



BHARAT HEAVY ELECTRICALS LIMITED
PROJECT ENGINEERING MANAGEMENT, NOIDA

Date-18-Jul-19

CORRIGENDUM- 03

PROJECT	:	3X800 MW PVUNL PATRATU TPP Ph-I
PACKAGE	:	EFFLUENT TREATMENT PLANT
ENQUIRY NO	:	E-6234/2019 Dated. 18.06.2019
SUBJECT	:	PRE- BID CLARIFICATION

Type of Corrigendum			
Technical Corrigendum -	☒	Commercial Corrigendum -	☐

Please note the following:

- 1. Reply to Pre Bid Query (of 7 Pages) 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
Dy. Manager

Sr. No.	Volume	Section	Clause No.	Page No.	Specification Requirement	Clarification	Reason for Clarification / Bidder's Assumption	BHEL reply
Mechanical Clarification								
1.	IIB	I	2.0	22 of 1005	2.65 Three nos. (3) Nos. (2W+1S) UF FEED PUMPS	Please clarify the quantity of UF Feed Pumps.	Contradictory in specification.	UF Feed Pumps shall be 2W+1S as shown an P&ID. Amendment is being issued in this regard shortly.
	IIB	IA	Datasheet A	400 of 1005	80. UF FEED PUMPS a) Number required Two (1W+1S) nos.			
2.	IIB	I	2.0	23 of 1005	2.73 One no. acid dosing tank for UF system... 2.74 Two (2) (1W+1S) of positive displacement type suitable for dosing acid... 2.75 One no. alkali dosing tank for UF system... 2.76 Two (2) (1W+1S) of positive displacement type suitable for dosing alkali... 2.77 One no. bio dispersant dosing tank for UF system. 2.78 Two (2) (1W+1S) of positive displacement type suitable for dosing bio dispersant 2.79 One no. UF Chemical Cleaning (CIP) tank for UF system.... 2.80 Two (2) (1W+1S) UF Chemical Cleaning Dosing Pumps....	The complete UF system including UF cleaning system & UF chemical dosing system shall be provided as per recommendation of UF membrane manufacturer. Please confirm.	UF chemical dosing and cleaning operation philosophy to be followed as per UF manufacture recommendation.	Bidder to follow technical specification. However, any additional dosing is required as per manufacturer's recommendation shall be in bidder's scope.

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3.	IIB	I	11.1	28 of 1005	f) TDS FROM DM PLANT REGENERATION WASTE: 6000 PPM	Please provide the major parameters of effluent analysis (Ca, Mg, Na, K,Cl, SO4, NO3, Silica etc) for design of RO system.	DM plant is not in Bidder' scope. RO membrane manufacture requires effluent parameters for the design of RO system.	Amendment is being issued in this regard shortly.
4.	IIB	I	11.1	28 of 1005	h) TDS FROM AC PLANT REJECT WASTE: 10000 PPM	Please provide the major parameters of effluent analysis (Ca, Mg, Na, K,Cl, SO4, NO3, Silica etc) for design of RO system.	AC plant is not in Bidder' scope. RO membrane manufacture requires effluent parameters for the design of RO system.	The AC plant reject waste (reject from resin based softening plant) shall mainly consist of Ca, Mg, Na, Cl etc. The resin in resin based softening plant is regenerated through the brine solution and hence the reject will have mainly Na & Cl in addition to Ca & Mg. Bidder is requested to suitably consider the analysis with TDS of reject as 10,000ppm.
5.	IIB	I	11.1	28 of 1005	h) TDS FROM AC PLANT REJECT WASTE: 10000 PPM	Please provide the pH of AC plant reject waste.	Information required for the design of RO sytem.	Bidder to note that the pH of AC plant shall be around 8.0-9.5.
6.	IIB	I	11.0	28 of 1005	-	Please clarify the flow of DM regeneration waste (m3/hr) and ACW blowdown (m3/hr) coming to CMB.	Flow of DM regeneration waste and ACW blowdown are not specified in tender.	Flow of DM plant regeneration waste is indicated in P&ID. However, regarding ACW blowdown flow shall vary from 0-63m3/hr. Amendment is being issue in this regard shortly.

