPECIAL NOTE: All documents/ annexures submitted with the offer shall be properly annexed and placed in respective places of the offer as per enclosure list mentioned in the covering letter. BHEL shall not be responsible for any missing documents.

For timely receipt of tender, the bidders from Syria are required to submit their complete offer (Part I & II) with BHEL, Syria office (at following address) before due date and time of opening. The bidders shall also be required to submit their Part I offer through e-mail (at vkg@bhelpsnr.co.in) to BHEL Noida office before due date and time of opening.

Syria office address **:**

BHEL SITE OFFICE, (Kind Attention : Sh A K Gupta)
2ND FLOOR, BLDG NO 41, BEHIND TEACHERS ENCLAVE,
MAZZEH, EAST VILA, DAMASCUS, SYRIA
(TEL NO : 00963-116115950, 934897217)

7.0 No Deviation with respect to tender clauses and no additional clauses/ suggestions/ in Techno-commercial bid/ Price bid shall normally 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:

Bidders capacity for executing the job under tender shall be assessed as per the following:

I. Assigning Weightages (A) for Similar Jobs Under-Execution: Weightages shall be worked out and assigned based on the average number of Similar Works under execution including works yet to be commenced by the agency, in the following manner:

i). Number of Similar Jobs

a) No. of jobs in BHEL, PSER : Say 'J'
b) No. of jobs in BHEL, PSSR : Say 'K'
c) No. of jobs in BHEL, PSWR : Say 'L'
d) No. of jobs in BHEL, PSNR : Say 'M'
e) No. of jobs with other customers* : Say 'N' (*: Other than BHEL PSER, PSSR, PSWR & PSNR)
f) Average No. of Jobs is 'P'= (J+K+L+M+N) divided by 5

ii) Weightage "A" assigned to bidders based on Average Number of jobs "P";

a) If 'P' = 0-1, "A" will be equal to '3'
b) If 'P' = 2-3, "A" will be equal to '2'
c) If 'P' = 4-5, "A" will be equal to '1'
d) If 'P' is Above 5, "A" will be equal to '0'

II. Weightage "B" for Quarterly Performance Reports of Vendors: This shall be based on the averages of the net weighted score obtained by the bidder for the jobs under execution (excluding works not commenced) for the quarter previous to the last quarter reckoned from the date of latest due date of submission, in all four Regions i.e BHEL PSER, PSSR, PSWR & PSNR, in the following manner.

i). Ratings by Power Sector Region:

a) PS ER's Rating 'Rer' = $(X_1 + X_2 + .. + X_n)$ divided by n
b) PS WR's Rating 'Rwr' = $(X_1 + X_2 + .. + X_n)$ divided by n
c) PS SR's Rating 'Rsr' = $(X_1 + X_2 + .. + X_n)$ divided by n
d) PS NR's Rating 'Rnr' = $(X_1 + X_2 + .. + X_n)$ divided by n
e) Over all Power Sector Region Rating 'R_{BHEL}'= (Rer+ Rwr+ Rsr+ Rnr) divided by 4

(where "$X_1, X_2, X_3, \ldots X_n$" is the net weighted score obtained by the bidder as per the "Evaluation of Contractor Performance (Quarterly)" against the various contracts 'n' under execution in the respective Region).

ii) Weightage "B" assigned to bidders based on Overall Power Sector Rating (R_{BHEL}):

a) If R_{BHEL} is 80% and above, "B" will be equal to '6'
b) If R_{BHEL} is > 70% < 80%, "B" will be equal to '5'
c) If R_{BHEL} is > 60% < 70%, "B" will be equal to '4'
d) If R_{BHEL} is = < 60%, "B" will be equal to '0'

III. Evaluation of Bidders capacity to execute the job under tender: shall be based on the sum of scores obtained in 'A' and 'B', as below:

a) 6 or above : Considered 'Qualified' for the job under tender
b) Less than 6: Considered 'NOT Qualified' for the job under tender

IV. Explanatory note:

a) Similar work means Boiler or Turbine or Civil or Electrical or CI, etc irrespective of rating of Plant
b) Quarter shall be as per the quarter defined in the "Evaluation of Contractor performance (Quarterly)". For contracts where annexed Quarterly Evaluation performance was not part of the contract, 'Quarterly Performance Reports' previous to the last quarter reckoned from the date of latest due date of submission, given by the respective project site against the contract will be the basis for evaluation.

c) Vendors who are not executing any jobs presently in the Region and first timers to the Region, may be considered subject to satisfying all other tender conditions

d) 'Under execution' shall mean works in progress upto Boiler Steam Blowing (for Boiler and Auxilliaries) or Synchronisation (for all other jobs including Civil) shall be considered.

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 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. No additional claim shall be entertained by BHEL in future, on account of non-acquaintance of above.

11.0 For any clarification on the tender document, the bidder may seek the same in writing or through e-mail, 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 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 (xi) of 1 above.

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 pre-qualification evaluation/ techno-commercial bids, approval/ acceptance of customer (as applicable), etc. and date of opening of price bids shall be intimated to only such bidders.

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 authorised 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) or specified otherwise in SCC of tender.

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

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

20.0 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 In case Consortium Bidding is allowed as per Pre Qualifying Requirement, then Prime Bidder and Consortium Partner shall enter into Consortium Agreement. Validity period of Consortium Agreement shall be 6 months after which the same can be re validated.

'Stand alone' bidder cannot become a 'prime bidder' or a 'consortium bidder' in a consortium 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. .

24.0 The bidder shall submit 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 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

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

For BHARAT HEAVY ELECTRICALS LTD

(SCT)

Enclosure
01. Annexure-1: Pre Qualifying criteria.

02. Annexure-2: Check List.
03 Annexure-3: GENERAL TERMS AND CONDITIONS OF REVERSE AUCTION (RA)
04 Annexure-4: Authorization of representative who will participate in the on line Reverse Auction Process
05 Annexure-5: INTEGRITY PACT
06 Other Tender documents as per this NIT

ANNEXURE - 1

PRE QUALIFYING CRITERIA

JOB	**"ERECTION, TESTING, COMMISSIONING, TRIAL OPERATION AND HANDING OVER OF STEAM TURBINE, TURBO GENERATOR WITH AUXILIARIES INCLUDING FINAL PAINTING FOR UNIT 3&4 AT 2X200 MW TISHREEN, THERMAL POWER PLANT EXT. PROJECT OF PEEGT, SYRIA."**
TENDER NO.	**TENDER NO. BHEL/ NR/SCT/ TISHREEN-3&4/ TG/ 851**

SL. NO.	CRITERIA
1.0	**TURN-OVER** Tenderers should have an average annual turnover of minimum of INR 105 Millions OR EURO 1.523 Millions OR USD 1.985 Millions OR SYP 108 Millions based on the audited accounts of last three financial years (2008-09, 2009-10 & 2010-11). Bidders shall submit audited annual accounts (balance sheets and profit & loss account) in support of this. Financial year in line with calendar year may also be considered. e.g closing in Dec 2010 as 2010-11.
2.0	Bidders who wish to participate should have executed following works, during last 7 years, as on the latest date of bid submission. (a) Erection and Commissioning of one STG of unit rating of 100 MW or higher capacity. OR (b) Erection and Commissioning of one GTG of unit rating of 190 MW or higher capacit OR (c) Erection and Commissioning of one BOILER (with Rotating machinery) of above 400 MW rating, under direct order of BHEL and Erection and Commissioning of one STG of at least 60 MW rating. (Relevant document like Work Order copy with scope and completion certificate in support of above shall be submitted.)
3.0	The bidder is required to enter into an Integrity Pact (I P) with BHEL against this tender / contract by signing and stamping all the pages of I P by authorized representative. Bidders, who do not accept and comply with this requirement, shall not be considered against this tender.
4.0	For this project, separate contractors are to be deployed for executing erection and commissioning works of TG, Electrical and C&I, BOP and Boiler. Accordingly, for this TG tender, contractors for Electrical and C&I, BOP and Boiler works, if already engaged for this project, shall not be considered.
5.0	Bidder's selection for this work is subject to approval of BHEL's customer

Explanatory Notes:

1. **'Executed'** mentioned above for STG/GTG means that Synchronization of the unit has been completed.
2. **'Executed'** mentioned above for Boiler means that boiler light up has been completed.
3. If the Qualifying work is executed in the 7 years period as specified above, even if it has been started earlier, the same will also be considered meeting the qualifying requirements.

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	Details of Contact person for this Tender	Name : Mr/Ms Designation: Telephone No: Mobile No: 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	BIDDER REPLY
6	Whether the format for compliance with PRE QUALIFICATION CRITERIA (ANNEXURE-I) is understood and filled with proper supporting documents referenced in the specified format	Applicable	YES / NO
7	Audited profit and Loss Account for the last three years	Applicable/Not Applicable	YES/NO
8	Copy of PAN Card	Applicable/Not Applicable	YES/NO
9	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	Declaration by Authorised Signatory	Applicable/Not Applicable	YES/NO
12	No Deviation Certificate	Applicable/Not Applicable	YES/NO
13	Declaration confirming knowledge about Site Conditions	Applicable/Not Applicable	YES/NO
14	Declaration for relation in BHEL	Applicable/Not Applicable	YES/NO
15	Non Disclosure Certificate	Applicable/Not Applicable	YES/NO
16	Bank Account Details for E-Payment	Applicable/Not Applicable	YES/NO
17	Capacity Evaluation of Bidder for current Tender	Applicable/Not Applicable	YES/NO
18	Tie Ups/Consortium Agreement are submitted as per format	Applicable/Not Applicable	YES/NO
19	Power of Attorney for Submission of Tender/Signing Contract Agreement	Applicable/Not Applicable	YES/NO
20	Analysis of Unit rates	Applicable/Not Applicable	YES/NO

NOTE : STRIKE OFF 'YES' OR 'NO', AS APPLICABLE

DATE :

AUTHORISED SIGNATORY
(With Name, Designation and Company seal)

ANNEXURE- 3

GENERAL TERMS AND CONDITIONS OF REVERSE AUCTION (RA)

Against this enquiry for the subject item / system with detailed scope of supply as per our tender specification, BHEL-PSNR, NOIDA may resort to "REVERSE AUCTION PROCEDURE" i.e. **ONLINE BIDDING on INTERNET.**

1. For the proposed reverse auction, technically and commercially acceptable bidders only shall be eligible to participate.
2. BHEL will engage the services of a service provider who will provide all necessary training and assistance before commencement of on line bidding on Internet.
3. In case BHEL decides to conduct reverse auction, BHEL's service provider shall contact the vendor directly and impart them the training.
4. Business rules like event date, time, start price, bid decrement, extensions, etc. also will be communicated through service provider for compliance.
5. Vendors have to fax the compliance form in the prescribed (provided by service provider) before start of Reverse auction. Without this the vendor will not be eligible to participate in the event.
6. **Total Price quoted shall be inclusive of all taxes except service tax in line with the NIT conditions for the subject work in Indian Rupees (INR), which is to be worked out as per the BOQ (Rate Schedule) given in tender enquiry and subsequent changes made, if any. EXCEL Sheet shall be provided, if applicable.**
7. Reverse auction will be conducted on schedule date & time.
8. At the end of reverse auction event, the lowest bidder value will be known on the network.
9. The lowest bidder has to fax the duly signed filled-in prescribed format as provided on case-to-case basis to BHEL through service provider after completion of event on the same day preferably.
10. Any variation between the on-line bid value and signed document will be considered as sabotaging the tender process and will invite disqualification of vender to conduct business with BHEL as per prevailing procedure.
11. In case BHEL decides not to go for Reverse auction procedure for this tender enquiry, the price bids and price impacts, if any already submitted and available with BHEL shall be opened as per BHEL standard practice.

ANNEXURE- 4

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

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

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 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 IPC/ PC 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 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.

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 Bidders(s)/ Contractor(s) from the tender process or take action as per the separate “Guidelines for Suspension of Business Dealings with Suppliers/ Contractors” framed by the Principal.

Section 4 – Compensation for Damages

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

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 Bidder(s)/ Contractor(s) undertake(s) to demand from his sub-contractors a commitment consistent with this Integrity Pact. This commitment shall be taken only from those sub-contractors whose contract value is more than 20% of Bidder's/ Contractor's contract value with the Principal.

6.2 The Principal will enter into agreements with identical conditions as this one with all Bidders and Contractors.

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

Section 7 – Criminal Charges against violating Bidders/ Contractors /Sub-contractors

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.

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 As soon as the Monitor notices, or believes to notice, a violation of this agreement, he will so inform the Management of the Principal and request the Management to discontinue or

take corrective action, or heal the situation, or to take other relevant action. The Monitor can in this regard submit non-binding recommendations. Beyond this, the Monitor has no right to demand from the parties that they act in a specific manner, refrain from action or tolerate action.

8.6 The Monitor will submit a written report to the CMD, BHEL within 8 to 10 weeks from the date of reference or intimation to him by the Principal and, should the occasion arise, submit proposals for correcting problematic situations.

8.7 The CMD, BHEL shall decide the compensation to be paid to the Monitor and its terms and conditions.

8.8 If the Monitor has reported to the CMD, BHEL, a substantiated suspicion of an offence under relevant IPC / PC 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.

8.9 The number of Independent External Monitor(s) shall be decided by the CMD, BHEL.

8.10 The word 'Monitor' would include both singular and plural.

Section 9 – Pact Duration

9.1 This Pact begins when both parties have legally signed it. It expires for the Contractor 12 months after the last payment under the respective contract and for all other Bidders 6 months after the contract has been awarded.

9.2 If any claim is made / lodged during this time, the same shall be binding and continue to be valid despite the lapse of this pact as specified as 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.

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	For & On behalf of the Bidder/ Contractor
(Office Seal)	(Office Seal)

Place----------

Date----------

Witness: _____	Witness: _____
(Name & Address) _____	(Name & Address)_____
_____	_____

TECHNICAL CONDITIONS OF CONTRACT (TCC)

TENDER NO. BHEL/ NR/SCT/ TISHREEN-3&4/ TG/

OF

ERECTION, TESTING, COMMISSIONING, TRIAL OPERATION AND HANDING OVER OF STEAM TURBINE, TURBO GENERATOR WITH AUXILIARIES INCLUDING FINAL PAINTING FOR UNIT 3&4 AT 2X200 MWTISHREEN, THERMAL POWER PLANT EXT. PROJECT OF PEEGT ,SYRIA

PART- I OF TCC

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

Rev 00

6th JULY 2010

TECHNICAL CONDITIONS OF CONTRACT (TCC)

(Document No PS:MSX:TCC)

BHARAT HEAVY ELECTRICALS LIMITED

TECHNICAL CONDITIONS OF CONTRACT (TCC)
CONTENTS (PART-I)

1.0	Project Information
1.1	INTRODUCTION Syrian Arab Republic is situated in the Middle East, at eastern end of the Mediterranean Sea, between Turkey and Lebanon. Its climate is hot and dry in summer. Hottest month is August. Its Cold and wet in winter with occasional snow. Wettest and coldest month is January. Coastal region has typical Mediterranean climate. Spring (March – April) and autumn (September - October) are very pleasant. Major Cities of Syria are Damascus (capital), Aleppo, Latakia and Homs. Main languages spoken are Arabic (official), Kurdish, Armenian, Aramaic, Circassian, French widely understood. 1. Name of the Owner : Public Establishment of Electricity for Generation and Transmission (PEEGT), Syrian Arab Republic 2. Address : PEEGT, Damascus, Syria. 3. Installed capacity : 2x200 MW in operation. 4. New Installation : 2X200 MW (Unit 3 & 4) 5. Nearest Railway station : - 6. Nearest City : DAMASCUS- 50 KMS 7. Nearest Airport : DAMASCUS- 20 KMS 8. Altitude : 606.7 mtrs Above Sea Level Seismic Force UBC 1997 Zone 3
1.2	CLIMATIC CONDITIONS a) Maximum temperature : 45 DegCelcius b) Minimum temperature : 2 DegCelcius c) Maximum Relative Humidity : 72% d) Minimum Relative Humidity : 36% e) Average Annual Rainfall : 234 mm f) Height above MSL : 606.7 M

2.0 SCOPE OF WORK

2.1 BHEL has been awarded the work of Design, Manufacture, supply, installation, erection & commissioning of EPC package of **2x200 MW units at Tishreen Syria (Units 3&4), by PEEGT.** The equipment consists of boiler, Fans, steam turbines, generators, boilers feed pumps, condensate extraction pumps and piping along with the associated auxiliary supports and controls.

