



BHARAT HEAVY ELECTRICALS LIMITED
PROJECT ENGINEERING MANAGEMENT, NOIDA

Date-22-Jul-19

CORRIGENDUM- 05

PROJECT	:	1 x 660 MW Panki STPP
PACKAGE	:	D.M. PLANT
ENQUIRY NO	:	PE/PG/PKI/E-6217/2019 Dt. 03.06.2019
SUBJECT	:	DUE DATE EXTENSION + TECHNICAL AMENDMENT

Type of Corrigendum			
Technical Corrigendum -	☒	Commercial Corrigendum -	☒

In reference to the above mentioned tender enquiry please note the following.

1. Due Date has been extended from 22.07.2019 to 02.08.2019 till 02:00 PM. Bid Opening shall be done at 03:00 PM on the due date.
2. In line with cl no 23 of NIT, the minimum local content for FY 2019-20 for this package is 82%.
3. Pre-bid replies and technical amendment attached below.

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

Yours faithfully,

For and on behalf of BHEL

Vinit Kumar Verma
Dy. Manager



**AMENDMENT TO TECHNICAL SPECIFICATION FOR DM
PLANT 1 X 660 MW PANKI TPS EXTENSION PROJECT**

SPECIFICATION NO.: PE-TS-426-163-A001

AMENDMENT NO # 1

REV. NO. 00

DATE: 01/07/2019

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The following modifications with respect to **TECHNICAL SPECIFICATION FOR DM PLANT** BHEL's Technical specification no **PE-TS-426-163-A001** shall apply. Bidder to note that existing clauses/details as appearing in the specification stands deleted / replaced 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**.

SCHEDULE- A

MODIFIED CLAUSES/PAGE NUMBERS:

Sl no.	Section	Sub-Section/ Description	Clause no	Page no	Existing clause/details	Modified to or Read as
1.	I	Sub-Section- I-A, Datasheet-A, 2.0, Dual Media Filter	2.27 A)	288 of 612	2.0 DUAL MEDIA FILTER 2.27 Guaranteed Effluent A) Turbidity < 1 NTU	2.0 DUAL MEDIA FILTER 2.27 Guaranteed Effluent A) Turbidity < 2 NTU
2.	I	Sub-Section- I-A, Datasheet-A, 4.0, Activated Carbon Filter	4.28 c)	290 of 612	4.0 ACTIVATED CARBON FILTER: 4.28 Guaranteed Effluent c) Turbidity <1 NTU	4.0 ACTIVATED CARBON FILTER: 4.28 Guaranteed Effluent c) Turbidity < 0.5 NTU
3.	I	Sub-Section- I-A	2.0 Scope of Supply (Mechanical) ,sr. no. 75	16 of 612	The Bidder's scope includes all the first fill and one year's topping, requirements of consumables such as oils, lubricants including grease, servo fluids, gases and essential chemicals etc. Consumption of all these consumables during the initial operation or PG test of bidder's supplied equipment (whichever is later) and final filling after the initial operation OR PG test of bidder's supplied equipment (whichever is later) shall also be included in the scope of the Bidder. Bidder shall also supply a quantity not less than 10% of the full charge of each variety of lubricants, servo fluids, gases, chemicals etc. used which is expected to be utilized during the first year of operation. This additional quantity shall be supplied in separate Containers. As far as possible lubricants marketed by the Indian Oil Corporation shall be used. The variety of lubricants shall be kept to a	The Bidder's scope includes all the first fill and one year's topping, requirements of consumables such as oils, lubricants including grease, servo fluids, gases and chemicals and reagents required for analysers. Consumption of all these consumables during the initial operation or PG test of bidder's supplied equipment (whichever is later) and final filling after the initial operation OR PG test of bidder's supplied equipment (whichever is later) shall also be included in the scope of the Bidder. Bidder shall also supply a quantity not less than 10% of the full charge of each variety of lubricants, servo fluids, gases, chemicals etc. used which is expected to be utilized during the first year of operation. This additional quantity shall be supplied in separate Containers. As far as possible lubricants marketed by the Indian Oil Corporation shall be used. The variety of