Sr. No.	Volume	Section	Clause No.	Page No.	Specification Requirement	Clarification	Reason for Clarification / Bidder's Assumption	BHEL reply
7.	IIB	IA	Annexure - V	337 of 1005	8 Cartridge Filtration Units [For RO (DM) & RO (Waste water)]	Mandatory spares for Cartridge Filtration Units for RO (DM) are not applicable. Please confirm.	RO (DM) plant is not part of ETP package.	Mandatory spares for Cartridge Filtration Units (RO (Waste Water)) shall be applicable. Amendment is being issue in this regard shortly.
8.	IIB	IA	Annexure - V	337 of 1005	9 RO (Reverses Osmosis) Plant – Membranes [For RO (DM) & RO (Waste water)]	Mandatory spares for RO plant membrane for RO (DM) are not applicable. Please confirm.	RO (DM) plant is not part of ETP package.	Mandatory spares for RO (Reverses Osmosis) Plant – Membranes (RO (Waste Water)) shall be applicable. Amendment is being issue in this regard shortly.
9.	IIB	IA	Annexure-V	338 of 1005	Note:-	For Mandatory Spares, only applicable spares for equipment being supplied for ETP Package shall be supplied. All duplicate descriptions, if any in the list shall be deleted from scope of supply.	M/s BHEL to accord acceptance.	Mandatory spares for ETP package shall be applicable. Amendment is being issue in this regard shortly.
10.	IIB	IA	Annexure-IX	360 of 1005	P&ID of Effluent Treatment Plant: Sump pit- E8	Pipe diameter and pipe length between Node-6 to Node-7 are not specified. Please provide the same.	Details required for sizing of pump head calculation.	Bidder to note that Pipe length and pipe size from E9 to Node 6 is 10m and 100NB. Also note that Pipe length and pipe size from Node 6 to Node 7 is 555m and 125NB. Amendment is being issue in this regard shortly.
11.	IIB	IA	Annexure-IX	360 of 1005	P&ID of Effluent Treatment Plant: Sump pit- E21/22/23 TP is shown as "Nearest TP".	Please clarify the TP pressure requirement.	Details required for sizing of pump head calculation.	Effluent from E21/E22/E23 shall be routed to nearest CHP TP sump. Amendment is being issue in this regard shortly.

Sr. No.	Volume	Section	Clause No.	Page No.	Specification Requirement	Clarification	Reason for Clarification / Bidder's Assumption	BHEL reply
12.	IIB	IA	Datasheet A	393 of 1005	67. LAMELLA CLARIFIER/ TUBE SETTLER I	Please clarify the MOC of Flocculation tank and its agitator.	Data sheet of Flocculation tank is not available.	Amendment is being issue in this regard shortly.
13.	IIB	IA	Annexure-IX	360 of 1005	P&ID of Effluent Treatment Plant: Sump pit- E25/ Treated water transfer pump	Please clarify the pipe size or flowrate (m3/hr) to be considered for the pipe to be terminated upto CHP Area.	Details required for sizing of pump head calculation and piping.	Pipe sizes to be designed considering flow rate of Treated water transfer pumps.
14.	IIB	IA	Annexure-IX	360 of 1005	P&ID of Effluent Treatment Plant: Sump pit- E25/ Treated water transfer pump	Please clarify the TP requirement (Pipe length, flow rate, pressure) at tapping of service water shown at discharge of Treated water transfer pump.	Details required for sizing of pump head calculation and piping.	Treated water from E25 shall be routed to Clarified water sump. Pipe length from ETP area to Clarified Water Sump may be considered as 246m. Amendment is being issue in this regard shortly.
15.	IIB	IA	Datasheet A	401 of 1005	83. ULTRAFILTRATION SKID b) UF Permeate (Filtrate Flow): Capacity to each UF to match with gross capacity of RO in one hour ++ with 5% margin over the above total requirements	We understand that Capacity of each UF to match with gross capacity of each RO train/stream in one hour++ with 5% margin over the above total requirements. Please confirm.	Capacity of UF skid is not cleared.	Technical Specification is clear in this regard. Bidder to follow technical specification
16.	IIB	IA	Datasheet A	401 of 1005	85. UF PERMEATE TRANSFER PUMPS g) Design flow, m3/ hr- To suit the gross capacity of RO system requirements	We understand that design flow of each UF permeate transfer pump shall be to suit the gross capacity of each RO train/stream requirement.	Capacity of UF permeate transfer pump is not cleared.	Technical Specification is clear in this regard. Bidder to follow technical specification
17.	IIB	IA	Annexure-IX	360 of 1005	P&ID of Effluent Treatment Plant: RO permeate transfer pump	Please clarify the TP requirement (Pipe diameter or flow rate) at tapping of ACW system, DM/RO plant and FGD as shown at discharge of RO permeate transfer pump.	Details required for sizing of pump head calculation and piping.	RO permeate shall be routed to ACW system/ DM/RO plant /FGD plant sumps/pits. Pipe sizes to be designed considering flow rate of RO permeate transfer pumps.