2.2 **The scope of work under this mainly consists of the following:**

1. Erection, testing & commissioning of Steam turbine generator & auxiliaries
2. Collection ofmaterials from BHEL/client's stores/storage yard including loading; transportation to site
3. Erection, testing and commissioning of Steam turbine (HP,IP,LP),turbo generator set with TG integral piping (CS, AS, SS), R.E. joints, B.F valves, and otherassociated auxiliaries .
4. Erection, testing and commissioning of of LP & HP Heaters, Coolers, Feed Storage Tank &Deaerator with approach platform and auxiliaries.
5. Erection, testing and commissioning of Boiler Feed Pumpswith associated auxiliaries
6. Erection, testing and commissioning of LP by-pass system, HP by-pass system
7. Power cycle piping, ACW piping etc. with all associated valves, fittings, hangers &supports, and tanks and vessels etc.
8. Application of Thermal insulation
9. Final Painting including supply of paints
10. Various Bought out Items of Hardwar and PEM packages as per annexure-I.

NOTES:

1. **Contractor shall make complete arrangements for unloading ofgenerators ofboth the units on respective foundations by EOT crane**.
2. **DC Jet condenser, CW circuit will be in the scope of other contractor of BHEL/Customer. Bidder have to provide all the necessary help and coordinate for interconnection of turbine exhaust with jet condenser by the other contractor**

2.3 BRIEF DESRIPTION OF STEAMTURBINE & AUXILIARIES

2.3.1 STEAM TURBINE

Steam Turbine consists of three cylinders (HP, IP and LP) broadly including the following.foreach unit :

1. Bearing pedestals.
2. Base plates, foundation holding down bolts.
3. Combined emergency stop and control valves – 4 nos.
4. Combined reheat stop and control valves - 2 nos.
5. Steam strainers & strainer housing for MS lines – 2 nos; for HRH lines – 2 nos.
6. Cross around piping between IP & LP casings.
7. Hydraulic turning gear with hand barring.
8. .Electro – hydraulic governing system backed up with hydro – mechanical system.
9. Lubrication & governing oil system.
10. Main Oil Tank with internals.
11. Main Oil Pump.
12. AOP with drives - 2X100% AC.
13. EOP with drives, DC – 1 no.
14. JOP with drives – 2 no.
15. Oil Vapour exhauster – 2 nos.
16. Duplex oil filter for LO sys.
17. Duplex oil filter for JO sys.
18. Temp CV for LO sys.
19. LO/ JO sys, piping, valves & all other accessories etc.
20. Unit oil purifier (centrifuge type).
21. Turbine gland sealing sys including necessary piping, valves, hanger & supports.
22. Cond spray sys Including necessary piping, valves and hanger & supports.
23. Turbine drain system Including necessary piping, valves and hanger & supports.
24. LPBP valves with their supply units & all accessories - 2 nos.
25. Water inj valves for LPBP valves – 4 nos.
26. CRH NRVs.
27. Vacuum breaker valves.
28. Flow measuring devices for PG test flow nozzles.
29. Thermal Insulation of Turbine,ESV,IV,LP bypass valve & cross around piping
30. Thermal Insulation of seal steam turbine drainage & signal piping
31. Turbine cleading

2.3.2 TURBO GENERATOR

Air cooled generator(Exciter:static) consists of following:
Stator-1 no.
Rotor-1 no.
End shields-02 nos
Bearings(pedestal mounted) – 2 nos
Air coolers – 4 nos.
Terminal bushings -6 nos
Foundation frame-1 set
Enclosure sound absorbing cover-1 set
Foundation items-1 set
Liquid detector rack-1 no.

Slip Ring shaft assembly consists of

Brush carrier assy
Slip ring shaft assy
Bearings(pedestal mounted
Slip ring cover

2.3.3 **PUMPS**

BOILER FEED PUMPS with motors- 3x60%.
Condensate pumps-- 3x60%.
Auxiliary cooling water pumps with motors – 2X100%

2.3.4 **HEAT EXCHANGERS**

LP Heaters No. 1,2&3
HP heaters 5 & 6
Gland Steam Condensar - 1 no.
Drain cooler – 1 no.
Turbine Oil coolers –3x 100%.
Tray cum spray type deaerator.

2.3.5 TG Integral Piping along with associated valves & fittings

2.3.6 Power cycle piping(PGMA 80) along with associated valves ,fittings

2.3.7 Tanks (supplied from BHEL Bhopal) likeHP flash tank, LP flash Tank

The tentative weight schedule of Steam Turbine, Generator and auxiliaries to be erected under this specification are as per Annexure- I.

2.4. The items indicated under tender specifications **(Item No. 1 of Rate Schedule)** are required to be erect by the contractor as per actual tonnage which may be necessary to complete the work in all respect to commission the unit. The payment to contractor will be done on the basis of Lumpsum price quoted against each item of rate schedule.

2.5. The contractor is required to erect actual tonnage (irrespective of any variation plus or minus) which may be necessary to complete their work of Power Cycle Piping, LP Piping and related platforms/ structures and complete the work in all respects as detailed in tender specifications **(Item No. 2 & 3 of Rate Schedule)**, for which payments shall be released on finally accepted tonnage rates. The contractor undertakes to erect / commission actual quantities as per advice of BHEL Engineer and accordingly the final contract price shall be worked out on the basis of quantities actually erected at site and payments will also be regulated for the same.

2.6. The customer M/s PEEGT and /or their Consultant may depute their representative or checking and supervision of important stages of work. The contractor shall be required to provide all facilities for inspection of works, without any cost implications to the BHEL. Any defect in quality of

work or deviations from drawings/ specifications pointed out during such inspection shall be made good by the contractor in the same way as if pointed out by the BHEL Engineer, without any cost implication to BHEL.

3.0 FACILITIES IN THE SCOPE OF BHEL/CONTRACTOR

Sl.No	Description	Scope / to be taken care by		Remarks
		BHEL	Bidder	
1.1.0	**PART-I ESTABLISHMENT**			
1.1.1	FOR CONSTRUCTION PURPOSE:			
A	Open space for office	Yes		BHEL shall provide free of charge limited open space for office and store as and where made available by BHEL's customer
B	Open space for storage	Yes		
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	
1.1.2	**FOR LIVING PURPOSES OF THE BIDDER**			
A	Open space	Yes		Limited undeveloped

B	Living accommodation		Yes	open space will be provided to the contractor, as and where made available by BHEL's customer
1.2.0	**ELECTRICITY & LIGHTS**			On chargeable basis, The indicative charge for Construction Power shall be SYP 4.0/kwh. However, the actual charges and usage conditions shall be subject to charges & conditions as per customer (PEEGT) instructions. In the initial stages , the Contractor shall have to deploy the DG sets for carrying out the tender works
1.2.1	Electricity For construction purposes			
1.2.1.1	nearest point source as available	Yes		
1.2.1.2	Further distribution for the work to be done which include supply of materials and execution		Yes	
1.2.2	Electricity for the office, stores, canteen etc of the bidder which include:			As in 1.2.0 above
1.2.2.1	Distribution from single point including supply of materials and service		Yes	

1.2.2.2	Supply, installation and connection of material of energy meter including operation and maintenance		Yes	
1.2.2.3	Duties and deposits including statutory clearances for the above		Yes	
1.2.2.4	Living facilities for office use including charges		Yes	
1.2.2.5	Demobilization of the facilities after completion of works		Yes	
1.2.3	Electricity for living accommodation of the bidder's staff, engineers, supervisors etc on the above lines.		Yes	
1.3.0	**WATER SUPPLY**			
1.3.1	**For construction purposes:**			
1.3.1.1	Making the water available at single point	Yes		**FREE OF COST**
1.3.1.2	Further distribution as per the requirement of work including supply of materials and execution		Yes	
1.3.2	**Water supply for bidder's office, stores, canteenetc**		Yes	
1.3.2.1	Making the water available at single point	Yes		
1.3.2.2	Further distribution as per the requirement of work including supply of materials and execution		Yes	
1.4.0	**LIGHTING**			

1.4.1	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	
1.4.2	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	
1.4.3	Providing the necessary consumables like bulbs, switches, etc during the course of construction		Yes	
1.4.4	Lighting for the living purposes of the bidder at the colony / quarters		Yes	
1.5.0	**COMMUNICATION FACILITIES FOR SITE OPERATIONS OF THE BIDDER**			
1.5.1	Telephone, fax, internet, intranet, e-mail		Yes	
1.6.0	**COMPRESSED AIR SUPPLY**			
1.6.1	Supply of Compressor and all other equipments required for compressor and compressed air system including pipes, valves, storage systems etc		Yes	
1.6.2	Installation of the above system and operation and maintenance of the same .		Yes	
1.6.3	Supply of the all the consumables for the above system during the contract period		Yes	

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

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

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

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

a) All electrical installations should be as per local electricity rules & regulations.
b) All distribution Boards installed by the contractor should be constructed with fireproof materials viz. Steel frames, Bakelite sheets etc.
c) Connection for single phase should be taken from phase and neutral. Nowhere the connection should be taken with earth as neutral.
d) All electrical connections should be made through connectors, nuts and bolts, switches, plug and sockets. Loose connections or hooking up of wires shall not be permitted.
e) Contractor have to make their own earthing arrangement for their equipment / DB earthing.
f) All electrical equipment / tools and plants should be properly earthed. DBs to be earthed diagonally opposite at two points.
g) Contractor should use “MCCB” and “ELCB” either on incoming or outgoing connections to the DBs.
h) Contractor should ensure that all the CBs / TPNs/ Fuses/ MCCB / ELCB cables etc. should be of adequate rating/ capacity.
i) For permission of supply connections contractor has to submit a test report of their installations with a single line diagram of connected/ proposed loads.

3.5 ELCB will be tested once in a week or as directed by BHEL by actually simulating the earth leakage for all installations and the same shall be recorded in the logbook to be maintained by the contractor.

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

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

3.8 Compressor of required capacity for construction activities purposes shall be arranged by Contractor.

3.9Contractor should install PCs ALONG WITH MODEM to connect with our server (LAN) AT SITE.

3.10 The Contractor shall during the progress of the work, provide, erect and maintain at his own expenses all necessary temporary workshops, stores, consumables, offices, etc. required for the proper and efficient execution of the work. The planning, setting and

erection of these buildings shall have the approval of the Engineer and the Contractor shall at all times keep them tidy and in a clean and sanitary condition to the entire satisfaction of the Engineer.

3.11 In case contractor is from India, BHEL will help in providing a letter (or arrange invitation letter from customer) for issuance of Visa for the persons of contractors by Syrian embassy. However arrangement of Visa and its Fee etc shall be coordinated by contractors themselves (or their agents).

4.1 LIST OF T&P TO BE DEPLOYED BY CONTRACTOR (FOR BOTH UNITS)

INDICATIVE LIST OF T&P TO BE DEPLOYED BY CONTRACTOR			
S.NO.	**EQUIPMENT**	**CAPACITY**	**QTY**
1.	Welding Generators, Transformers, Rectifiers And TIG Welding Machine and ovens for welding electrodes backing and holding		Adequate numbers.
2.	Telescopic Mobile crane	40 T	2 nos
3.	Crawler crane FOR SUITABLE PACKAGES	75 T/ SUITABLE	APR
4.	Low Bed Trailer	60 MT	APR
5.	Trailer with Pulling Unit	10 / 20 MT	1 no
6.	Hydra	18 MT	2 nos
7.	Hydraulic Jack (Low Height)	25/50/100T	Adequate numbers.
8.	Screw Jacks	5/10/25/50T	Adequate numbers.
9.	Hydraulic Pipe Bending Machine (Manual and Motorized)		1 number each.
10.	Pipe Bending Machine (Hydraulic)		02 Nos
11.	Stress Relieving Sets, including oil cooled transformers, heating coils, panels Recorders Etc.		Adequate numbers.
12.	Radiography arrangement including source		1 set
13.	Vacuum Cleaner (Industrial)		1 number.
14.	Surface Grinder and other Workshop Equipment		1 set.
15.	Electric Winches		Adequate numbers.
16.	Torque Tension Meter/ Wrench Up to 1000ft Lbs Range		1 number.
17.	Electronic Tube Expander (With Tools)		3 numbers.
18.	Air Compressor	140/210 CFM	1 number.
19.	Scaffolding pipes		Minimum 500 nos. per unit
20.	Chain Pulley blocks	5/10 MT	APR

21.	Digital Multimeters 3 ½ digit of reputed make		10 Nos.
22.	250V/ 500 V/ 1000 V rated Hand operated Megger Mains/ Battery operated		1 no. each
23.	Dumpy Level	0 to 350 mm	1 No.
24.	Surface Plate	Upto 1.0 Sq. Mtr	1 No.
25.	Temperature Recorder for 0-1000 deg C 6/12 points with thermocouples/ rods and compensating cables		2 Set
26.	Master pressure Gauge	0-4 Kg/cm2	1 No.
	SPECIAL T&Ps		
27.	Slings for lifting turbine rotors with lifting beam		One Set
28.	Slings for lifting generator stator with lifting beam		One Set

APR- As Per Requirement decided by BHEL Engineer

NOTES:

1. **The above list specifies only major T&P/MMD (may not be complete to be deployed by the contractor. All additional/ other tools and plants which are required for satisfactory & timely completion of work shall also be deployed by the contractor within finally accepted rate/ price.**.
2. If works gets delayed due to non-availability of T&P and MMD, BHEL reserves the right to get work done at the risk & cost of contractor without prejudice to right of BHEL as in GCC
3. Contractor must re-ascertain/ recheck range and accuracy of each IMTE from BHEL Engineer well in advance before arranging calibration/ deployment.
4. All custom Formalities for taking their materials to Syria for this project and further taking it out from Syria after completion of work shall be arranged/completed by contractors (or their authorized representative).
5. Temporary admission and temporary imports, if required, shall be done as per Article /18/ of PEEGT contract no. 480/EXT/PEEGT with BHEL.
6. Other terms and conditions regarding above items shall be as per T&P clause in SCC

5.0 T&P AND MMD DEPLOYED BY BHEL ON SHARING BASIS

LIST OF T&P and MMD being provided by BHEL for use of contractor free of hire charges on sharing basis.

S.NO.	EQUIPMENT	CAPACITY	QTY
T&Ps			
1.	EOT Crane (in T.G. hall)	170T / 30T	02 Nos
2.	Crawler crane (for lifting of FST & De-aerator)	200 / 250 T	01 No

NOTES:

1. **Cl.4.2.2.16 c. of SCC shall be read as** day-today upkeep and running maintenance like filling topping up of lubricants, changing filters, etc including repair of self starter, batteries and dynamo of these cranes shall be the responsibility of the contractor. If on checking it is found that the same is not followed, BHEL will exercise its right to get the job/works done at the risk and cost of contactor. BHEL may also provided cranes through crane hiring agencies in which case the day-to-day upkeep and running maintenance shall be excluded from scope of contractor.

2. **Cl.4.2.2.16 e. of SCC shall be read as-**The **operator for** BHEL's cranes **200 MT & above capacity** being provided by BHEL free of cost. **Further, Helpers and fuel for operation of all BHEL cranes, shall be provided by contractor within the final accepted rates.**

3. **The Cranes at Sl No 2 will be provided as per requirement on sharing basis and for special package handling only at the discretion of the BHEL Engineer**

4. **For the Crane at Sl. No.1 (EOT Crane) the operator will be provided by the contractor and electricity charges for the same will be borne by the contractor.**

5. **The contractor shall make necessary arrangement like laying of steel plates, assembly & dismantling of heavy lift attachment, boom, jib etc. for movement and operation of crane.**

6. Any other special T&P if supplied by the manufacturer and available with the customer will also be provided to the contractor free of hire charges as and when made available. Special tools and tackles are to be used only for the purpose for which these are meant and to be returned in good condition. However low height jack may not be made available and will have to be arranged for by the contractor

7. **For other T&P mentioned above, contractor shall transport from BHEL stores, install,operate, carry out maintenance, dismantle after use and return to BHEL stores.**

8. **Providing mobile crane & shift Test load upto EOT for Load Testing**

9. Other terms and conditions regarding above items shall be as per T&P clause in SCC

6.0 TIME SCHEDULE

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

6.2 Entire work as detailed in the tender specifications shall be completed within **19 months f**rom the Zero date as per programme/ milestones indicated by BHEL Engineer. Contractor has to mobilise adequate resources to meet BHEL's commitments to their customer as indicated from time to time.

