BHARAT HEAVY ELECTRICALS LIMITED

PROJECT ENGINEERING MANAGEMENT, NOIDA

Date: 28 Sept 2020

CORRIGENDUM- 03

PROJECT	**:**	**2 X 660 MW THDC KHURJA-TG**
PACKAGE	**:**	**CONDENSATE POLISHING UNIT**
ENQUIRY NO	**:**	**E-6521/2020 Dtd. 02.09.2020**
SUBJECT	**:**	**PRE- BID CLARIFICATION & TECHNICAL AMENDMENT NO #1**

Type of Corrigendum			
Technical Corrigendum -	☑	Commercial Corrigendum -	☐

Please note the following:

1. **Reply to Pre-Bid Clarification & Technical Amendment No # 1 attached with this corrigendum shall be treated as part of NIT.**

All the other terms and conditions of the tender enquiry shall remain unchanged. All the bidders are requested to quote accordingly.

Yours faithfully,

For and on behalf of BHEL

SHARAD CHANDRA

Digitally signed by SHARAD CHANDRA
DN: c=IN, o=BHARAT HEAVY ELECTRICALS LIMITED, ou=BHEL / PS-PEM- Noida, postalCode=201301, st=Uttar Pradesh, 2.5.4.20=089a16018da25cac45670e8f7d15d00fb0f21f752b7d5defc65e3d0da37894fd, cn=SHARAD CHANDRA
Date: 2020.09.28 08:36:24 +05'30'

Sharad Chandra
Manager/BOP

Project: Condensate Polishing Unit For 2×660 MW THDC Khurja-TG
Tender No.: PE/PG/THD/E-6521/2020 dated September 02, 2020
Doc. Title: **Pre-Bid Queries (Technical)**

Sr. No.	Volume	Section	Clause No.	Page No.	Specification Requirement	Clarification	Reason for Clarification / Bidder's Assumption	BHEL Reply
Mechanical Clarification								
1.	Technical Specification Volume-IIB	IA	C. 5) & 6)	30	**Piping:-** One Way Piping distance for resin Transfer Piping between farthest service vessel and regeneration area shall be 1000 meters. One Way Piping distance for DM water piping between farthest service vessel and regeneration area shall be 350 meters.	Please confirm the Resin transfer Piping distance between between farthest service vessel and regeneration area as the Piping distance for DM water piping between farthest service vessel and regeneration area shall be 350 meters but for Resin transfer it is given 1000 meters.	M/s BHEL is requested to clarify.	Please refer Amendment 1.
2.	Technical Specification Volume-IIB	IA	C. 5) & 6)	30	**Piping:-** Piping distance, Pipe MOC & Pipe Size from CPU regeneration area N. Pit to Bottom Ash Slurry Sump.	Piping distance, Pipe MOC & Pipe Size from CPU regeneration area N. Pit to Bottom Ash Slurry Sump is not included in Piping. Kindly confirm the Piping distance, Pipe MOC & Pipe Size from CPU regeneration area N. Pit to Bottom Ash Slurry Sump	M/s BHEL is requested to clarify.	For MOC of Pipe Bidder to follow the tender specification Section IIA GENERAL TECHNICAL REQUIREMENT OF LOW PRESSURE PIPING Clause No. 2.03.05 page no. 532. For Pipe size design criteria shall be as per Section II Clause no. 5.11.00 page no. 469. Pipe Distance is as per Amendment 1.

Sr. No.	Volume	Section	Clause No.	Page No.	Specification Requirement	Clarification	Reason for Clarification / Bidder's Assumption	BHEL Reply
3.	Technical Specification Volume-IIB	IA	13.2	41	**Terminal Point External Regeneration Area:-** Terminal point location for DM Water inlet for DM Water Storage tanks.	Terminal point location for DM Water inlet for DM Water Storage tanks is not included in terminal point. Kindly confirm the terminal point location for DM Water inlet for DM Water Storage tanks	M/s BHEL is requested to clarify.	DM water from DM make up line shall be at 10.0M from the foundation of DM tanks at ground level. This has been already stated in P&ID attached in Tender Specification. Bidder to Follow the same.
4.	Technical Specification Volume-IIB	IA	14.2	42	**Exclusions:-** Main pipe trestles interconnecting CPU regeneration building and Service vessel Pipe trestle.	Main pipe trestles interconnecting CPU regeneration building and Service vessel Pipe trestle is mention under exclusions. However M/s BHEL is to confirm & include the following Pipe trestle under exclusion:- (i) Pipe Trestle between service vessels to waste service water sump of ETP. (ii) Pipe Trestle from CPU regeneration area Resin transfer waste Water Sump to CW channel. (iii) Pipe Trestle from CPU regeneration area N. Pit to Bottom Ash Slurry Sump.	M/s BHEL to accord acceptance.	Pipe Trestle between service vessels to waste service water sump of ETP, Pipe Trestle from CPU regeneration area Resin transfer waste Water Sump to CW channel, Pipe Trestle from CPU regeneration area N. Pit to Bottom Ash Slurry Sump are not in bidder's scope.