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					minimum possible.	lubricants shall be kept to a minimum possible. Further acid (30-33% HCL) and alkali (48% NaOH) required for regeneration of resins & for UF cleaning are excluded from bidder's scope. However, any other chemicals required for cleaning of UF system including Sodium hypochlorite (NaOCL) till the trial run operation of the plant and additional chemicals of six-month requirement are in bidder's scope.
4.	I	Sub-Section– I-A	10.0, exclusions, sr. no. 10.4	21 of 612	All chemicals except reagents, monitoring gadgets required for pre- commissioning, commissioning, trial run and PG test.	Chemicals [i.e. Acid (30-33%HCL) and alkali (48% NaOH)] except reagents, monitoring gadgets required for pre-commissioning, commissioning ,trial run and PG test.
5.	I	Sub-Section– I-A	10.0, exclusions, sr. no. 10.9	21 of 612	Chemicals.	Chemicals i.e. Acid (30-33%HCL) and alkali (48% NaOH) are excluded from bidder's scope.
6.	II	SUB-SECTION IIA General technical requirements (mechanical)	Sr. no. 8.3.4	376 of 612	Bidder shall supply first charge of filter media, resin, degasser tower Packings, lubricating oil, inhibitor of oil & all the consumables including chemicals till the Trial Run Operation of the plant and additional chemicals of one (1) month requirement.	Bidder shall supply first charge of filter media, resin, degasser tower Packings, lubricating oil, inhibitor of oil & all the consumables including chemicals (except Acid (30-33%) and alkali (48%)) till the Trial Run Operation of the plant and additional chemicals of six (6) month requirement.
7.	I	Sub-Section– I-A	Piping 1 e)	18 of 612	DMF outlet piping up to filter water O/H tank inlet, filter water O/H tank I/L and O/L piping and DMF back wash water pump piping for DMF backwash. Further potable water pump piping up to a 5 m distance from the pump installed location shall be in bidder's scope and same shall be provided with isolation valve (as per P&ID) and blind flange by bidder.	Filtered water storage tank shall be located in DM plant area at ground level and DM plant area is identified in plot plan attached with tender specification. Further DMF outlet piping up to filter water storage tank inlet, filter water storage tank I/L and O/L piping and DMF back wash water pump piping for DMF backwash shall be in bidder's scope. Further potable water pump piping up to a 5 m distance from the pump installed location shall be in bidder's scope and same shall be provided with isolation valve (as per P&ID) and blind



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						flange by bidder. Further Filtered water overhead tank wherever used in technical specification shall be read as "Filtered water storage tank."
8.	I	Sub-Section– I-A, ANNEXURE III, Functional Guarantee And Liquidated Damages	4.00,c i)	134 of 612	c) ION EXCHNAGE UNITS: i) Each ion exchange unit shall be Guranteed for a design flow (net) 65m3/hr (min.) after meeting the water requirement for various regeneration steps. Net output from each cation – anion unit between two regenerations shall be not less than 1300m3/hr (min.) and for mixed bed 9100 m3/hr (min.) of treated water.	c) ION EXCHNAGE UNITS: i) Each ion exchange unit shall be Guranteed for a design flow (net) 65m3/hr (min.) after meeting the water requirement for various regeneration steps. Net output from each cation –anion unit between two regenerations shall be not less than 1300 m3 (min.) and for mixed bed 9100 m3 (min.) of treated water.
9.	I	Sub-Section– I-A	8.0,Terminal points , sr. no. iv)	21 of 612	UF outlet piping up to DM Water storage tanks inlet nozzles. Location of DM tank marked in plot plan. However minimum 200 m piping shall be in bidder scope from DM area to DM tanks inlet nozzles.	UF outlet piping up to DM Water storage tanks inlet nozzles. Elevation of inlet nozzle in DM water storage tank is EL (+) 10.9 m from FGL.Location of DM tank marked in plot plan. However minimum 200 m piping shall be in bidder scope from DM area to DM tanks inlet nozzles.
10.	I	Sub-Section– I-A Datasheet-A, 24.0, HOT WATER TANK	Sr. no. 24.5	303 of 612	Type of Heater/ Capacity -Electric Heater with 2 X 50 % electrical heating coil / 120% of water required for regeneration of one (1) bed volume of (1 SBA &WBA +1 MB unit) both at 40°C.	Type of Heater/ Capacity -Electric Heater with 2 X 50 % electrical heating coil / 120% of water required for regeneration of one (1) bed volume of (1 SBA & 1 WBA +1 MB unit) at 40°C.
11.	II	SUB-SECTION IIA General technical requirements (mechanical) 5.5 Preparation Tanks /Vessels , Hot Water tank	Sr. no. vi)	376 of 612	Effective capacity: Suitable Volume to meet the requirement for regeneration of one (1) bed volume of SBA at 40°C + regeneration of one (1) anion regeneration vessel + 20% margin.	Effective capacity: Suitable Volume to meet the requirement for 120% of water required for regeneration of one (1) bed volume of (1 SBA & 1 WBA +1 MB unit) at 40°C.
12.	I	Sub-Section– I-A, ANNEXURE IIIA, ESTIMATED AUXILIARY POWER CONSUMPTION FIGURES	Sr. no. 2	136 of 612	Degassed Water Pump – Working 1 no. + Stand by 2 nos.	Degassed Water Pump – Working 1 no. + Stand by 1 no.
13.	III	FORMAT FOR GUARANTEED AUXILIARY POWER CONSUMPTION	Sr. no. 2	612 of 612	Degassed Water Pump – Working 1 no. + Stand by 2 nos.	Degassed Water Pump – Working 1 no. + Stand by 1 no.