In case due to reasons not attributable to the contractor, the work gets delayed and additional manpower / resources have to be mobilized so as to expedite the work to meet various milestones, same shall be done within the quoted rates as per Rate Schedule, at no extra cost to BHEL. In the event the contractor fails to respond to these requirements, BHEL shall take appropriate actions to meet customer's commitments in line with the provisions of General Conditions of Contract.

6.3 The various milestones dates to be achieved under this tender is as :

MILE STONES	**MONTHS**
Erection Start	Zero
Box – up for oil flushing	8th Month
Oil Flushing Completion.	10th Month
Barring Gear	11th Month
Rolling & Synchronising	12th Month
Trial operation & handing over	14th Month

The milestones of Unit-4 shall follow with a time lag of Four months.

Note:

In order to meet above schedule in general, and any other intermediate targets set, to meet customer/ project schedule requirements, contractor shall arrange & augment all necessary resources from time to time on the instructions of BHEL. This project is a fast track project.

6.4 The contractor has to ensure that work is completed in all respects leaving no pending points. However the punch list/ pending points, which are possible to be attended at site, shall be fully liquidated within two months from successful trial operation of the unit.

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

6.6 **CONSEQUENCE OF DELAY**

It may be noted that in the event delay in completion is attributable to the contractor BHEL will impose LD on the contractor as indicated elsewhere in the contract.

7.0 TERMS OF PAYMENT

7.1 The 'Engineer' will certify regarding the actual work executed in the measurement books and bills, which shall be accepted by the contractor in measurement book.

7.2 Contractor shall submit bills for the work completed under the specification, once in a month detailing work done during the month. The format for billing shall be approved by BHEL before raising invoices.

7.3 Subject to any deduction, which BHEL may be authorised to make under the contract, the contractor on the certificate of the Engineer at site be entitled for payment as explained hereunder.

7.3.1 Interest bearing recoverable advance : Applicable as per Clause No. 2.13 of GCC.

7.3.2. PROGESSIVE PAYMENT ON PRORATA BASIS

A. 85% of Lump sum price (Item No.1 of Rate Schedule) :
(Applicable on items covered under ANNEXURE – I)

1.	**CONDENSER**	**2X1%**
2.	**TURBINE**	**2X12%**
3.	**GENERATOR**	**2X12%**
4.	**INTEGRAL PIPING**	**2X2.5%**
5.	**AUXILIARIES (PUMPS, HEATER, TANKS, VALVES ETC)**	**2X15%**

B. 85% of UNIT RATE (Item No.2 of rate schedule)

(Applicable on items covered under ANNEXURE – II)

1.	**Completion of pre-assembly, (if not applicable this portion shall be clubbed with Placement in position**	**20%**
2.	**Placement in position**	**20%**
3.	**Alignment**	**10%**
4.	**Welding/ Bolting/ fixing as required**	**15%**
5.	**Completion of non-destructive examination & stress relieving/ heat treatment (if not applicable then this portion to be paid along with welding)**	**5%**
6.	**Hangers & supports etc wherever necessary as per dwg**	**10%**
7.	**Hydraulic Test or Pneumatic Test**	**5%**
	TOTAL FOR PRO RATA PAYMENTS	**85%**

C. 85% of UNIT RATE (Item No. 3 of rate schedule)

(Applicable on items covered under ANNEXURE – III)

1.	**Placement in position**	**50%**
2.	**Alignment**	**15%**
3.	**Welding/ Bolting/ fixing as required**	**20%**
	TOTAL FOR PRO RATA PAYMENTS	**85%**

D. MILESTONE PAYMENT (15% OF Contract Value)

1.	**Oil Flushing Completion**	**2X1%**
2.	**Barring Gear**	**2X2%**
3.	**Completion of steam rolling & synchronization**	**2X1.5%**
4.	**Full Load**	**2X2%**
5.	**Final Painting**	**2X1%**
	TOTAL	**15%**

NOTES:

1. Further break-up of above terms of payment, if required can be carried out at site entirely at the discretion of BHEL.
2. The above break up is only for payment purposes and does not cover all equipment in the scope of the subject work. The total scope of work shall be as detailed in the tender specification.
3. Pro-rata payments shall be made every month in proportion to the work carried out by the contractor during the month, which shall be measured on the basis of percentages fixed above. The engineer shall carry out the assessment of the work for payment within the above percentages and it shall be final and binding on contractor. However, further percentage break up for payment against above clauses, will be mutually discussed and finalised at site.
4. Recovery of retention amount & its payment and final bill shall be made as per clause nos. 2.22 and 2.23.2 of GCC.

Note:

If the commissioning activities could not be carried out due to no fault of contractor, BHEL Site in-charge, at his discretion, after recording reasons for exercising such option, can split and release payment up to 50% of milestone payment on completion of work, to the extent possible, required for carrying out that particular milestone/ commissioning activity.

7.4 CURRENCY OF PAYMENT

The Running/Final Bill Payments shall be made as follows subject to Syrian Bank / Reserve Bank of India guidelines:

1.) 30% of the Net Payable Amount – in SYRIAN POUNDS (SYP)

2.) 70% of the Net Payable Amount – in EURO

The EURO-SYP exchange rate for RAB payments shall be taken as declared by Central Syrian bank on the last day of the month for which the Running Account Bill has been raised. The conversion rate for Euro to SYP shall be the "Buying rate" of Euro by Central Syrian bank.

7.5PRICE VARIATION

Prices shall remain firm throughput the contract period, including extended period, if any.

7.6LIQUIDATED DAMAGES(LD)

If the Contractor fails to maintain the required progress of work which results in delay in the completion of the work as per contractual completion period as given in **clause 6.2** , BHEL shall have the right to impose a penalty of delay according to the following percentages even if it does not cause any harm for BHEL. No intimation/review for such penalty shall be required.

a) 0.2% (two per thousand) of the total value of the work for each week of delay of the first five weeks.
b) 0.5% (five per thousand) of the total value of the work for each week of delay of the five weeks following the weeks subject of paragraph a).
a) 1% (one per cent) of the total value of the work for each week of delay of the weeks following the weeks, subject of paragraph b).

The partial delay per week will be calculated on the basis of the number of days of delay divided by seven. The ceiling of the total penalty of delay for the work will not exceed 20% (Twenty Per Cent) of the total contract value.

For this purpose the period of delay shall be the delay attributable to the contractor for completion of work as per contract. Contract value for this purpose, shall be the final executed value exclusive of ORC, Extra works executed on Manday rate basis, Supplementary/ Additional items.

8.0 TAXES & DUTIES

8.1 The bidder shall quote their rates inclusive of all expenses, taxes/ duties {applicable outside Syrian Arab Republic (SAR) and local taxes and duties in Syria Arab Republic}. The Contractor shall be responsible for paying any and all Taxes/ Duties assessed on the Contractor, its Sub-Contractor and Suppliers or their respective employees.

8.2 The bidder shall quote their rates inclusive of workers insurance expenses for this work (with the Establishment of Social Insurance at Syria Arab Republic).

8.3 Custom clearance shall be done by the contractor as per procedures prevailing at Syria Arab Republic.

a) PEEGT will pay the custom duties for all materials and equipment of the project and which ultimately become the property of Customer/ gets consumed in the project for one time, while the Contractor will bear the custom duties in case of his compulsion to import some of them for more than one time due to defect or damage or any other reason.

b) The materials that are available locally, like Cement, reinforced steel and wood, the Contractor will bear all custom duties, expenses and fees, in case of importing from out Syrian Arab Republic.

c) Limited T&P shall be allowed for temporary imports with custom duty exemption as per the prevalent Syrian laws.

8.4 The above mentioned taxes, duties and expenses that are levied inside Syria ArabRepublic and which will be borne by the contractor, will be applied according to the valid laws in Syria Arab Republic.

8.5 Taxes as required to be deducted at source as per Local Syrian Laws, if any, at prevailing rates shall be deducted on gross invoice value from the running bills unless Exemption Certificate from appropriate Tax Authority is furnished.

8.6 No reimbursement / recovery on account of increase / reduction in the rate of taxes/ duties etc. on input goods / services / work shall be made.

9.1 The contractor shall comply with following towards Social Accountability;

(a) The contractor shall not employ any employee less than 15 years of age in pursuant to ILO convention. If any child labour were found to have been engaged , the Contractor shall be levied with expenses as per Syrian laws.

(b) The contractor shall not engage Forced/Bonded Labour.

(c) The contractor shall maintain Health & safety requirement as stipulated in the Contract

(d) The Contractor shall abide by UN convention w.r.t Human Rights and shall be liable for Discrimination /Corporal punishment for failure in meeting with relevant requirements.

(e) The Contractor shall abide the requirement of Syrian government laws/ guidelines for working hours.

(f) The Contractor shall abide by the statutory requirement of Minimum Wages as per Syrian Rules and Regulations.

(g) The Contractor shall arrange potable drinking water to its employees & workers.

(h) Social Insurance participation: The contractor shall be subject to the labour law valid in the Syrian Arab Republic Concerning employment and misemployment of Syrian workers. He shall also be subject to legislation concerning social insurance valid in SAR, especially those related to work accidents and illness of profession as a result of work nature. He shall bear all insurance payments relating to that and also all payments of social insurance arising from the execution of the contract

9.2 The customer PEEGT and / or their Consultant may depute their representative for checking and supervision of important stages of work. The contractor shall be required to provide all facilities for inspection of works at no extra cost to BHEL. Any defect in quality of work or deviations from drawings/ specifications pointed out during such inspection shall be made good by the contractor in the same way as if pointed out by the BHEL Engineer, without any cost implication to BHEL.

9.3 INSTRUCTIONS TO TENDERERS

9.3.1 The tenderers are advised to physically visit the site and fully acquaint themselves with site conditions, transportation routes, various distances and the fact that other contractors would be working in this area their structures are to be protected. The material brought and stacked for construction should not make hindrance to other contractors. Necessary precaution and arrangements including sprinkling of water during work as acceptable to BHEL for safety & security for the above have to be made by

the contractor. No claim will be entertained by BHEL on ground of lack of knowledge and the contractor's rates shall be deemed to have taken this into account.

9.3.2 The contractor, in the event of this work awarded to him, shall establish a office at site and keep posted an authorised, responsible officer with valid Power of Attorney for the purpose of the contract. Any order or instructions of the `**BHEL** Engineer' or his duly authorised representative, communicated to the contractor's representative at site office will be deemed to have been communicated to the contractor at his legal address.

9.3.3 Tenderers should fulfill the following pre-requisites, as envisaged in Article 11 of 'The Uniform System of Contracts Law No. (51), decree no. 450 of Ministry of Finance, Syria Arab Republic:

a) They must not be prohibited participation in tenders or from contracting with public entities, nor having a property under seizure in favour of public entities whether by way of reserve or executive seizure.

b) They must be registered in the commercial register if he is a Syrian or treated like a Syrian.

c) They must be registered in one of the Chambers of Commerce or Industry or Agriculture or Tourism - as the case may be - if he is a Syrian or treated like a Syrian.

d) They must not be convicted of a crime or a disgraceful act unless he has been reinstituted.

e) They must not be an employee in a public entity or a member of an Executive Council of Local Administration specifically in the governorate to which he belongs.

f) They must not own a factory or establishment or branch office in Israel, nor must he have subscription in any establishment or body in it. He must not be a party to any contract for manufacture or assembly or license or technical assistance with any establishment or body or person in Israel. He must not practice any such activity in Israel whether in person or through a mediator. He must not have any contribution whatsoever to supporting Israel or its war effort.

Tenderers are required to submit a certificate confirming the above, on their letter head as per Format given in Annexure of this tender.

9.3.4 The Contractor shall indemnify BHEL, its representatives or employees against any action, claim or proceeding relating to infringement or use of any patent or design or any alleged patent or design rights and shall pay any royalties or other charges which may be payable in respect of any article or material or part thereof included in the Contract. In the event of any claim being made or action being brought against BHEL or any agent, servant or employee of BHEL in respect of any such matters as aforesaid, the Contractor shall immediately be notified thereof, provided that such indemnity shall not apply when such infringement has taken place in complying with the specific directions issued by BHEL but the Contractor shall pay any royalties or other charges payable in respect of any such use, the amount so paid being reimbursed to the Contractor only if the use was the result of any drawings / specifications issued after submission of the tender.

10.1 COMPLIANCE TO REGULATIONS AND BYELAWS

10.1.1 Syrian laws and regulations: The contractor shall undertake to respect the regulations, laws and provisions valid in the Syria Arab Republic.

10.1.2 Legal references: "Unified Contracts Regulations" issued by law no. /51/ of 2004 and Book of General Conditions issued by decree no. /450/ of 2004 will be referred to for all conditions not stipulated in this contract and its annexures. In case all these texts are not sufficient, the Syrian Law will be considered the sole reference for this contract and for any dispute arising in connection with the execution of it.

10.1.3 **The Contract shall be governed by the applicable Laws of Syrian Govt. and the bidders to ensure considering latest Syrians Laws before quoting.** The Contractor shall undertake to respect the regulations, laws and provisions valid in the Syrian Arab Republic. The Legislation valid in Syrian Arab Republic shall be considered the sole legal reference to be applied for all what is not stipulated in the specifications of this NIT.

10.1.4 The Contractor shall conform to the provisions of any statute relating to the work and regulations and bylaws of any local authority and of any water and lighting Companies or Undertaking with whose system the work is proposed to be connected. He shall, before making any variation from the drawings or the specifications that may be necessitated for such connections give the Engineer, notice specifying the variation proposed to be made and the reasons therefore and shall not carryout any such variation until he has received instructions from the Engineer in respect thereof. The Contractor shall be bound to give all notices required by statute, regulations or bye-laws as aforesaid and to pay all fees and taxes payable to any authority in respect thereof.

10.1.5 The Contractor shall abide by "The Uniform System of Contracts Law No. (51) with decree no. 450 and decree no. 15 for 2001, General Notice of the Uniform system of Contracts, book of General Conditions for The Uniform System of Contract and its time to time amendments and any other laws applicable in Syria by Syrian Arab Republic, Ministry of finance". The copy of the same can be provided to bidder against specific request to BHEL at the address given in this NIT.

10.1.6 The Contractor shall ensure conformance in all respects with the provisions of all state

and local laws, regulations or other laws in force in Syria or elsewhere including all regulations and by-laws of any local or other duly constituted authority within Syria or elsewhere which may be applicable to the performance of the Contract and the rules and regulations of all public bodies and companies whose property or rights are affected or may be affected in any way by the Works or any Temporary Works (which are herein referred to as "Laws"), and shall give all notices and pay all fees required to be given or paid thereby and shall keep BHEL and/ or its Customer (M/s PEEGT) indemnified against all penalties and liability of any kind for breach of any of the same.

10.1.7 **Arbitration & Reconciliation** shall be as per the clause in GCC.

10.1.8 The Contractor shall comply with all applicable Syria Government's safety and sanitary laws, transportation rules, regulations and ordinances, as well as the established safety rules and practices of BHEL's Customer (M/s PEEGT). The Contractor shall also provide insurance cover for his workmen throughout the contract period, under prevailing local Syrian Laws.

10.1.9 Temporary admission and temporary imports, if required, shall be done as per Article /18/ of PEEGT contract no. 480/EXT/PEEGT with BHEL.

10.2 FACILITIES TO BE PROVIDED BY BHEL / CONTRACTOR

10.2.1 BHEL shall provide free of charge limited open space for office and store as and where made available by its customer. It is the responsibility of the contractor to construct sheds, provide all utilities as a part of his scope of work.

Similarly , limited open space will be provided to the contractor, as and where made available by its customer, for building labour hutments and it will be the responsibility of the contractor to construct sheds, provide all utilities as a part of his scope of work.