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5.	Technical Specification Volume-IIB	IA	Annexure-I & Annexure-II	45 to 57 & 58 to 280	**QAP for Condensate Polishing Unit (CPU):-** Annexure-I **Sub Vendor List:-** Annexure-II	Vendor list, Inspection criteria and Quality plan shall be mutually discussed and agreed upon at the time of award of contract.	M/s BHEL to accord acceptance.	Bidder to Follow the Tender Specification.
6.	Technical Specification Volume-IIB	IA	N/A	317	**Sketch related to space for CPU Service vessel area and Tentative Inlet & Outlet TPs:-** Space for CPU	Please note that in sketch related to space for CPU Service vessel area Pre-filters, air compressor, Backwash Water Collection tank (M/s BHEL Scope) and Pre-Filter Backwash Waste water transfer pumps is not shown hence M/s BHEL is requested to keep the space for these missing Equipment's in CPU Service vessel area. Further RCPa & RCPb (Rinse Recycle Pumps) has shown in sketch however same is not shown Tender P & ID Page No. 315.	M/s BHEL is requested to clarify.	Detail of CPU Service Vessel Layout shall be dealt during detail engineering. Further RCPa &RCPb (Rinse Recycle Pumps) are not applicable for CPU as per tender specification.
7.	Technical Specification Volume-IIB	IA	2.2.(xi)	321	**Pre-Filter:-** Inlet, outlet and common bypass motorized/pneumatic valves with necessary interlocks with CPU.	No motorized valves shown in Tender P & ID Page No. 315 for Pre-Filters. M/s BHEL to confirm requirement of motorized valves for Pre-Filters.	M/s BHEL is requested to clarify.	Bidder to follow the tender P&ID in which the arrangement of valves and associated required has been detailed out.

Sr. No.	Volume	Section	Clause No.	Page No.	Specification Requirement	Clarification	Reason for Clarification / Bidder's Assumption	BHEL Reply
8.	Technical Specification Part-C	VI	8.10.01	389	**Lubricants, Servo Fluids and Chemicals:-** All the first fill and one year's topping requirements of consumables such as greases, oil, lubricants, servo fluids / control fluids, gases (excludingH2, CO2 and N2 for Generator) **and essential chemicals e**tc.	Please confirm the scope of supply for chemicals Hcl and Noah..	M/s BHEL to accord acceptance.	Hcl and NaOH are excluded from Bidder's scope of supply as per tender specification. Bidder to follow the same.
9.	Technical Specification Part-A	VI Sub-Section-A9	1.00.00	479 to 521	**Power Cycle Piping:-** Scope of supply and works for Power Cycle piping system.	Power Cycle Piping chapter, Pages 479 to 521 needs to be deleted from the Technical specification as there is no Such Power Piping is applicable for the System except High pressure Piping for condensate inlet and outlet is applicable in service vessel area.	M/s BHEL to accord acceptance.	Bidder to refer the relevant portion with respect to CPU only. General Specification has been included as the part of Tender Specification.
10.	Technical Specification Part-B	VI Sub Section-A6	N/A	545 to 546	**Low Pressure Piping:-** Drinking Water Tanks.	M/s BHEL to confirm the scope of supply for Drinking Water Tanks.	M/s BHEL is requested to clarify.	Bidder to follow the scope of supply as per tender specification, Drinking water tanks are not included in the part of bidder's Scope.