**AMENDMENT TO TECHNICAL SPECIFICATION FOR DM
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		(TO BE FILLED BY THE BIDDER)				
14.	I	Sub-Section– I-A	P&ID FOR DM Plant	286 of 612	DIT (Density indicator transmitter) Non - Nucleonic (Vibration) Type Density Meter provided at each of the following locations by bidder: 1) At the outlet of ejector provided for hydrochloric acid measuring tank 1& 2 for SAC/WAC. 2) At the outlet of ejector provided for hydrochloric acid measuring tank 1& 2 for MB. 3) At the outlet of ejector provided for alkali measuring tank 1& 2 for SBA. 4) At the outlet of ejector provided for alkali measuring tank 1& 2 for MB.	DIT (Density indicator transmitter) Non - Nucleonic (Vibration) Type Density Meter & Density indicator (hydrometer type) both shall be considered by bidder in his scope for each of the following locations: 1) At the outlet of ejector provided for hydrochloric acid measuring tank 1& 2 for SAC/WAC. 2) At the outlet of ejector provided for hydrochloric acid measuring tank 1& 2 for MB. 3) At the outlet of ejector provided for alkali measuring tank 1& 2 for SBA/WBA. 4) At the outlet of ejector provided for alkali measuring tank 1& 2 for MB.



TITLE:
**TECHNICAL SPECIFICATION FOR
DM PLANT
1 X 660 MW PANKI TPS EXTENSION PROJECT**

BHEL DOCUMENTS NO.: PE-TS-426-163-A001

SECTION -I

SUB -SECTION :IA

REV. NO. 01

DATE: 27/06/2019

ANNEXURE-IIIA

ESTIMATED AUXILIARY POWER CONSUMPTION FIGURES

S.NO.	DESCRIPTION OF EQUIPMENT	NO OF EQUIPMENT		TOTAL GUARANTEED POWER CONSUMPTION FOR WORKING DRIVES AT MOTOR INPUT TERMINAL (IN KW)
		WORKING	STANDBY	
1	DM Plant Feed Pump	1	1	92.7
2	Degassed Water Pump	1	1	
3	Degassed Air Blower	1	1	
4	UF feed pump	1	2	
5	Neutralized Effluent Disposal pump	1	3	
6	Potable water Pump	1	1	
				Total (Kw)



TITLE:

TECHNICAL SPECIFICATION FOR
DM PLANT
1 X 660 MW PANKI TPS EXTENSION PROJECT

BHEL DOCUMENTS NO.: PE-TS-426-163-A001

VOLUME

SECTION –III

REV. NO. 01

DATE: 27/06/2019

FORMAT FOR GUARANTEED AUXILIARY POWER CONSUMPTION
(TO BE FILLED BY THE BIDDER)

S.NO.	DESCRIPTION OF EQUIPMENT	NO OF EQUIPMENT		TOTAL GUARANTEED POWER CONSUMPTION FOR WORKING DRIVES AT MOTOR INPUT TERMINAL (IN KW)
		WORKING	STANDBY	
1	DM Plant Feed Pump	1	1	
2	Degassed Water Pump	1	1	
3	Degassed Air Blower	1	1	
4	UF feed pump	1	2	
5	Neutralized Effluent Disposal pump	1	3	
6	Potable water Pump	1	1	
				Total (Kw)

Note-Base auxiliary power consumption figure for the system (for working drives only) has been considered as **92.7 KW**. As long as bidder's quoted total guaranteed power consumption (GPC) above remains within Base auxiliary power consumption figure, there will be no technical loading of bid on power consumption for evaluation. However, if bidder's quoted GPC exceeds base auxiliary power consumption figure, there shall be technical loading of bid for evaluation @ ₹ 5, 84,000/- (Rupees Five lacs and eighty four thousand) per KW of additional power over Base auxiliary power consumption figure.

Bidder's guaranteed auxiliary power consumption as furnished above shall be demonstrated by the successful bidder during performance testing at works/ site. In case power consumption is higher than Base auxiliary power consumption figure / bidder's quoted GPC whichever is higher, during inspection/ PG test, penalty @ ₹ 5, 84,000/- (Rupees Five lacs and eighty four thousand) per additional KW shall be levied on vendor. (+) 1.0% of the guaranteed Auxiliary Power Consumption shall be acceptable shortfall with LD.