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

10.2.3 **Construction/ lighting power, on chargeable basis will be given at a single point by BHEL, if required by the contractor**. The indicative charge for Construction Power shall be SYP 4.0/kwh. However, the actual charges and usage conditions shall be

subject to change as per customer (PEEGT) instructions. In the initial stages , the Contractor shall have to deploy the DG sets for carrying out the tender works. Energy Meter for electricity will have to be provided by the Contractor at his own cost. Further distribution of power / extension to the required point shall be done by contractor at his cost. All wiring must comply with local regulations and will be subject to Engineer's inspection and approval before connecting supply..

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

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

10.2.6 Adequate lighting facilities such as flood lamps, hand lamps and area lighting shall be arranged by the contractor at the site of construction, contractor's material storage area etc. within finally accepted rates.

10.2.7 WATER SOURCES SHALL BE GIVEN FREE OF COST AT A SINGLE LOCATION. Water has to be distributed by the Contractor at his own cost. Contractor to satisfy himself that the water drawn by him is fit for construction / consumption and adequately treat such water at his cost when it is not found fit for the said purposes.

10.2.8 The Contractor shall during the progress of the work, provide, erect and maintain at his own expenses all necessary temporary stores, consumables, offices, etc. required for the proper and efficient execution of the work. The planning, setting and erection of these buildings shall have the approval of the Engineer and the Contractor shall at all times keep them tidy and in a clean and sanitary condition to the entire satisfaction of the Engineer.

10.2.9 On completion of work or as and when required by BHEL, all the temporary buildings, structures, pipe lines, cables etc. shall be dismantled and leveled and debris shall be removed as per instruction of BHEL by the contractor at his cost. In the event of his failure to do so, same will be got done by the Engineer and expanses incurred shall be recovered from the contractor along with prevailing overhead. The decision of BHEL Engineer in this regard shall be final.

10.2.10 All custom Formalities for taking **their** materials to Syria for this project and further taking it out from Syria after completion of work shall be arranged/completed by contractors (or their authorized representative)

10.3 OTHERS

10.3.1 Bidder's selection is subject to approval of BHEL's customer (M/s PEEGT).

10.3.2 The responsibility toward others : The contractor will bear the responsibility of all damages which hurt others due to the execution of the contract works, and he is obliged to pay compensation of these damages according to the laws and regulations valid in Syrian Arab Republic. Where the damages have occurred, BHEL has the right to recourse upon him for any consequent obligations through clearing or any other procedure.

10.4 PRICE VARIATION

10.4.1 Price shall remain firm throughout the contract period includes the extended period if any.

11.0 SECURITY DEPOSIT (SD)

11.1 The contractor shall submit Security Deposit in Euros within 15 days from the date of issue of LOI as per the General Conditions of Contract (GCC). For calculation purpose, SD as per GCC will be worked out in Euros based on the SBI TT selling rate prevailing on the date of technical bid opening. For conversion of any amount in this tender/contract from one currency to the other currency, wherever required, exchange rates as applicable on the date of technical bid opening shall be considered.

11.2 In case the contractor opts to furnish Bank Guarantee as a part of Security Deposit, the BG shall be issued as per the Performa enclosed in this tender and also that the BG should be issued preferably through any of the Schedule Banks in India. The BG may also be accepted from a Foreign Bank at the sole discretion of BHEL, provided the BG is duly endorsed by any of the Indian Schedule Banks.

ANNEXURE-I

TENTATIVE WEIGHT SCHEDULE

SUMMARY OF WEIGHTS PER UNIT

AA TURBINE, GENERATOR & AUXILIARIES

TURBINE	**A**	**561**	**MT**
GENERATOR	**B**	**387**	**MT**
CONDENSER (ACCESSORIES)	**C**	**66**	**MT**
INTEGRAL PIPING	**D**	**44**	**MT**
CONDENSER EXTRACTION PUMP	**E**	**4**	**MT**
HEATERS & TANKS	**F**	**111**	**MT**
BFP & BOOSTER PUMP	**G**	**52**	**MT**
BUTTERFLY VALVES	**H**	**61**	**MT**
MISC BOP ITEMS (Supplied by PEM)	**I**	**350**	**MT**

NOTE:

THE WEIGHT/QTY INDICATED IS APPROXIMATE AND THERE MAY BE A VARIATION IN WEIGHT OF EQUIPMENT / PACKAGE. NO CLAIM WHATSOEVER WILL BE ENTERTAINED BY BHEL ON ACCOUNT OF VARIATION IN WEIGHT / QUANTITIES

A		**TURBINE**		
S. No.	**Package No.**	**Description**	**QTY:SET/NOS**	**Net Weight (In Kg)**
1	501/0	SOLE PLATE PEDESTAL ANCHOR	1	2310
2	503/0	COMPONENTS FOR BASE PLATEASSEMBLY	1	3340
3	504/0	COMPONENTS OF BASE PLATE ASSLY	1	2840
4	505/0	BASE PLATE LP CASING	1	2230
5	507/0	LP OUTER CASING PARTS	1	8070
6	508/0	LP OUTER CASING PARTS	1	8070
7	509/0	LP OUTER CASING PARTS	1	2455
8	510/0	LPC OUTER CASING PARTS	1	2455
9	511/1	LP OUTER CASING PARTS	1	405
10	511/2	LP OUTER CASING PARTS	1	478
11	512/0	ASSEMBLY DEVICES	1	100
12	513/0	INSPECTION SHAFT FOR IPC	1	575
13	515/0	ASSEMBLY FIXTURE FOR HPT	1	4580

14	516/0	ASSEMBLY FIXTURE HP TURBINE	1	1065
15	517/0	ASSEMBLY FIXTURE HP TURBINE	1	1430
16	518/0	ASSEMBLY FIXTURE HP TURBINE	1	2835
17	519/0	HP/IP BEARING PEDSTAL ASSEMBLY	1	12100
18	520/1	HP/IP BEARING PEDSTAL PARTS	1	338
19	520/2	HP/IP BEARING PEDSTAL PARTS	1	12
20	521/0	AUXILIARIES OF LP TURBINE	1	1710
21	522/0	AUXILIARIES OF LP TURBINE	1	1142
22	523/0	AUXILIARIES OF LP TURBINE	1	1142
23	524/0	LP JOINT COVERING	1	841
24	525/0	ASSEMBLY TOOLS	1	450
25	526/0	CAP(SPRING SUPPORT)	1	300
26	527/0	CAP(SPRING SUPPORT)	1	300
27	528/0	CAP (COMPENSATOR ASSEMBLY)	1	2884
28	529/0	CAP (COMPENSATOR ASSEMBLY)	1	3000
29	530/0	CAP(OBLIQUE REDUCER ASSEMBLY)	1	500
30	531/0	CAP (MITRE BEND ASSEMBLY)	1	435
31	532/0	CAP (COMPENSATOR ASSEMBLY)	1	3000
32	534/0	CAP (MAN-HOLE ASSEMBLY)	1	550
33	535/0	CAP (MAN-HOLE ASSEMBLY)	1	550
34	536/0	CAP(MITRE BEND ASSEMBLY)	1	435
35	537/0	CAP(MITRE BEND ASSEMBLY)	1	435
36	538/0	CAP(PIPE ASSEMBLY)	1	455
37	539/0	CAP(MITRE BEND ASSEMBLY)	1	435
38	541/0	LONGITUDINAL GIRDER (LEFT)	1	15107
39	542/0	LONGITUDINAL GIRDER (RIGHT)	1	15107
40	543/0	LP FRONT WALL (TS)	1	9878
41	544/0	LP FRONT WALL (GS)	1	9878
42	545/1	LP SHAFT SEALING (FRONT)	1	1802
43	545/2	LP SHAFT SEAL COMPENSATOR (TS)	1	1351
44	546/1	LP SHAFT SEALING (REAR)	1	1802
45	546/2	LP SHAFT SEAL COMPENSATOR (GS)	1	1351
46	550/1	LP CASING ASSEMBLY (FASTNERS)	1	2190
47	550/2	LP CASING ASSEMBLY (PARTS)	1	4511
48	550/3	LP CASING ASSEMBLY (PARTS)	1	65
49	551/0	EXTRACTION PIPE LINE (LPC)	1	350
50	552/0	EXTRACTION PIPE LINE (LPC)	1	570
51	553/0	EXTRACTION PIPE LINE (LPC)	1	906
52	554/0	EXTRACTION PIPE LINE (LPC)	1	572
53	555/0	EXTRACTION PIPE LINE (LPC)	1	572
54	556/0	EXTRACTION PIPE LINE (LPC)	1	375
55	557/0	EXTRACTION PIPE LINE (LPC)	1	226
56	558/0	EXTRACTION PIPE LINE (LPC)	1	390

57	559/0	EXTRACTION PIPE LINE (LPC)	1	400
58	560/0	EXTRACTION PIPE LINE (LPC)	1	380
59	561/0	EXTRACTION PIPE LINE (LPC)	1	235
60	562/0	LP EXTRACTION PIPE SHEATHING	1	929
61	563/1	INNER GUIDE PLATE OF DIFFUSER(TS)	1	1334
62	563/2	INNER GUIDE PLATE OF DIFFUSER(GS)	1	1334
63	564/0	DIFFUSER (TS)	1	3630
64	565/0	DIFFUSER (GS)	1	3630
65	566/0	AUXILIARIES OF IP TURBINE	1	320
66	567/0	AUXILIARIES OF IP TURBINE	1	204
67	568/0	AUXILIARIES OF IP TURBINE	1	204
68	569/0	LP-GEN BEARING PEDESTAL ASSY	1	9300
69	570/0	IP-LP BEARING PEDESTAL ASSY	1	13500
70	574/0	LP INNER OUTER CASING (U/H)	1	20800
71	575/1	LP INNER OUTER CASING (L/H) & LP INNER INNER CASING (L/H)	1	29207
72	575/2	LP INNER CASING ASSY FASTNERS	1	1300
73	576/0	LP INNER-INNER CASING (U/H)	1	10800
74	577/0	STEAM INLET PIPE (LPT)	1	1024
75	578/0	LP ROTOR	1	58277
76	579/0	BEARING PEDESTAL ARRANGT PARTS	1	850
77	581/0	STUD HEATING DEVICE AND BREECH NUT HEATING DEVICE	1	190
78	582/0	GROMMET SLINGS	1	230
79	583/0	IP TURBINE	1	56000
80	584/0	HP TURBINE	1	56000
81	585/0	HP INLET ASSY	1	3741
82	586/0	HP EXHAUST ASSEMBLY	1	1000
83	587/0	HP TURBINE PARTS	1	230
84	588/1	HP FRONT BEARING PEDESTAL	1	11569
85	588/2	HP FRONT BRG. PEDESTAL PARTS	1	523
86	589/0	IP TURBINE PARTS	1	250
87	591/0	RATING, COLLABORATION AND MONOGRAM PLATES	1	25
88	592/0	IP INLET ASSEMBLY	1	5518
89	593/0	OIL FLUSHING AND PRESSURE TEST DEVICE	1	102
90	595/0	SUPPORT FOR MS VALVE CASING	1	2240
91	596/0	SPRING SUPPORT	1	1044
92	597/0	SPRING SUPPORT	1	1044
93	598/0	SPRING SUPPORT	1	650
94	599/0	SPRING SUPPORT	1	650
95	600/0	STEAM BLOWING & HYD. TEST	1	3041

		DEVICE		
96	602/0	TOOLS AND PACKING DEVICES	1	407
97	603/1	SUSPENSION OF VALVES (IV)	1	2500
98	603/2	SUSPENSION OF VALVES (IV)	1	2500
99	605/0	FIRE PROTECTION VALVE ETC	1	323
100	606/0	ASSEMBLY DEVICE FOR VALVES	1	121
101	607/0	CHANGE OVER VALVE	1	56
102	608/0	ATT SOLENOID VALVES	1	114
103	609/1	ESV & CV CASING WITH VALVES	1	5420
104	609/2	ESV & CV CASING WITH VALVES	1	5420
105	609/3	ESV & CV CASING WITH VALVES	1	5420
106	609/4	ESV & CV CASING WITH VALVES	1	5420
107	610/1	IV & CV CASING WITH VALVES	1	15008
108	610/2	IV & CV CASING WITH VALVES	1	15008
109	611/1	ESV SERVOMOTOR WITH L.S. MTG.	1	1382
110	611/2	ESV SERVOMOTOR WITH L.S. MTG.	1	1382
111	611/3	ESV SERVOMOTOR WITH L.S. MTG.	1	1382
112	611/4	ESV SERVOMOTOR WITH L.S. MTG.	1	1382
113	612/1	IV SERVOMOTOR WITH LIMIT SWITCH MTG.& TEST VALVES	1	1614
114	612/2	IV SERVOMOTOR WITH LIMIT SWITCH MTG.& TEST VALVES	1	1614
115	614/1	CONTROL VALVE SERVOMOTOR	1	970
116	614/2	CONTROL VALVE SERVOMOTOR	1	970
117	614/3	CONTROL VALVE SERVOMOTOR	1	970
118	614/4	CONTROL VALVE SERVOMOTOR	1	970
119	615/1	I.P. CONTROL VALVE SERVOMOTOR	1	1518
120	615/2	I.P. CONTROL VALVE SERVOMOTOR	1	1518
121	616/0	CRH NRV WITH SERVOMOTOR	1	5545
122	616/1	STEAM BLOWING DEVICE CRH NRV	1	605
123	617/0	GOVERNING CONTROL RACK ASSLY	1	3500
124	618/0	GLAND STEAM PRESSURE INDICATOR	1	5
125	624/1	FRAME FOR SUSPENSION (IV)	1	758
126	624/2	FRAME FOR SUSPENSION (IV)	1	758
127	624/3	LOOSE ITEMS OF FRAME FOR SUSP.	1	266
128	625/0	EMERGENCY GOVERNOR	1	60
129	700/0	INJECTOR FOR SUC. PIPE NB350	1	529
130	702/0	MAIN OIL TANK & NOZZLE ARRGT. ASSY	1	9981
131	703/0	MAIN OIL TANK & NOZZLE ARRGT. ASSY	1	327
132	704/0	OIL STRIPPER	1	83
133	705/0	OIL STRAINERS	1	168
134	708/0	VARIABLE ORIFICES THROTTLE	1	100

		VALVES & FLUSHING PARTS		
135	709/0	HOUSING FOR MS STRAINER	1	3000
136	710/0	HOUSING FOR MS STRAINER	1	3000
137	711/0	STEAM STRAINER ASSEMBLY DEVICE MS & HRH	1	552
138	714/0	HOUSING FOR HRH STEAM STRAINER	1	3450
139	715/0	HOUSING FOR HRH STEAM STRAINER	1	3450
140	716/0	STEAM STRAINER (MS)	1	184
141	717/0	STEAM SRAINER (HRH)	1	385
142	718/1	BLANKING ARRANGEMENT FOR MSSTRAINER HOUSING	1	388
143	718/2	BLANKING ARRANGEMENT FOR HRHSTEAM STRAINER HOUSING	1	870
144	718/3	BLANKING ARRANGEMENT FOR MSSTRAINER HOUSING	1	388
145	718/4	BLANKING ARRANGEMENT FOR HRHSTRAINER HOUSING	1	870
146	719/0	STEAM STRAINER HOUSING GASKETS	1	20
147	720/0	COMPENSATOR	1	27
148	725/0	LEAKAGE OIL TANK	1	515
149	728/0	WASTE OIL TANK	1	515
150	729/0	INJECTOR FOR SUC. PIPE NB 400	1	472
151	730/0	OIL STRAINERS	1	168
152	801/0	TURBINE INSTRUMENT RACKS	1	658
153	802/0	TURBINE INSTRUMENT RACKS	1	615
154	803/0	IMPULSE PIPES (CARBON STEEL)	1	1385
155	804/0	PRESS. TRANSMITTERS, SWITCHES & GAUGES	1	575
156	805/0	TRANSMITTERS & J.B OF BEARINGS	1	60
157	806/0	IMPULSE PIPES (ALLOY STEEL)	1	300
			TOTAL	**560881**