Sr. No.	Volume	Section	Clause No.	Page No.	Specification Requirement	Clarification	Reason for Clarification / Bidder's Assumption	BHEL reply
18.	IIB	IA	Datasheet A	410 of 1005	108. LAMELLA CLARIFIER/ TUBE SETTLER II	Please clarify the MOC of Flocculation tank and its agitator.	Data sheet of Flocculation tank is not available.	Amendment is being issue in this regard shortly.
19.	IIB	IA	Datasheet A	412 of 1005	113. CENTRIFUGE Accessories Dumper trolley (Qty = 2nos.) Capacity : 2m3	Dumper truck is not in bidder's scope. Please confirm.	Sludge disposal is not in bidder' scope.	Technical Specification is clear in this regard. Bidder to follow technical specification.
20.	IIB	IIA	1.00.00	729 of 1005	d) Submersible Pumps (Capacity-2x100%) interlocked with Level control devices shall be installed in the Area Pit/sump(s)...	Please clarify the type of sump pump, Submersible pump or vertical centrifugal pump, to be provided in area pits/sump.	Tender data sheet and P&ID shows vertical centrifugal pump.	Selection of type of pumps shall be applicable as per P&ID.Amendment is being issue in this regard shortly.
			3.09.00	732 of 1005	d. Submersible Pumps (Capacity-2x100%) interlocked with Level control devices shall be installed in the Area Pit(s)/sump(s)....			
21.	IIB	IIA	19.01.00	835 of 1005	b) Gravity filter- 2 x 75 m3/hr	Please clarify the capacity of each gravity filter, 75 m3/hr or 150 m3/hr.	Contradictory in specification.	Capacity of Gravity Filters shall be 2x150m3/hr. Amendment is being issue in this regard shortly.
	IIB	IA	Datasheet A	399 of 1005	77. GRAVITY FILTERS a) Number Two (2) (2X100 %) c) Design Capacity (each) Net Output 150 m3/hr.			
22.	IIB	IA	Datasheet A	403 of 1005	89. REVERSE OSMOSIS (RO) SYSTEM b) Overall flow rate at RO outlet from both stages 50 CuM/Hr (minimum)	Considering of RO recovery and UF Recovery over 50 cum/hr of RO permeate, UF feed water requirement will be about 66 m3/hr which is not matched with Capacity of Gravity filter i.e. 150 m3/hr. Please check and clarify the capacity of Gravity filter.	Capacity of Gravity filter is not matched with UF feed water requirement.	Technical Specification is clear in this regard. Bidder to follow technical specification.
	IIB	IA	Datasheet A	399 of 1005	77. GRAVITY FILTERS a) Number Two (2) (2X100 %) c) Design Capacity (each) Net Output 150 m3/hr.			