Sr. No.	Volume	Section	Clause No.	Page No.	Specification Requirement	Clarification	Reason for Clarification / Bidder's Assumption	BHEL Reply
11.	Technical Specification Part-B	VI Sub Section -A6	N/A	546 to 547	**Low Pressure Piping:-** Condensate Storage Tanks.	M/s BHEL to confirm the scope of supply for Condensate Storage Tanks.	M/s BHEL is requested to clarify.	Bidder to follow the scope of supply as per tender specification, Condensate Storage tanks are not included in the part of bidder's Scope.
12.	Technical Specification Part-B	VI	1.00.00 To 6.00.00	587 to 604	**Pre-Commissioning and Commissioning:-** Pre-Commissioning Activities	Pre-Commissioning and Commissioning chapter, Pages 587 to 604 needs to be deleted from the Technical specification as the mentioned activities of Commissioning are related to Turbine Generator.	M/s BHEL to accord acceptance.	Bidder to refer the relevant portion with respect to CPU only. General Specification has been included as the part of Tender Specification.

Sr. No.	Volume	Section	Clause No.	Page No.	Specification Requirement	Clarification	Reason for Clarification / Bidder's Assumption	BHEL Reply
13.	Technical Specification Part-B	VI Sub Section -IIIC-18	2.00.00 & 11.01.00	647 to 648 & 686 to 688	**<u>Specification for Electronic transmitter:-</u>** There are two different requirement given in technical specification for transmitter as well as for Control valve i.e. Hart compatible and Profibus Compatible.	Please clarify which one is to be considered.	M/s BHEL is requested to clarify.	We wish to clarify as follows for: - (i) Transmitters – All the transmitters for pressure, temperature, differential pressure & DP based flow/level (TT, PT, DPT) shall be genuine, verifiable PROFIBUS PA protocol compatible instruments. Please refer clause no. 4.0 of Specific Technical Requirements for C&I (page no. 351 of the CPU specification) Specification to be followed for these instruments shall be as per clause 11.00.00, page nos. 686-689 of the CPU specification. (ii) Control valve – The specification is very clear. Please refer to pages 680 through 685 of CPU technical specification. The control valves' smart positioner shall be calibrated and operated through HART protocol.

Sr. No.	Volume	Section	Clause No.	Page No.	Specification Requirement	Clarification	Reason for Clarification / Bidder's Assumption	BHEL Reply
14.	Technical Specification Part-B	VI Sub Section -IIC-01	E	796	**List of Analysers:-** CPU Outlet : Specific Conductivity, Cation Conductivity, Silica, Sodium, pH	1. Is this a requirement at each service vessel outlet or CPU common header Outlet requirement 2. In case it is applicable for each service vessel, then P &ID does not ask for ph analyser 3. In case, it is common outlet requirement then P &ID does not ask anything except specific conductivity analyser Please confirm.	M/s BHEL is requested to clarify.	Please refer Amendment 1.
15.	Technical Specification Part-B	VI Sub Section -IIC-01	E Note no. 1	796	**List of Analysers:-** Multistream for Silica and Sodium Analyser shall be acceptable. Multistream analysers shall have at least one stream as spare	Please explain, channel sequencer is inbuilt or external sequencer to be considered.	M/s BHEL is requested to clarify.	It may please be noted that external channel sequencer has to be considered.

Sr. No.	Volume	Section	Clause No.	Page No.	Specification Requirement	Clarification	Reason for Clarification / Bidder's Assumption	BHEL Reply
16.	Corrigendum-01			3 S.No. 20	Redundancy of sensors shall be provided by bidder (i) Triple redundancy for all analog and binary inputs required for protection of system /drives. (ii) For all other control functions dual redundancy of the sensors shall be provided by the bidder.	Please clarify, this clause is applicable for transmitters (Pressure, DP, Flow, Level) as well as all analysers or only for transmitters.	M/s BHEL is requested to clarify.	Please refer Amendment 1.

The following modifications with respect to Technical Specification for **CONDENSATE POLISHING UNIT** BHEL's Technical specification no **PE-TS-475-155-A001** shall apply.

Bidder to note that existing clauses/ details as appearing in the specification stands deleted and clauses/details as mentioned in "Modified to or Read as" column shall be applicable and complied by the bidder as listed below in **SCHEDULE A**.