B		**GENERATOR**		
S. No.	**Package no**	**Description**	**QTY:SET/NOS**	**Net Wt. (in Kg)**
1	11001/0	FOUNDATION PARTS FOR GENERATOR	1	5774
2	11002/0	FOUNDATION PARTS FOR GENERATOR	1	4690
3	11003/0	EMBEDDED PARTS	1	2978
4	11004/0	GENERATOR STATOR WITH SEALINGFOR TRANSPORT	1	282000
5	11005/0	GENERATOR ROTOR	1	60019
6	11006/0	COOLER HOUSING	1	12190

7	11007/0	SUPPORTS FOR COOLER HOUSING	1	877
8	11008/0	BEARING ASSEMBLY (EE)	1	3070
9	11009/0	BEARING ASSEMBLY (TE)	1	3070
10	11010/0	TERMINAL BUSHINGS	1	486
11	11011/0	TERMINAL BUSHINGS CONNECTION ITEMS	1	430
12	11012/0	END SHIELD AIR BAFFLE RING, AIRSEALING, OIL-CATCHER (EE)	1	730
13	11013/0	END SHIELD AIR BAFFLE RING, AIRSEALING, OIL-CATCHER (TE)	1	730
14	11014/0	GENERATOR ACCESSORIES	1	514
15	11015/0	DRY AIR BLOWER	1	119
16	11016/0	TOOLS & TACKLES –I	1	945
17	11017/0	TOOLS & TACKLES –II	1	535
18	11018/0	SLIP RING SHAFT ASSY	1	1020
19	11019/0	REAR AND FRONT COVER	1	1704
20	11020/0	ACCESSORIES OF SLIP RING SHAFT	1	790
21	11021/0	BED PLATE,BEARING & BRUSHGEAER	1	2550
22	11022/0	LIQUID DETECTOR RACK	1	40
23	11023/0	PIPING FOR LIQUID DETECTORRACK	1	80
24	11024/0	COOLER PIPING	1	1500
25	11025/0	FITTINGS FOR COOLER PIPING	1	250
26	11026/0	VALVES FOR COOLER PIPING	1	200
27	11027/0	INSTRUMENTS FOR COOLERPIPING	1	50
			TOTAL	**387341**

C		**CONDENSER (ACCESSORIES)**		
Sl.No.	**Package No.**	**Description**	**QTY:SET/NOS**	**Net Wt. (in Kg)**
1	78301/0	GLAND STEAM CONDENSER	1	785
2	78302/0	STAND PIPE/LOOSE ITEM (GSC)	1	150
3	78304/0	LOOSE ITEMS OF GSC (FRAGILE)	1	50
4	78305/0	LOOSE ITEMS GSC(NON FRAGILE)	1	60
5	78310/0	DRAIN COOLER	1	2440
6	78311/0	LOOSE ITEMS(DRAIN COOLER)	1	90
7	78315/0	L.P.HEATER NO.1	1	9900
8	78316/0	STAND PIPE NO 1(LP HTR NO 1)	1	50
9	78317/0	LOOSE ITEMS OF LPH-1	1	126
10	78318/0	LOOSE ITEMS (STD PIPE:LPH-1)	1	206
11	78321/0	L.P.HEATER NO 2	1	9900

12	78322/0	STAND PIPE NO 1(LP HTR NO 2)	1	52
13	78323/0	STAND PIPE NO 2(LP HTR NO 2)	1	52
14	78324/0	LOOSE ITEMS OF LPH-2	1	126
15	78325/0	LOOSE ITEMS(STAND PIPES,LPH2)	1	130
16	78328/0	L.P HEATER NO 3	1	9900
17	78329/0	STAND PIPE NO 1(LP HTR NO 3)	1	52
18	78330/0	STAND PIPE NO 2(LP HTR NO 3)	1	52
19	78331/0	LOOSE ITEMS OF LPH-3	1	126
20	78332/0	LOOSE IT.(STAND PIPES:LPH-3)	1	280
21	78401/0	TUBRINE OIL COOLER	1	7400
22	78402/0	TUBRINE OIL COOLER	1	7400
23	78403/0	TURBINE OIL COOLER	1	7400
24	78406/0	TOC (LOOSE ITEMS)	1	62
25	78407/0	TOC (LOOSE ITEMS)	1	40
26	78424/0	GENERATOR AIR COOLER	1	2311
27	78425/0	GENRATOR AIR COOLER	1	2311
28	78426/0	GENERATOR AIR COOLER	1	2311
29	78427/0	GENERATOR AIR COOLER	1	2311
			TOTAL	**66073**

D		**INTEGRAL PIPING(PER UNIT)**		
Sl.No.	**Package No.**	**Description**	**QTY:SET/NOS**	**Net Wt (in Kg)**
1		For Turbine (CS/SS/AS)	1	31000
2		For Generator (CS/AS) for Seal Oil, Gas System etc	1	13000
			TOTAL	**44000**

E	**CONDENSATE EXTRACTION PUMP (PER UNIT)**		
S. No.	**Description**	**Weight (in KG)**	**Qty**
1.	**Condensate Extraction Pump** 9795 X Dia 1450 mm	**4250**	**2 Nos**
	Total	**4250**	

F	**HEATER & TANKS (PER UNIT)**		
S. No.	**Description**	**Weight (in KG)**	**Qty**
1.	**HP Heater No.5** 2200x2120x10675 mm	29750	1 No
2.	**HP Heater No.6** 2200x2120x11830 mm	37550	1 No
3.	**RE Joints**		
3.1	**Inlet Assy** 5365x2800x3200 mm	18600	1 No
3.2	**Outlet Assy** 2950x2800x3700 mm	17000	1 No
4.	**Flash Tanks**		
4.1	**HP Flash Tank** 2800X3000X4100 mm	4600	1 No
4.2	**LP Flash Tank** 2000X2200X2800 mm	3000	1 No
4.3	**Flash Vessel** 1400X1500X1800 mm	1000	1 No
	TOTAL WEIGHT	**111500**	

G	**BOILER FEED PUMP & BOOSTER PUMP (PER UNIT)**		
SN	**Description of Equipment**	**Weight (in KG)**	**Total Qty(Nos.)**
1	BFP Skid (Pump Assly+Base Plate + tubing+ Seal Coolers) [2250x1000x1050]mm	17310	3
2	BP Skid (Pump Assly+ Base plate + tubing) [1650x1200x950]mm	7533	3
3	Hydraulic Coupling (DD) [1800x1700x1800]mm	10680	3
4	Hyd. Coupling W.O. Cooler (DD) [3700x1500x500]mm	4425	3
5	Hyd. Coupling L.O. Cooler (DD) [3100x1300x450]mm	2325	3
6	Hyd. Coupling loose items	2130	3
7	Suction Strainer at BP Suction (DD) [900x800x1400]mm	2400	3
8	BFP Recirculation valve (DD) [1800x550x1400]mm	1050	3
9	Local Gauge Boards with instruments (DD) [2000x300x1800]mm	1050	3
10	Local Gauge Boards with instruments (DD) [2200x300x1800]mm	1200	3
11	Local Instrument rack with instruments (DD) [2000x4000x1800]mm	800	2
12	Loose Items	1000	
	Total	**51903**	

H	**BUTTERFLY VALVES (PER UNIT)**		
S. No.	**Description**	**Weight (in KG)**	**Qty**
1	1600 MM / E	9740	2 Nos
2	1800 MM/ E	21800	4 Nos
3	600 MM/ M#	2184	3 Nos
4	600 MM / M	2148	3 Nos
5	800 MM/ M	8700	6 Nos
6	450 MM/ M	3500	7 Nos
7	400 MM/ M	1950	5 Nos
8	500 MM/ M#	3906	7 Nos
9	450 MM/ E	2200	4 Nos
10	450 MM/ M	3850	7 Nos
11	450 MM/ M#	1500	3 Nos
	Total Weight (in Kg)	**61478**	
	E- Electrical, M- Manual, M# - Manual with Limit Switch		

I	**MISC ITEMS (PEM SUPPLY) for one unit**		
SR. NO.	**DESCRIPTION**	**Weight (in Kg)**	**QTY**
1	GUN METAL VALVES	216	162
2	BALL VALVES		113
3	DUAL PLATE CHECK VALVES		7
4	BUTTERFLY VALVES (WATER SYSTEMS)	3489	81
5	M.E. BELLOWS	2500	3
6	STEAM TRAPS	500	30
7	AIR TRAPS		55
8	THERMAL INSULATION - R-MATTRESSES/P-SECN	275000	LS
9	THERMAL INSULATION -ANCILLARY MATERIAL	8000	LS
10	ALUMINIUM SHEETS/COILS		
11	MISC.PUMPS (VERTICAL/ HORIZONTAL/SUM PUMP)	4250	10
12	AUX PRDS	1444	3
13	SELF CLEANING STRAINERS	2000	2
14	CHAIN PULLEY BLOCK		18
15	SINGLE GIRDER EOT / HOT MISC. CRANES		2
17	ELECTRIC HOIST	6000	3
18	LUBE OIL TRANSFER PUMPS	6000	4
19	CONTROL VALVE	23000	23
20	FLOW ELEMENT	17000	17
21	ROTAMETER		2

Note:

1. **Above mentioned items are tentative only, The Jet Condenser (as supplied by M/s GEA) will be erected by another party. Under scope of this contract, the contractor has to erect the actual tonnage (as supplied by BHEL units) in co-ordination with another party (engaged in erection of Jet condenser) to complete the overall scope of Condenser Erection.**

ANNEXURE-II

A. PIPING SYSTEM (PER UNIT)

A.1 POWER CYCLE PIPING

SL NO	PGMA	DESCRIPTION OF PG	APPROX. WEIGHT (IN KG)
1	80331	EXTRACTION STEAM TO LP HEATER-2	2,700
2	80332	EXTRACTION STEAM TO LP HEATER-3	2,700
3	80335	EXTRACTION STEAM TO DEAERATING HEATER	4,050
4	80336	EXTRACTION STEAM TO HP HEATER NO.1	3,150
5	80337	EXTRACTION STEAM TO HP HEATER-2	900
6	80369	HP DRAIN FLASH TANK VENT TO SYSTEM	2,250
7	80375	UNLISTED SV EXHAUSTS - TG SCOPE	2,250
8	80381	HP HEATER VENTS - TG SCOPE	855
9	80382	LP HEATER VENTS	900
10	80385	VENT FROM UNLISTED PPG/EQPT TO COND	4,950
11	80387	CONDENSATE PUMP VENT	855
12	80388	CONDENSER AIR EVACUATION PIPING	2,700
13	80400	CONDENSATE SUCTION	2,250
14	80401	CD FROM PUMP TO LPH1/DC INLET TEE&RECIR	5,850
15	80402	CD FROM LPH1/DC INLET TEE TO TG TP	4,950
16	80407	CONDENSATE FOR SEALING OF VACUUM	2,700
17	80408	CONDENSATE DUMP FROM HEADER	1,800
18	80413	UNLISTED CONDENSATE	1,350
19	80420	BOILER FEED PUMP SUCTION	5,850
20	80440	CONDENSER DRAINS	675
21	80442	GLAND STEAM COOLER DRAINS	270
22	80443	LP HEATER-1 TO CONDENSER	1,800
23	80444	LP HEATER-2/3/4/5 DRAINS&DRIP PUMP INCL	2,700
24	80446	DEAERATING HEATER OVER FLOW AND DRAIN	1,350
25	80447	HP HEATER DRAINS	5,850
26	80449	TG CYCLE PIPING DRAINS & VENTS	10,800
27	80457	MANIFOLDS FOR HP FLASH BOX & CONDENSER	1,800
28	80673	LUBE OIL PIPING SYSTEM	2,700

30	80418	ERECTION MATERIALS FOR INSTRUMENTS	252
31	80460	SG AUX COOLING WATER UNIT SYSTEM	23,850
32	80604	ACID CLEANING PIPING-TEMPORARY	24,300
33	80917	BHELVALVE-ACID CLEANING ALKALI FLUS-TEMP	5,040
35	80926	H&S FOR TEMPORARY PIPING ACID AND ALKALI	3,690
36	80992	IMPORTED ELECTRODES	90
37	81411	DIRECT GAUGES FOR STEAM LINES	720
38	81432	CONSUMABLES AND ERECTION MATERIALS	9
39	81435	JUNCTION BOXES	45
40	81436	LOW TENSION CABLES	90
41	81437	SUPERVISORY CONTROL PANEL	360
		TOTAL (in KG)	**139401**
		TOTAL (in MT)	**139**

A.2 LP PIPING

SL NO	PGMA	DESCRIPTION OF PG	APPROX. WEIGHT (IN KG)
1	80463	TG AUX COOLING WATER	1,00,800
2	80468	MAIN CIRCULATION WATER PIPING	45,000
3	80473	DEMINERALISED WATER SYSTEM	9,900
4	80477	SERVICE WATER PIPING	3,60,000
5	80478	DRINKING WATER PIPING	17,100
6	80612	SERVICE AIR FOR INDIVIDUAL UNITS	5,400
7	80616	INSTRUMENT AIR FOR INDIVIDUAL UNIT	5,400
		TOTAL (in KG)	**5,43,600**
		TOTAL (in MT)	**543**

ANNEXURE-III

PLATFORMS /STRUCTURES (PER UNIT)

SL NO	PGMA	DESCRIPTION	APPROX. WEIGHT (IN KG)
1		FABRICATION & ERECTION OF PLATFORMS & STRUCTURES (Steel plates shall be supplied by BHEL)	5000
		TOTAL (in MT)	**5**

ANNEXURE-IV

Art. 18- Temporary Admission and Temporary Import:

1- The Contractor has the right to benefit from the regulations governing temporary admission and import valid in SAR, concerning materials, equipment, vehicles and machines required for the project execution.

The temporary admission for the vehicles is subject to the previous approval of the Syrian Competent Authorities, after submitting by the Contractor the necessary justifications and the actual need to use these vehicles with the necessity to determine the their quantities and types in order to execute the contract.

PEEGT will render assistance to the Contractor in the formalities required in this respect but will not bear any additional incurred expenses.

The Contractor shall submit the required bank guarantee to the Syrian Customs Administration for the purpose of guaranteeing the temporary admission declaration.

When the need for these materials, equipment, vehicles and machines comes to an end, the Contractor can sell all or part of them in the local markets after paying what PEEGT had already paid for them. The provisions of foreign trade and customs shall be respected regarding that.

PEEGT has the preference right to buy them for a price agreed upon by two sides.

After approval of foreign currency office, the Contractor has the right to transfer the value arising from this sale outside the SAR.

The vehicles, equipment and materials whose import is controlled by the Government can be sold only to the Syrian General Establishment, which is concerned in this.

2- The Contractor shall bear all taxes, duties and expenses due to the benefiting from the temporary admission and temporary import.

3- The Contractor shall discharge the temporary declaration presented for the clearance of the materials which will be put in local consumption and subs.itute them with final declarations within a period not exceeding the period already specified by the Syrian Customs Administration. The Contractor shall bear all penalties resulting from the delay in discharging these declarations and his performance bond shall not be freed completely unless the Customs Administration indic ating that the declarations were discharged gives a deed of release.