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23.	IIB	IA	Datasheet A	394 of 1005	d) Fluid to be handled Inlet to CMB 1. Treated water from CMB 2. Neutralized waste water from DM/RO (consisting TDS of 6000ppm) 3. AC plant reject waste (Flow of 5 m3/hr on average basis consisting mainly brine solution of 10000 ppm)	Effluent stream of ACW blowdown is not specified. Please clarify. Further to above, please clarify the Flow (m3/hr) of ACW blow down and Neutralized waste water of DM plant.	Combine effluent from CBM to be treated through UF-RO plant.	Flow of DM plant regeneration waste is indicated in P&ID. However, regarding ACW blowdown flow shall vary from 0-63m3/hr. Amendment is being issue in this regard shortly.
24.	IIB	IIA	2.04.00	746 of 1005	CENTRIFUGE /BELT FILTER PRESS: f) The feed to centrifuge/belt filter press will contain about 5 to 7 per cent solids. The solids cake discharge from centrifuge/belt filter press shall have minimum twenty five (25) per cent solids and shall be of tractable consistency.	As per tender scheme of ETP, sludge from lamella clarifier/HRSCR will be having maximum 2% solids instead of 5% to 7 % solids. Please confirm. Considering above, sludge consistency from centrifuge outlet will be less than 20%. Please clarify the same.	Contradictory in specification.	Amendment is being issue in this regard shortly.

Client :	BHEL				PRE BID CLARIFICATION SCHEDULE			
Project :	ETP							
Date :	08.07.2019							
S. No.	VOLUME	SECTION	CLAUSE NO.	PAGE NO.		CLARIFICATION	REASON FOR CLARIFICATION	BHEL REPLY
1	Volume II B	Section IC	Part 5	456 of 1005	Point no :6-Bidder to provide mandatory spares as per mandatory spares list	There is no specific mandatory spare list given to C&I as like mechanical.Any Spare list is there for C&I	To calculate spare quantity	Technical specification is clear with respect to C&I mandatory spare list. Bidder to follow technical specification.
2	Volume II B	Section IC	Part 6	592 of 1005	AMC:2.The Bidder shall provide complete maintenance services for each System under comprehensive Annual Maintenance Contract (AMC) for period of three years after the Warranty period.	AMC is in Bidder Scope?Please confirm	-	As per specification AMC is in bidder's scope.
3	Volume II B	Section IA	Annexure IX	359 of 1005	Lamella Clarifier II treated water to ESP area (E34)	Kindly provide the distance to ESP area	To calculate pump head	For the calculation of pump head, length to ESP area may be taken 950m. Amendment is being issued in this regard shortly.
4	Volume II B	Section IC	Part 6	592 of 1005	AMC: Further, Bidder may note that during the AMC he will be allowed to use End customer's mandatory spares, but has to replenish the same within three months' time or before completion of AMC period whichever is earlier	Kindly confirm whether AMC for C&I in bidder's scope for mandatory spares		The specification requirement is clear, bidder to provide AMC as per specification.
5	Volume II B	Section IIA	Part 8	844 of 1005	General Requirements of Piping & Valves for water treatment plant	Kindly provide Moc of pipe for oil containing effluents		IS1978 or ASTM-A-106 Gr. B or approved equivalent shall be applicable for pipe for oil containing effluents.
6	Volume II B	Section IA	Datasheet - A	400 of 1005	Number of UF skid is Two (2x50%) but the number required for UF feed pump is 2 (1W+1S)	Kindly confirm the number of UF feed pump		UF Feed Pumps shall be 2W+1S as shown an P&ID. Amendment is being issued in this regard shortly.
7	Volume II B	Section IA	Annexure IX	360 of 1005	Kindly provide the EQMS area in P&ID	Please locate EQMS area in P&ID		Amendment is being issue in this regard shortly.
8	Volume II B	Section IA	Datasheet - A	377 of 1005	Kindly provide the nature of solids and solid size in mm of effluents coming from various area to ETP area (BFP,COT,TG,MRS,ACC,SG,ESP,FO,SCS,Clean water drainage unit,Transformer yard unit etc)	For pump selection		Please note that the effluent expected to be of average size of less than 15mm. Bidder to suitably select the pumps.