In addition, new clauses and scope are also added as listed below in **SCHEDULE B** and shall be a part of tender specification. Bidder to comply the same.

SCHEDULE-A

MODIFIED CLAUSES/ PAGE NUMBERS:

Sl no.	Vol. No.	Section/ Description	Clause no	Page no	Existing clause/details	Modified to or Read as
1.	IIB	Section – IA	7.C. 05	30 of 802	Resin transfer piping shall be minimum 80 NB and of SS 304 Sch 40 (minimum). One-way piping distance for resin Transfer Piping between farthest service vessel and regeneration area shall be 1000 meters. Complete resin transfer piping shall be in bidder's scope. Other details have been attached elsewhere in the tender technical specification.	Resin transfer piping shall be minimum 80 NB and of SS 304 Sch 40 (minimum). One-way piping distance for resin Transfer Piping between farthest service vessel and regeneration area shall be 450 meters. Complete resin transfer piping shall be in bidder's scope. Other details have been attached elsewhere in the tender technical specification.
2.	IIB	Section – IA	7.C. 05	30 of 802	Piping handling DM water shall be Stainless steel SS 304 Schedule 40 (minimum). One-way piping distance for DM water piping between farthest service vessel and regeneration area shall be 350 meters. Complete DM water piping shall be in bidder's scope. Other details have been attached elsewhere in the tender technical specification	Piping handling DM water shall be Stainless steel SS 304 Schedule 40 (minimum). One-way piping distance for DM water piping between farthest service vessel and regeneration area shall be 450 meters. Complete DM water piping shall be in bidder's scope. Other details have been attached elsewhere in the tender technical specification
3.	IIB	Section – IA	7.C. 04	30 of 802	The material of piping handling Pre filter backwash waste water shall be of stainless steel type 304 Sch.40 (Min). The piping distance between farthest service vessel and waste service water sump of ETP 1100 meters. Other details have been attached elsewhere in the tender technical specification.	The material of piping handling Pre filter backwash waste water shall be of stainless steel type 304 Sch.40 (Min). The piping distance between farthest service vessel and waste service water sump of ETP 1100 meters. Other details have been attached elsewhere in the tender technical specification. However, Pipe

						Length of 300 meters only is in Bidder's Scope, Total Pipe Length of 1100 meters is provided to calculate the Pump Head and other details accordingly.
4.	IIB	Section – IA	7.C. 07	30 of 802	The material of piping handling DM waste water generated during regeneration shall be of stainless steel type 304 Sch.40 (Min). The piping distance from CPU regeneration area to CW channel is 750 meters. Other details have been attached elsewhere in the tender technical specification	The material of piping handling DM waste water generated during regeneration shall be of stainless steel type 304 Sch.40 (Min). The piping distance from CPU regeneration area to CW channel is 750 meters. Other details have been attached elsewhere in the tender technical specification. However, Pipe Length of 100 meters only is in Bidder's Scope, Total Pipe Length of 750 meters is provided to calculate the Pump Head and other details accordingly.
5.	IIB	Section – IC	33.0	354 of 802	Redundancy of sensors shall be provided by bidder (i) Triple redundancy for all analog and binary inputs required for protection of system /drives. (ii) For all other control functions dual redundancy of the sensors shall be provided by the bidder.	Redundancy of sensors (excluding analysers) shall be provided by bidder (i) Triple redundancy for all analog and binary inputs required for protection of system /drives. (ii) For all other control functions dual redundancy of the sensors shall be provided by the bidder.

SCHEDULE-B

NEW CLAUSE/ SCOPE ADDED:

Sl no.	Vol. No.	Section/ Description	Clause no	Page no	Description
1.	IIB	Section – IIC	E	796 of 802	Specific Conductivity, Cation Conductivity, Silica Analyser, Sodium Analyser have already been indicated in the P&ID and in Bidder's Scope. However, one common pH analyser at the common outlet of CPU for each TG unit is also in Bidder's Scope.
2.	IIB	Section - IA	7.C	30 of 802	Piping distance from Neutralisation Pit (N pit) for CPU regeneration to Bottom Ash Slurry Sump shall be 750 meters. However, Pipe Length of 100 meters only is in Bidder's Scope, Total Pipe Length of 750 meters is provided to calculate the Pump Head and other details accordingly.

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