ANNEXURE-V

*FORMAT FOR COMPLAINCE TO **ARTICLE 11** OF THE UNIFORM SYSTEM OF CONTRACTS LAW NO. (51), DECREE NO. 450 OF MINISTRY OF FINANCE, SYRIA ARAB REPUBLIC*

(To be submitted in the tenderer's letter head)

REF: **Dt.**

Bharat Heavy Electricals Limited
Power Sector – Northern Region,
Plot No. 25, Sector - 16A ,
Distt.GautamBudh Nagar,
NOIDA – 201 301. INDIA

**Sub: Compliance to Article 11 of the Uniform System of Contracts Law No. (51), Decree No. 450 of Ministry of Finance, Syria Arab Republic for the work of "Erection, Testing,Commissioning, Trial operation & Handing over of Steam Turbine, Turbo generator with auxiliaries including final painting of 2 X 200 MW UNIT 3 & 4 at TISHREEN TPS,
TISHREEN, SYRIA."**

TENDER NO. BHEL/ NR/SCT/ TISHREEN-3&4/ TG/

Dear Sirs,

With reference to above, this is to certify that we comply to provisions of subject article as under:

a. We are not prohibited from participation in tenders or from contracting with public entities, nor having aproperty under seizure in favour of public entities whether by way of reserve or executive seizure.
b. We are registered in the commercial register. **(for participant who are Syrians or treated like Syrians.)**
c. We are registered in one of the Chambers of Commerce or Industry or Agriculture or Tourism - as the casemay be (**for participants who are Syrian or treated like a Syrian)**.
d. We are not convicted of any crime or a disgraceful act.
e. We are neither employed in a public entity nor members of an Executive Council of Local Administrationspecifically in the governorate to which we belong.
f. We do neither own a factory or establishment or branch office in Israel, nor do we have subscription in anyestablishment or body in it. We are not a party to any contract for manufacture or assembly or license ortechnical assistance with any establishment or body or person in Israel. We are not practicing any suchactivity in Israel whether in person or through a mediator. We are not having any contribution whatsoeverto support Israel or its war effort.
g. We shall open a temporary office or a branch in Syria as per the prevailing Syrian Laws and this shall notin any way effect the start and completion schedule (**for participants who do not have a branch or aresident representative in Syrian Arab Republic.)**

In case, any of the above statement is found to be incorrect during any stage of the contract, we agree to any action/ penalty imposed by BHEL/ PEEGT/ Government of Syria Arab Republic including termination of contract. We shall abide by all prevailing laws, rules and regulations in Syria Arab Republic pertaining to the execution of this contract.

Thanking you,

Yours faithfully,

(Signature, date & seal of authorized representative of the tenderer)

RATE SCHEDULE

S. No.	Description of Work	Unit Of Measurement	Quantity (in MT)	Unit Rate in EURO (In figures and words)	Total Value in EURO (In figures and words)
1.	Lump sum price for complete scope of work as per tender specification for 2X200 MW TG Set including Integral Piping and auxiliaries (Items as per annexure- I)	LUMPSUM	1		
2.	Rate in EURO/MT for complete scope of work as per tender specification for Piping Systems) (For items indicated in Annexure-II)	MT	1364		
3.	Rate in EURO/MT for complete scope of work as per tender specification for Platforms/ Structures (Items as in Annexure-III)	MT	10		
				TOTAL VALUE	

NOTES:

1. **For Item Sl. No. 1 of Rate Schedule**

   The items indicated under tender specification & respective annexures are indicative only. The contractor is required to erect all the material supplied which is necessary to complete the work in all respect and commission the unit. The payment to contractor will be done on the basis of Lumpsum price quoted against each item of rate schedule.

2. **For Item Sl. No. 2 and 3 of Rate Schedule**

   The contractor is required to erect actual tonnage (irrespective of any variation

plus or minus) which may be necessary to complete their work of Power Cycle Piping, LP Piping and related platforms/ structures and complete the work in all respects as per advice of BHEL Engineer for which payments shall be released on finally accepted tonnage rates.

3. The contractor has to handle / erect / commission all the items indicated by BHEL for achieving the milestones and completion of work.
4. Evaluation of the bids shall be done based on total price against this BOQ.

5. In case of mismatch in Rate and amount on price discrepancy, the same will be dealt as per clause no. 1.4 of GCC.

PART-II

1.0 GENERAL

1.1 The intent of this specification is to provide services for execution of project according to most modern and proven techniques and codes. The omission of specific reference to any method, equipment or material necessary for the proper and efficient services towards installation of the plant shall not relieve the contractor of the responsibility of providing such services / facilities to complete the work or portion of work awarded to him. The quoted / accepted rates / lump sum price shall deem to be inclusive of all such contingencies.

1.2 The contractor shall carry out the work in accordance with standard practices / codes / instructions / drawings / documents / specification supplied by BHEL from time to time.

1.3 The work shall conform to dimensions and tolerances given in various drawings and documents that will be provided during execution. If any portion of work is found to be defective in workmanship, not conforming to drawings or other stipulations, the contractor shall dismantle and redo the work duly replacing the defective materials at his cost failing which the job will be carried out by BHEL by engaging other agencies / departmentally and recoveries will be affected from contractor's bills towards expenditure incurred including BHEL's usual overhead charges.

1.4 Following shall be the responsibility of contractor and have to be provided within finally accepted rates / prices.

1.4.1 Provision as required of all types of labour, supervisors, engineers, watch and ward, tools & tackles, calibrated inspection, measuring and test equipments as specified and otherwise required for the work, consumables for erection, testing and commissioning including material handling.

1.4.2 Proper out-turn as per BHEL’s plan and commitment

1.4.3 Completion of work as per BHEL Schedule.

1.4.4 Good quality and accurate workmanship for proper performances of equipment.

1.4.5 Repair and rectification

1.4.6 Preservation / Re-conservation of all components during storage / erection till handing over.

1.4.7 HOUSE KEEPING-The contractor is supposed to carryout housekeeping of the work area on regular basis to keep the work place neat and tidy and available for the SAFE Working. The scrap, generated daily during the Execution activities, is to be dumped at designated area as decided by BHEL/ PPGCL on daily basis. The erection materials issued to the contractor and kept near the work area should also be staged properly at site. Compliance report on above shall be submitted by the contractor to BHEL on Daily basis. In case the contractor fails to do so, BHEL have rights to carry out the same from the other party at the Risk and cost of the contractor. The cost applicable with BHEL overheads shall also be recovered from the monthly running bills of contractor.

1.5PRELIMINARY WORKS

1.5.1 The contractor shall, as a first field activity check the foundations for turbine, generator and all auxiliaries for the correctness of the same as per the drawings and satisfies himself in all aspects. He should ensure location of foundations, their consolidation, absence of voids, levels, correctness of bolt holes, pockets levels and centerlines etc. All measurements should be recorded and submitted to Engineer for approval before erection

1.5.2 Before starting erection job, contractor shall ensure that TG area is sufficiently enclosed against ingress of dust and water, and all debris have been cleared off from the floor to a designated area as per instruction of Engineer. The contractor shall arrange to get the working area and surroundings cleaned daily to ensure a dust free atmosphere for working.

Contractor shall first cover all openings on operating floor and put temporary hand railings on all sides of the floor to avoid any accident to the personal working. Material for above work, if available can be issued by BHEL on returnable basis.

1.5.3 The contractor shall provide his tool stores for special tools and instruments at a convenient location near to the place of working in TG hall. Necessary area shall be provided to contractor by BHEL. This is to be cleared after completion of the work. If so required he will have shift the same if required to give fronts to other agencies engaged at site.

1.5.4 The contractor shall set up longitudinal and transverse axes and two or more level bench marks accurately on TG floor. BHEL Engineer shall certify these. The certified TG-Center lines and datum level shall be the reference for TG and all auxiliaries' erection and alignment work. The contractor shall transfer these axes to all the floors to facilitate further execution.

1.5.5 All matching surfaces of components shall be well cleaned with cleaning agent and burrs shall be removed by filing and blue matched wherever required. Wherever necessary sealing/ lubricating/ anti-seize compounds shall be applied as per recommendation of Engineer. Machining/ grinding required for fitting of keys, pins, packers & dowels etc. shall be carried out by contractor at his cost. The contractor is expected to have his own arrangements for machining activities.

1.5.6 The accuracy of all equipment/ instruments and their functioning shall be established before they are permitted for use on the job. If the Engineer doubts the accuracy of the precision tools, any time during erection, the contractor shall arrange the checking/ calibration of tools/ equipment/ instruments at his cost.

2.0 CIVIL WORKS, FOUNDATION, GROUTING

2.1 BHEL shall provide all equipment foundations. For the correctness of these foundations as per drawings, the contractor shall check the dimensions & locations of the foundations, pockets, anchor-bolt pitch. Further, top elevation of foundations shall be checked with respect to benchmark. All minor adjustments of foundation level, dressing and chipping of foundation surfaces up to 50 mm, enlarging the pockets in foundations etc., as may be required for the erection of equipment / plants shall be carried out by the contractor.

2.2 While on the job, care is essential to avoid too much chipping and resultant lowering of level. In case of excess chipping, contractor has to arrange additional packing plates as per requirements provided BHEL Engineer allows it. When required by manufacturers, the embedded sub-sole plates shall be scraped and checked with Prussian blue to get the required contact with frames.

2.3 The contractor shall ensure perfect matching of packer plates including machining, scraping and blue matching with foundation by dressing the foundation, as well as perfect matching between the packer plates and the base plate of equipment to the satisfaction of BHEL Engineer. If required the packer plates may have to aligned and fixed on the foundations using special high strength, non-shrinking and quick-setting grouts. The minimum thickness below the packer plate should be 20 mm. The material required for this has to be arranged for by the contractor at his cost.

2.4 The Grouting of BFP & TG will have to be carried out by the Contractor. The contractor has to arrange for all materials required for carrying out the grouting including supply of the Special Grout as indicated in the drawings and as approved by the Engineer. **Although supply and application of approximately 20 MT of approved Non- Shrink Grout per unit has been envisaged, the contractor will be required to supply and apply actual quantity as per the site requirement without any extra cost.**

2.5 The contractor has to ensure that all the matching joints which are not to be grouted shall be kept free from the grouting mixture by applying tape or any other alternative method approved by Engineer. All assistance required has to be provided by the contractor

2.6 The contractor shall check and verify the alignment of equipment, alignment of shafts of rotating machinery, the slopes of all bearing pedestals, centering of rotors with respect to their sealing bores, couplings etc. as applicable and the like items to ensure that no displacement had taken place during grouting. The values recorded prior to grouting shall be used during post grouting check up and verifications. Such pre and post grout records of alignment details shall be maintained by the contractor in a manner acceptable to the Engineer.

2.7 Besides grouting as above, any civil works required for safe and efficient operation of tools and tackles like grouting / excavation/ casting of foundation / anchor points for derricks, winches, guy ropes fastening, etc / foundations required for chemical cleaning pumps, tanks and any other temporary supports shall also bethe contractor's responsibility. For these civil works all materials including

cement and required facilities will have to be arranged by contractor at his own cost.

3.0 ERECTION

3.1 All normal erection and assembly techniques necessary for completion of works under this specification and magnitude have to be carried out. It is not possible to specifically list out all of them. Absence of any specific reference will not absolve the contractor of his responsibility for the particular operation. These would include,

- Scaffolding and rigging operations,
- Machine / flame / electric cutting, grinding, welding, radiography and stress relieving
- Fitting, fettling, filing, straightening, chamfering chipping, scrapping, reaming, as cleaning, checking, leveling, blue matching, aligning and assembly.
- Machining, surface grinding, drilling, doweling, shaping.
- Temporary erections for alignment, dismantling of certain equipment for checking, cleaning, servicing and site fabrication.

3.2 Any fixtures, scaffolding materials, approach ladder, concrete block supports, steel structures required for temporary supporting, pre-assembly or checking, welding, lifting and handling during pre-assembly and erection shall be arranged by contractor at his cost.

3.3 No members of any ladder / structure / platform should be cut without specific approval of BHEL. In case it is necessary to cut, the contractor shall rectify / repair in a manner acceptable to BHEL / customer without any additional cost.

3.4 The contractor shall erect scaffolding / temporary platforms for erection. These should be of adequate capacity and shall never be over loaded. These should be replaced when not found suitable during erection work and dismantled on work completion & removed from work site.

3.5 Corrections like straightening of ladders, tube support plates adjustment / removal of ovulates in pipes and opening or closing the fabricated bends of piping to suit the layout shall be considered part of the work and the contractor is required to carry out such work within finally accepted price / rate as per instructions of Engineer.

3.6 The contractor shall carry out the condenser neck welding with casing only after final installation of casing. However the contractor shall adjust the gap between condenser neck and LP exhaust hood uniformly by suitably lifting the condenser as directed by engineer. Also the makeup pieces required for this purpose shall be fabricated and welded to the dome walls by the contractor.

3.7 Some of the rotating equipment and electrical motors are provided with protective greases only. Contractor shall arrange for cleaning of the same with petrol or some other reagent. If necessary, dismantling some of the parts of the equipment would be necessary. He shall arrange for re-greasing / lubricating them with recommended lubricants and for assembling back the dismantled parts, at quoted rate. Lubricants will, however, be supplied free of cost by BHEL.

3.8 All rotating machines and equipment shall be cleaned, lubricated, checked for their smooth rotation, if necessary by dismantling and refitting before erection. If, in the opinion of Engineer, the equipment is to be checked for clearance, tolerance at any stage of work or during commissioning period, all such works are to be carried out by contractor at his cost.

3.9 All the shafts of rotating equipment shall be properly aligned to those of the matching equipment to as perfect and as accurately as practicable. All bearings, shafts and other rotating parts shall be thoroughly cleaned and suitably lubricated before starting.

3.10 All the motors and equipment shall be suitably doweled after alignment of shafts with tapered/parallel machined dowels. The contractor at his own cost shall arrange for the machining of dowel pins required for the same. However the materials for dowel pins shall be issued by BHEL free of cost.

3.11 The bearings shells will be blue matched at site and checked for bearing clearances. The contractor shall carry out scraping of bearing housing, if required to any extent. No extra claim for blue matching of any two surfaces up to 1mm initial gap will be entertained. The contractor shall also check air gap and adjustment of stator/ rotor to magnetic center shall be carried out as part of erection.

3.12 The contractor shall fabricate and weld pipes, special bends, as required for installing lube oil systems. The contractor shall also service the lube oil system, carry out the hydraulic test of oil coolers and piping systems as required.

3.13 The contractor as part of the scope of work if required or if directed by BHEL shall carry out the servicing and realignment of skid-mounted equipment.

3.14 All electrical panels, control gears, motors and such other devices shall be properly dried by heating to improve IR value, before they are installed and energized. Bearings, slip rings commutators and other exposed parts shall be protected against ingress of moisture and corrosion during storage and periodically inspected.

3.15 The contractor shall completely erect and test all the piping systems including their hangers, supports, valves, insulation, and accessories including sampling lines and coolers as per specifications and drawings. The services will include welding, pre-heating, stress relieving, bolting, testing, and cleaning insulation and painting. System shall be demonstrated in condition to operate continuously in a manner acceptable to the Engineer. Welding shall be used throughout for joining pipes except where flanged screwed or other type joints are specified or shown on the drawings. All piping shall be erected true to the lines and elevation as indicated in the drawings

3.16 Pipes sent in standard length shall be cut to suit the site conditions and the layouts. Tubes or pipes wherever deemed to be convenient will be sent in running lengths with sufficient bends. Bends up to 80 mm nb will be fabricated at site wherever required.

3.17 Certain adjustments in length may be necessary while erecting high-pressure pipelines. The contractor should remove the extra lengths/ add extra lengths to suit the final layout after preparing edges a fresh by adopting specified heat treatment procedures, at no extra cost.

3.18 It is possible that a few flanges may not be matching. The contractor shall be required to cut and re-weld the same as and when required without any additional cost.

3.19 The contractor shall be responsible for any modifications of shop fabricated pipes prior to installation to accommodate minor site alteration in pipe routing at no extra cost

3.20 All vents and drains for piping equipment covered in the scope whether shown in the drawings or not, shall be terminated outside the TG hall in atmosphere and at sump-pit as directed by the engineer.

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

3.22 Normally the high-pressure valves will have prepared edges for welding. But, if it becomes necessary, the contractor will prepare new edges or recondition the edges by grinding or chamfering to match the corresponding tubes and pipes. All fittings like `T' pieces, weld neck flanges, reducers etc., shall be suitably matched with pipes/valves for welding.

3.23 The valves will have to be checked, cleaned or overhauled (including lapping of seat) in full or in part before erection and/or after chemical cleaning and during commissioning.

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

3.25 Steel for suspensions for piping, will be supplied in running lengths. These are to be cut to suitable sizes and adjusted as per requirement.

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

3.27 All hangers, supports and anchors shall be installed as per drawing to obtain safe and reliable and complete pipe installation as per instructions of Engineer. Any additional support as called for by Engineer shall have to be fabricated and erected by the contractor. The raw materials required for fabricating such supports shall be supplied by BHEL free of cost and contractor shall be eligible for payment of such additional supports as per applicable rate for item No 5 of rate schedule.

3.28 Spring suspensions/ constant load hangers may have to be pre-assembled for required load and erection carried out as per instructions of BHEL. Any adjustments, removal of temporary arrestors / lockers etc., have to be carried out as and when required.

3.29 Contractor shall install piping in such a way that no excessive or destructive expansion forces exist either in the cold condition or under conditions of maximum temperature and pressure. All bends, expansion joints and any other special fittings necessary to take care of proper expansion shall be incorporated as per the advice of Engineer. During installation of expansion joints, anchors, care must be taken to see that full design movement is available at all times from maximum and minimum temperature.

3.30 The contractor shall carry out the tightening of the field bolts on the equipment and piping covered under this specification by using either the calibrated torque wrench method or the turn of part method. The procedure to be followed, the tools and the equipment deployed shall be subject to the approval of Engineer. All the torque wrenches shall be calibrated as per requirement and before they are put in use on any job.

3.31 The contractor shall ensure that all supporting elements, anchors & restraint have been installed and adjusted in accordance with the drawings / sketches & other written instructions of the Engineer. The contractor shall inspect the hangers associated with the piping systems as follows:

- After hydraulic test, with the piping in the cold position, with all travel stops removed, with the pipe completely insulated and complete in all respect ready for start up.
- Piping in the hot position with the unit operating at the maximum load.
- Piping in the cold position during the first complete shutdown.

3.32 The hanger assemblies shall not be used for attachment of rigging to hoist the pipes into position. Separate temporary supports shall be used to securely hold the pipe in position till pipe supports are completely assembled and attached to the building structure.

3.33 Layout of small bore piping as required shall be done as per site requirement. Necessary sketch for routing these lines should be got approved from BHEL by the contractor. There is a possibility of slight change in routing the above pipelines even after completion of erection or from aesthetic point of view. Contractor at no extra cost should carry this out.

3.34 Erection, testing and commissioning of power cylinders, electrically operated valves and their actuators etc. coming under various groups is covered under the scope of this specification

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

3.36 The contractor shall also or grind the valve seat, if required, to ensure satisfactory performance of valves at no extra cost. All parts such as gaskets, gland packing which form the permanent part of equipment shall be supplied by BHEL free of cost.

3.37 Erection and welding of necessary instrumentation tapping points, thermocouple pads, thermo-wells, valves, battery of first root valves, condensing vessels, flow nozzles and control valves to be provided on TG, auxiliaries and pipe lines covered within the scope of this specification, will also be the responsibility of the contractor. The welding of all the above items will be contractor's responsibility even if the:

- Product groups, under which these items are released, are not covered in the scope of this tender.
- Items are supplied by any agency other than BHEL.

NOTE: ADDITIONAL THERMOWELLS AS REQUIRED FOR CONDUCTANCE OF THE PERFORMANCE GUARANTEE TEST ARE TO BE INSTALLED BY THE CONTRACTOR.

3.38 Erection of CO_2 and H_2 systems complete in all respects, including cylinders stands, connecting piping, valves, distribution headers, main control panels etc is in the scope of contractor. The delivery gas cylinders is to be taken from BHEL / its client stores, their handling and filling of gases in the system as and when required, till unit is commissioned and handed over, shall be the responsibility of the contractor. The empty cylinders are to be returned to BHEL/its client stores.

3.39 Additional platforms and ladders of permanent nature incidental to the job for approaching different equipment / valves as per site requirement, which may not be indicated in drawings, shall be fabricated and installed by the contractor. The materials required will be supplied by BHEL free of cost. The contractor will be eligible for payment for such additional platform and ladders at the rate applicable rate against item No. 3 of the rate schedule.

3.40 The contractor shall carry out Kerosene oil / dyepenetration tests of all the bearing housing of turbine & generator. The Kerosene oil DPT kit for the tests shall also be arranged by the contractor at his cost.

3.41 The contractor is strictly prohibited in using the TG / Aux. Components for any temporary supporting or scaffolding woks etc. In case of such misuse a sum of determined by Engineer will be recovered from contractor’s bills

3.42 The calibration of skid mounted instruments shall be arranged by BHEL through other agency engaged for C&I. Contractor will be informed by BHEL engineer about the details of C&I agency. The contractor shall coordinate with the C&I agency for removal, calibration and re-installation of the instruments. Though C&I agency will remove and reinstall the instruments after calibration, the contractor for this package will maintain the list of all the instruments removed & reinstalled. Instruments prior to removal and after reinstallation shall be considered in custody of the contractor for this package. All instruments such as pressure gauges/ temperature gauges, switches etc. forming part of product group (PG) are under the erection scope of this contract and shall be installed and commissioned by the contractor of this package at no extra cost to BHEL, however the calibration of these instruments shall be done by C&I agency as above

3.43 The feed storage tank will be received in several pieces and is to be assembled, welded and tested at site. Besides the provisions under T&P Clause, all other arrangements for erection of feed storage tank and deaerator has to be made by contractor within their finally accepted price

3.44 The contractor shall assist BHEL in preparation of as built piping drawing.

3.45 Conduits shall be thoroughly cleaned before pulling in the cables.

3.46 Pipes sent in standard length shall be cut to suit the site conditions and the layouts. Tubes or pipes wherever deemed to be convenient will be sent in running lengths with sufficient bends. Bends upto 80mm Nb will have to be fabricated at site.

3.47 Contractor shall fabricate and erect stands/ supports for Junction boxes, push button stations, fixing of push button and plugging of holes in JBs. This is considered inclusive in the item erection.

3.48 For calibration of pneumatic valve/ controllers/ power cylinders etc, the contractor shall attend to minor leakages from the tubing etc, and prepare exact cam profiles as part of the work, if required.

3.49 DRIP SHIELDS shall be fabricated for all field mounted panels/ instruments/ instrument racks/ JB Racks/ control cabinets etc. The hardware /material shall be supplied by BHEL. The fabrication forms part of erection work.

3.50 The Motors, power cylinders, control valve actuators, motorized valves actuators and solenoid valves will be erected by other agency. However their electrical and C&I commissioning is to be carried out by the agency within the subject scope of work. The staff earmarked for commissioning will carry out the work in association and guidance of BHEL Engineer as a part of system commissioning for which no extra cost will be paid by BHEL.

3.51 Certain instruments like gauges, transmitters, switches and indicators are received in assembled condition and will be erected along with the main equipment by other agency. Contractor for subject work will get these equipment dismantled for calibration and will reinstall them in original location as and when directed by BHEL. Payment for above work shall be released as per respective items indicated in the price bid.

3.52 In case of Transformers if any leakage /sweating is observed from field assembled/ shop assembled gasket joints, valves, welded joints the same shall be attended by the contractor including draining of oil, refilling of oil & centrifuging if required at no extra cost to BHEL till handing over period. Sealing compound and any other consumable, if needed, shall be arranged by the contractor within the quoted rates.

3.53 Calibration log-sheets/history cards of all the instruments, panels, drives, relay testing etc. under the scope shall be recorded and submitted on BHEL approved formats. Proper logging will form a part of calibration / erection activity for the purpose of monthly running bills payments.

3.54 The contractor shall use only SHEARING machine or HACKSAW for cutting angles, flats, channels and trays. No gas cutting is permitted. Drill machine shall be used for drilling holes.

3.55 The contractor should note that after execution of work they will hand over marked up drawings “as erected” drawings to BHEL Engineer at site for preparation of firm “as built” drawings. “As erected” drawings will bear the signature of BHEL Engineer and contractor.

3.56 The contractor shall paint the name/put tag numbers on all equipments/ instruments/ cables etc erected by him. Materials for tagging shall be supplied by the contractor. The adhesive etc shall be arranged by contractor at his cost.

3.57 In case any defect is noticed during tests, trial runs and commissioning such as loose components, undue noise or vibration, strain on connected equipment etc the contractor shall immediately attend to these defects and take necessary corrective measures. If any readjustment and realignment are necessary, the same shall be done as per Engineer’s instructions including repair, rectification and replacement work by the contractor at his cost. The parts to be replaced shall be provided by BHEL.

3.58 During this period, though the BHEL’s /Client’s staff will also be associated in the work, the contractor’s responsibility will be to arrange for the complete requirement of supervision, labour, consumable, T&P and IMTEs required till such time the commissioned units are taken over by the BHEL’s customer.

3.59 During commissioning activities and for carrying out various tests, special instruments etc, have to be temporarily erected and commissioned to suit the commissioning activities. Contractor will provide the necessary equipment. Contractor has to carry out the erection, calibration, dismantling of the same. After completion of activities the temporary systems have to be removed and to be taken back at no extra cost to BHEL.

3.60 During erection of various equipment, prior to commissioning and after commissioning, protocols have to be made with BHEL’s customer. The Performa and formats as approved have to be printed by the contractor in adequate numbers. The pre-commissioning activities will start with various trials, commissioning operations shall continue till units are handed over to customer. Simultaneous commissioning activities will be progress in various areas, checking of equipment erected, make ready for trial runs, all these works need specialized gangs including electricians/ instrument technicians in each areato render assistance to BHEL commissioning staff. Contractor shall earmark separate manpower for various commissioning activities. The manpower shall not be disturbed or diverted.

3.61 It shall be responsibility of the contractor to provide workmen of various categories in sufficient numbers along with Engineers/ Supervisors including necessary consumables, T&P etc during pre-commissioning, commissioning and post commissioning period for commissioning of equipment and attending any problem in equipment erected by the contractor till handing over. The rates quoted shall include all these contingencies also.

3.62 It shall be specifically noted that the above employees of the contractor may have to work round the clock along with BHEL commissioning Engineer and hence overtime payment by the contractor to his employees may be involved. The contractor's accepted rates shall be inclusive of all these factors also.

3.63 In case, any rework is required because of contractor's faulty erection which is noticed during commissioning, the same has to be rectified by the contractor at his cost. If any equipment /part is required to be inspected during commissioning, the contractor will dismantle/ open up the equipment / part and reassemble /redo the work without any extra claim.

3.64 During commissioning, opening and closing of valves, attending to leakage, changing of gaskets, modifications in wiring, realignment of equipment, re-calibration of instrument, attending to leakage, minor adjustments of erected equipment may arise. The accepted rates shall include of all such works.

3.65 Any cutting of masonry work which is necessary shall be done by the contractor at his own cost and shall be made good to match the original work. The contractor shall obtain prior approval before cutting any masonry/ concrete work.

4.0 WELDING, HEAT-TREATMENT, RADIOGRAPHY AND NDT

4.1 The equipment and piping shall be erected in conformity with the provisions of Indian Boiler Regulation and as may be directed by BHEL as per any standard / specification in practice in BHEL. The method of welding (arc, gas, TIG or other method) may be indicated in the detailed drawings / schedules. BHEL Engineer will have the option of changing the method of welding as per site requirements.

4.2 Welding of equipment, piping, high tensile structural steel shall be done by certified high pressure welders who posses valid certificate of Syrian Authority in which the equipment is erected as per provision of Syrian Law/ Regulations . The H.P. welder who possesses necessary certificate shall ensure re-validation as per relevant provisions of Syrian Law/ Regulations and keep the certificate valid till the completion of work. The services of such welders, the validity of whose certificates have expired shall not be utilized for high-pressure works.

4.3 All welders like structural and high pressure welder shall be tested as per ASME section IX / Syrian Law/ Regulations and approved by BHEL Engineer before they are actually engaged on work even though they may possess a valid Syrian Law/ Regulations certificate. BHEL reserves the right to reject any welder if the welder's performance is not found to be satisfactory. The contractor shall maintain the records of qualification of welders. BHEL Engineer will issue all the welders qualified for the work, an identity card. The welder will keep the same with him at work place at all times. He may be stopped from work if he is not found in possession of the same.

4.4 Engineer may stop any welder from the work if his performance is unsatisfactory for any reason or if there is a high percentage of rejection in the joints welded by him. The welder having passed qualification tests does not absolve the contractor of contractual obligation to continuously check the welder's performance.

4.5 Faulty welds caused by the poor workmanship shall be cut and re-welded at the contractor’s expense. The Engineer, prior to any repair being made, shall approve the procedure for the repair of defective welds. After the repair has been carried out, the compliance shall be submitted to the engineer.

4.6 The contractor shall carry out the root run welding of all HP / LP piping, valves by TIG welding method only. The contractor shall have to carry out full TIG welding of butt weld joints of tubes / pipes of lesser thickness if required. During the root runs of stainless steel joints, the contractor shall before and during welding have to purge the pipes with inert gas. All arrangements required for the above shall be the responsibility of the contractor at no additional cost.

4.7 All expenses for testing of contractor's welders including destructive and nondestructive tests conducted by BHEL at site or at laboratory shall have to be borne by the contractor only. Limited quantity of raw material required for making test pieces will be supplied by BHEL free of cost.

4.8 The regulators used on welding machines shall be calibrated before putting these into use for work. The Contractor at his cost shall also arrange periodic calibration for the same.

4.9 **Only BHEL/ CUSTOMER approved electrodes and filler wire are to be arranged and used by the contractor, within the finally quoted price. BHEL/ RRVUNL reserve the**

right to test from the certified lab of approved electrode being used by the contractor. Testing charges for the same shall be borne by the contractor. All electrodes shall be baked and dried in the electric electrode-drying oven to the required temperature for the period specified by the Engineer before these are used in erection work. All welders shall have electrodes drying portable oven at the work spot. The electrodes brought to the site will have valid manufacturing test certificate. The test certificate should have a co-relation with the lot number/ batch number given on electrode packets. No electrodes will be used in the absence of above requirement. The thermostat and thermometer of electrode drying oven will be also calibrated and test certificate from Govt. approved/ accredited test house traceable to National/ International standards will be submitted to BHEL before putting the oven in use. The contractor shall also arrange periodical calibration for the same.

4.10 All butt / fillet welds shall be subject to dye penetration test as per the instructions of the engineer at no additional cost.

4.11 The contractor shall maintain a record in the form as prescribed by BHEL of all operations carried out on each weld. He has to maintain a record indicating the number of welds, the names of welders who welded the same, date and time of start and completion, preheat temperature, radiographic results, rejection if any, percentage of rejection etc. and submit copies of the same to the BHEL Engineer as required. Interpretation of the BHEL Engineer regarding acceptability or other wise of the welds shall be final.

4.12 The contractor shall carry out the edge preparation of weld joints at site in accordance with the details acceptable to BHEL Engineer. Wherever possible machining or automatic flame cutting should be done. Gas cutting will be allowed only wherever edge preparation otherwise is impractical. All slag / burrs shall be removed from the edge and all the hand cuts shall be ground smooth to the satisfaction of engineer.

4.13 All welds shall be painted with anticorrosive red oxide paint once radiography and stress reliving works are over. Necessary consumables and scaffolding etc including paints shall be provided by contractor at his own cost.

4.14 Pre-heating, radiography and other NDT tests, post heating and stress relieving after welding of tubes, pipes, including attachment welding wherever necessary, are part of erection work and shall be carried out by the contractor in accordance with the instructions of the Engineer. Contractor at his cost shall arrange all equipment and consumables essential for carrying out the above process.

4.15 Contractor shall arrange all necessary stress relieving equipment with automatic recording devices. The contractor arrange for labour, heating elements, thermocouples, thermo-chalks, temperature recorders, thermocouple attachment units, graphs, sheets insulating materials like asbestos cloth, ceramic beads, asbestos ropes etc. required for heat treatment/ stress relieving operations. The contractor should take a note of the following,

- Temperature shall be measured by thermocouple and recorded on a continuous printing type recorder. All the recorded graphs for heat treatment works shall be the property of BHEL.
- All stress relieving equipment will be used after due calibration and submission of test certificate to BHEL. Periodic calibration from Govt. Approved /

accredited Test Houses traceable to National / International standards will also be arranged by the contractor for such equipment at his cost.

The contractor shall obtain the signature of Engineer or his representative on the strip chart of the recorder prior to the starting of SR operations.

4.16 The contractor shall also be equipped for carrying out other NDT like LPI / MPI / Hardness test/Ultrasonic testing etc. as required as per welding schedules / drawings within the finally accepted price / rates.

4.17 The technical particulars, specification and other general details for radiography work shall be in accordance with ASME, Syrian Law/ Regulations or ISO as specified by BHEL.

4.18 Contractor for radiography work shall use iridium-192. The geometric un-sharpness shall not exceed 1.5 mm. The contractor should take adequate safety precautions while carrying out radiography. Contractor at his cost shall arrange necessary safe guards required for radiography (including personnel from BARC).

4.19 Low speed high contrasts, fine grain films (D-7 or equivalent) in 10 cm width only be used for weld joint radiography. Film density shall be between 1.5 to 2.0.

4.20 All radiographs shall be free from mechanical, chemical or process marks, to the extent they should not confuse the radiographic image and defect finding. Pentameter as per ASME or ISO must be used for each exposure.

4.21 Lead numbers and letters are to be used (generally 6mm size) for identification of radiographs. Contract number, joint identification, source used, welder's identification and SFD are to be noted down on paper cover of radiograph.

4.22 Lead intensifying screens for front and back of the film should be used as per the above-referred ASME specification.

4.23 The joint is to be marked with permanent mark A, B, C to identify the segments. For this a low stress stamp shall be used to stamp the pipe on the down streamside of the weld.

4.24 For multiple exposures on pipes, an overlap of about 25-mm of film should be provided.

4.25 Radiography personnel with sufficient experience and certified by M/s BARC for conducting radiographic tests in accordance with safety rules laid down by Division of Radiological protection only have to be deployed. These personnel should also be registered with DRP / BARC for film badge service.

4.26 All arrangements for carrying out radiography work including dark room and air conditioner and other accessories shall be provided by contractor within the space allotted for office at his cost. As an alternative the contractor may deploy an agency having all above facilities and who are duly approved / accredited by BARC and / or other Regulatory authorities. Detailed particulars of such agencies will be submitted and got approved by BHEL Engineer before the actual deployment of agency for radiography work.

4.27 The contractor shall have a dark room fully equipped with radiography equipment, film (un-exposed), chemicals and any other dark room accessories.

4.28 Contractor shall note that 100% radiography will be done at the initial stages on all the piping welding joints. Subsequently radiographic inspection will be done on the basis of quality of welding. However minimum percentage of joints to be radiographed shall not be less than the requirement of BHEL welding schedule / Syrian Law/ Regulations / Customer's requirements. The percentage may be increased depending upon the quality of joints and at the discretion of BHEL. Radiography on LP piping joints is not envisaged. However other NDT test as called for in the FQP including LPI, MPI and HT will have to be carried out

4.29 All the Radiographs shall be properly preserved and shall become the property of BHEL. They are to be reconciled with the work done, joints radiographed and submitted to BHEL / customer.

4.30 Since radioisotopes are being used, all precautions and safety rules as prescribed by BHEL/BARC/ Customer shall be strictly followed. BARC / DRP certificate to be provided before taking up the work.

4.31 Radiography of joints shall be so planned after welding that the same is done either on the same day or next day of the welding to assess the performance of HP welders. If the performance of welder is unsatisfactory, he is to be replaced immediately.

4.32 Wherever radiographs are not accepted, on account of bad shot, joints shall be re-radiographed and re- submitted for evaluation.

4.33 However, if the defect persists after first repair, further repair work followed with radiography shall be repeated till the joint is made acceptable. In case the joint is not repairable, the same shall be cut, re-welded and re-radiographed at contractor's cost.

4.34 If the contractor does not carry out radiography work due to non-availability of source / film / chemical / operator etc., BHEL will get the work done departmentally or through some other agency at the risk and cost of the contractor.

4.35 Heat treatment and radiography may be required to be carried out at any time (day and night) to ensure the continuity of progress. The contractor shall make all necessary arrangements including labour, supervisors/ Engineer required for the work as per directions of BHEL.

4.36 The contractor shall assist BHEL Engineer in preparing complete field welding schedule for all the field welding activities to be carried out in respect of piping and equipment erected by him involving high pressure welding at least 30 days prior to the scheduled start of erection work at site. The contractor shall strictly adhere to such schedules.

4.37 The pressure parts, equipment and piping shall be erected in conformity with the provisions of Indian Boiler Regulation and as may be directed by BHEL as per any standard / specification in practice in BHEL. The method of welding (arc, gas, TIG or other method) may be indicated in the detailed drawings / schedules. BHEL Engineer will have the option of changing the method of welding as per site requirements.

4.38 **Check shots as per the requirement of BHEL/ PEEGT will be taken at your cost.**

5.0 APPLICATION OF INSULATION

5.1 All attachment welding, including welding of hooks / supports as per pitch both on equipment and piping shall be done as directed by Engineer. Attachment welding shall have to be done by certified welders. If necessary contractor may have to cut the hooks to correct length. Application of red oxide paint including supply of paint on welded portions as directed by BHEL is also included in scope of work.

5.2 The mineral wool mattresses (bonded / un-bonded) / LRB mattresses are received at site in standard sizes. These are to be dressed / cut to suit site requirements by the contractor.

5.3 The number of layers / thickness of mineral wool / LRB mattresses for auxiliaries, pipe lines, valves and other vessels shall be as per various drawings and as directed by Engineer. For applying the mineral wool mattress, the required holding materials, if necessary by fabrication of rings/ hooks shall be fixed as directed and as per drawings and spec.

5.4 The contractor should ensure, proper finishing of surface of the insulation, sheeting and cementing.

5.5 The contractor should ensure that the finished surface of the insulation works conforms to the dimensions and tolerances given in the drawings. Aesthetic finish and accuracy of work are most important.

5.6 It is the responsibility of the contractor to ensure that the insulation materials and sheet metal covering issued to him for application are well protected against loss or damage from weather conditions. Closed / semi closed sheds or any other arrangements required for this will by him at his cost. If any damage occurs to the material due to improper storage or due to any causes attributable to the contractor except for normal breakage or damages allowed in such cases, the cost of such damaged material shall be to the account of the contractor.

5.7 Aluminum sheet cladding will be fabricated to the sizes and shapes specified in drawings. Beading, swaging, beveling of sheets, crowning the sheets if necessary will be carried out by him. Two coats of anti-corrosive black bituminous paint are to be applied on inner surfaces of the cladding. Bitumen sealing compound on the joints if necessary is included in the scope of this work. **Contractor may note that he will also supply anti-corrosive black bituminous paint & bituminous sealing compound required for above works at his cost.**

5.8 Aluminum sheet metal cladding over insulation will consists of plain / ribbed / corrugated sheets. The sheets will be supplied in standard sizes. Cutting them to required size, grooving, fabricating bends, boxes etc., for proper covering is contractors responsibility. Any cutting / bending / welding of fabricated skin casing sheets if required will also covered within the scope of this contract.

5.9 A logbook shall be maintained by the contractor to obtain clearance for application of insulation. If the contractor does the work on his own accord without prior permission the area may have to be redone at his cost.

5.10 Contractor is liable for the exact accounting of the material issued to him and he shall make any unaccountable losses good. Wastage allowances for the material issued are as below:

1. Wool / LRB mattresses and cladding sheets 2%
2. Insulation bricks and mortar 2%
3. Castable refractory 1%

5.11 The entire surplus, unused materials etc., supplied by BHEL shall be returned to BHEL after the work is over. Materials like gunny bags and packing materials, empty containers may be returned at periodical intervals.

5.12 The contractor shall leave certain gaps and opening while doing the work as per instructions of BHEL engineer to facilitate inspection during commissioning and to fix gauges, fittings and instruments. The gaps will have to be finished as per drawings at a later date by the contractor at his cost.

5.13 If during erection and commissioning any of the parts are to be insulated temporarily fixed and then replaced by permanent ones at a later date or if any of the parts are to be removed for modification, rectification, adjustment and then refitted or if some parts are to be opened for inspection and checking and for measurement of metal surface temperature the same may necessitate removal and re-application of insulation and sheet metal cladding, which shall be done by the contractor and the erection rate quoted shall be inclusive of such contingencies.

5.14 Removable type of insulation shall be provided for valves, fittings, expansion joints etc as per the drawings or as directed by BHEL Engineer.

5.15 All temporary pipelines required during testing, pre-commissioning and commissioning should be insulated as directed by BHEL at no extra cost to BHEL. However required insulation material shall be issued by BHEL free of cost.

6.0 PAINTING INCLUDING FINISH PAINTING

6.1 All exposed metal parts of the equipment, structure, auxiliaries, piping, and other items (covered within the scope of this contract) after installations are to be painted. Mostly the equipment / components installed are with one coat each of primer paint and synthetic enamel / heat resistant paint. However, due to aging, the same may have got deteriorated for peeled off. The surfaces are to bethoroughly cleaned of all dirt, rust, scales, grease, oils and other foreign materials by wire brushing, scrapping, any other method as per requirement of BHEL. The same will be inspected and approved by the engineer before painting.

6.2 After applying the primer paints all structure / equipment / items, shall be finish painted with two coats of alloyed resin machinery enamel paints as specified by BHEL engineer. In case proper finish is not obtained in two coats, the contractor shall apply additional coat (s) till proper finish is achieved. After completion of painting all bright spots shall be cleaned to the satisfaction of Engineer.

6.3 Certain equipment like control panels, valves etc. shall require spray painting. The contractor shall make arrangements of the required equipment for spray painting. Spray painting at the job site shall be permitted only at times and locations approved by Engineer.

6.4 Contractor at no extra cost to BHEL shall supply all paints, primers, tools and other consumables including scaffolding materials required for finish painting. Paint is to be BHEL approved make only and painting should be as per colour scheme and quality approved / specified by Engineer. Valid Test Certificate for the paint so supplied shall be made available before use of the same on work. No paint whose shelf life has expired should be used for painting.

6.5 The contractor may be required to fill up dents / marks by applying putty before final painting of equipment. All materials and arrangements have to be made within quoted lump sum price/rates.

6.6 The contractor shall provide legends with direction of flow on equipment and piping in size specified by Engineer. Letter writing shall be done in Hindi / English or in both languages.

6.7 The painters have to undergo test on a mock plate of size 1m*1m and only qualified painters will be allowed to work.

6.8 The contractor shall ensure availability of

- Ford Cup-4 to measure consistency of paint,
- Automatic magnetic gauge to measure the dry film thickness and
- SSPC Visual standards to assess degree of cleanliness of surfaces to be painted.

6.9 All paints should be stored in well-ventilated store. The painters and other personnel deployed should use proper protective equipment to avoid inhalation of fumes.

7.0 TESTING, PRE-COMMISSIONING, COMMISSIONING, AND POST-COMMISSIONING

7.1 The contractor shall carry out all the required tests and pre-commissioning and commissioning activities required for their successful and reliable operation. These would include hydraulic test of condenser, land flow test, chemical cleaning, alkali flushing and water flushing of piping, oil flushing of oil system etc. as instructed by BHEL.

All the chemicals required for carrying out these activities will be supplied by BHEL free of cost.

All required tests (Mechanical and electrical) indicated by BHEL and their clients for successful commissioning are included in the scope of these specifications. These tests / activities may not have been listed in these specifications.

Specialized test equipment, if any, shall be provided by BHEL / its client free of hire charges. However contractor has to take proper care of the equipment issued to him.

7.2 The contractor shall carry out the air-tightness test on assembled generator to the satisfaction of BHEL Engineer. The necessary arrangement for testing with dry-clean air shall be made by the contractor at his cost. Compressed air for testing can be taken by the contractor from the existing system

7.3 All the tests may have to be repeated till all the equipment satisfy the requirement / obligation of BHEL at various stages. The contractor shall repairs all joints (shop welded or site welded) failed during testing.

7.4 All items / material required for conducting hydraulic test, Detergent flushing, oil flushing, steam blowing etc., will be supplied by BHEL / its customer.

While the Detergent cleaning operation including the required looping in piping , draining and disposal will be carried out by another agency , the Contractor will have to ensure the readiness and availability of CEP ,associatedsystems and the piping which is to be cleaned . Any work required on the permanent system will have to be carried out by the Contractor.

All temporary piping along with their supports for steam blowing in the systems erected by the Contractor, and the required loops for chemical cleaning of the piping erected by the contractor will have to be erected within the quoted rates.

For completing the chemical cleaning contractor may have to do some temporary piping /welding will be in the scope of work.

The Contractor will also be responsible for their installation wherever required. He will dismantle the total system and return the same to BHEL / their customer store as directed. No separate payment will be released for erection & dismantling of the required equipment & piping.

7.5 Thermal shocks will be required during oil flushing operations. The contractor is required to make all arrangements for the same. This would include fabrication of heating tank with nozzles and requisite piping with supports. Complete erection

with pumps, tanks, electrical fittings including and other accessories is to be carried out. All material and equipment will be provided on returnable basis by BHEL.

7.6 The scope of pre-commissioning activities cover installation of all necessary temporary piping, supports, valves, blanking, pumps, tanks etc. and other accessories with access platforms valves, pressure gauges, electric cables, switches, cutting of some of existing valve, placing of rubber wedges in the valves etc., required for hydro test, chemical cleaning, steam blowing or for any other tests as the case may be and will carry out above activities under this scope of work as per instructions of BHEL. The scope also covers the off site disposal of effluents

7.7 All arrangement required for steam blowing including removal, reinstallation and welding of CRH NRV and installation of steam blowing arrangements including steam blow off piping is included in the scope of work.

7.8 It shall be the responsibility of the contractor to preserve the cleaned surface as per BHEL's requirement.

7.9 It shall be specifically noted that the employees of the contractor may have to work round the clock along with BHEL/Customer Engineers and hence overtime payment by the contractor may be involved. The contractor's finally accepted rates/ price shall be inclusive of all these factors also.

7.10 It shall be the responsibility of the contractor to provide various category of workmen in sufficient numbers along with supervisors with necessary consumables, T&P, IMTEs etc., along with any other assistance required during pre-commissioning, commissioning and post -commissioning of equipment and attending any problem in the equipment erected by the contractor till handing over.

Association of BHEL's / Client's staff during above period will not absolve contractor from above responsibilities.

7.11 In case, any rework is required because of contractor’s faulty erection that is noticed during pre-commissioning and commissioning, the same has to be rectified by the contractor at his cost. If any equipment / part is required to be inspected during pre-commissioning and commissioning, the contractor will dismantle/open up the equipment / part and reassemble / redo the work without any extra claim.

7.12 During commissioning, opening / closing of valves, changing of gaskets, realignment of rotating and other equipment, attending to leakage and adjustments of erected equipment may arise. This is included in the scope of work.

7.13 The contractor shall make all necessary arrangements including making of temporary closures on piping / equipment for carrying out the hydro-static testing on al piping equipment covered in the specification at no additional cost.

7.14 The water boxes of the condenser will be tested hydraulically to 1.5 times the design pressure after its assembly at site. The arrangement of all the blanking for carrying out the hydraulic test shall be the responsibility of the contractor at no additional cost. However only the main blanking flanges with fasteners for CW inlet

and CW outlet of the condenser shall be provided by BHEL free of cost. Fabrication of blanks will be carried out by the contractor.

7.15 The water-fill test of the steam space shall be carried out by filling the water upto 1 Meter or as required above the top row of tubes to facilitate leak detection. Hydraulic testing shall be carried out on the condenser water boxes. Dummy plates shall be provided by BHEL.

7.16 The contractor shall fill the condenser up to the specified level as many times as called for by the Engineer for checking of the turbine at no additional cost

7.17 In case any defect is noticed during tests, trial runs and commissioning such as loose components, undue noise or vibration, strain on connected equipment etc., the contractor shall immediately attend to these defects and take necessary corrective measures. If any readjustment and realignment including repair, rectification and replacement work are necessary, the contractor shall carry out the same as per Engineer's instructions. The parts to be replaced shall be provided by BHEL.

7.18 During hydraulic testing of pipes, all piping having variable spring type supports shall be held securely in place by temporary means while constant spring type support hangers shall be pinned or blocked solid during the test.

7.19 The contractor shall carry out cleaning and servicing of valves and valve actuators prior to pre-commissioning tests and / or trial operations of the plant. A system for recording of such servicing operations shall be developed and maintained in a manner acceptable to BHEL Engineer to ensure that no valves and valve actuators are left un-serviced.

7.20 Cleaning & servicing of all the filters / strainers, toppings of oils coming in the system shall be done by the contractor till the completion of trial operation and handing over of the unit within the quoted price .

7.21 The contractor shall incorporate all the changes / decisions proposed by BHEL Engineer at no additional cost.