Sr. No.	Volume	PDF Page No.	Tender Page No.	Section	Existing Clause	Deviation / Comments / Remarks / Amended Clause	BHEL Reply dated 20.07.2019
	Mechanical						
1	08-TECHNICAL SPECIFICATION PART 2 OF 4	59 Of 80	307 of 612	DATASHEET - A	UF FEED TANK/FEED TANK FOR ULTRA FILTRATION UNITS Internal Protection - Rubber lined (3x1.5mm thk RL of shore hardness 65 ± 5 Scale A)	Effective capacity of tank is minimum 100 m3. Hence it is site fabricated tank. As per tender internal protection is rubberlining. But it will difficult to done hot rubberlining at site. Hence bidder will do cold rubberling to this tank.	Tender specification requirement is clear, bidder to follow the same.
2	08-TECHNICAL SPECIFICATION PART 2 OF 4	65 Of 80	313 of 612	Valves P&ID	- Ebonite lined diaphragm valves for corrosive services - Elastomer lined butterfly valves for normal services	As per this clause we have considred butterfly valves for normal services & diaphragm valves only for corrosive services.	Tender specification requirement is clear, bidder to follow tender P&ID for the same.
3	Corrigendum -1, 2 & 3	11 of 12, 2 of 3 & 3 of 3			Sr. no.8 of Corrigendum-1, Sr. no. 3 of Corrigendum-2 & Sr. no.1 of Corrigendum-3: Specification requirement: d. ULTRA FILTRATION PLANT: a) Colloidal Silica as SiO2 - less than 1 ppb. b) Total Silica as SiO2- less than 10 ppb.	The accuracy of colloidal silica concentration below 10 ppb is not measurable. UF membrane manufacturer is not meeting the requirement of colloidal silica at UF outlet less than 1 ppb. UF membrane manufacturer recommend the Guarantee from UF plant outlet shall be: a) Colloidal Silica as SiO2 - <10 ppb b) Total Silica as SiO2- <20 ppb i.e. 10 ppb of colloidal silica + 10 ppb of reactive silica.	In case, no UF membrane suppliers is able to meet the guarantee the relevant supporting documents shall be shall be submitted by the vendor subject to customer approval during detail engineering without commercial & delivery implication to BHEL & end customer.
4	Corrigendum- 3	2 of 3			BHEL wants to clear the bidder that resin specification is clear in BHEL tender specification for 1X660 Panki TPS- DM Plant regarding uniformity coefficient of resins at page no. 375 of 612 at Sr no. m) "The uniformity co-efficient of resins shall be less than 1.2". In view of this Tender specification requirement is clear and bidder to follow the same.	As per resin manufacturer confirmation. < 1.2 uniformity co-efficient is only applicable for SAC & SBA resins not for WAC & WBA. For WAC & WBA it will be 1.7. Please confirm.	Tender specification requirement is clear, bidder to follow the same.
5	TECHNICAL SPECIFICATION PART 2 OF 4	38/80	286 of 612		Tender P & ID PE-DG-426-163-A001	Request to provide legible format of P & ID drawing for viewing correct understanding of scope and termination.	P & ID drawing of DM plant attached with the tender specification is clear and legible .
6	TECHNICAL SPECIFICATION PART 3 OF 4	35 of 220	363 of 612	Scope of technical requirments-C & I	Starter Panel along with local start/stop monitoring	We don't envisage any seprate requirement of local starter panel.	Noted.
7	TECHNICAL SPECIFICATION PART 3 OF 4	38 of 220	366 of 612	Scope of technical requirments-C & I	All transmitters/instruments shall be rack mounted along with protouding walkway.	We have not considered any separate walkway for rack mounted instruments/transmitters.	Noted.

Project: DM Plant For 1X660 MW UPRVUNL PANKI TPS EXT
Tender No.: PE/PG/PA1/E-6217/2019 dated JUNE 03, 2019
Doc. Title: **Additional Pre-Bid Queries (Technical)**

Sr. No.	Section	Clause No.	Page No.	Specification Requirement	Additional Clarification dated 01-July-2019	Reason for Bidder's Clarification / Assumption	BHEL Reply dated 20/07/2019
Mechanical Clarification							
1.	Corrigendum-1, 2 & 3	-	11 of 12 & 2 of 3	Sr. no.8 of Corrigendum-1, Sr. no. 3 of Corrigendum-2, sr. no. 1 of Corrigendum-3 : Specification requirement: d. ULTRA FILTRATION PLANT: a) Colloidal Silica as SiO₂ - less than 1 ppb. b) Total Silica as SiO₂- less than 10 ppb.	None of UF membrane manufacturer is None of UF membrane manufacturer are ready to submit offer complying with the requirement as specified in the tender. According to them, colloidal silica less than (<10 ppb) may escape in the outlet of UF and hence it cannot be guaranteed. Please confirm actual requirement. Further, total silica at outlet of UF shall be calculated considering 0.01 ppm reactive silica at the outlet of MB and the colloidal silica shall be added as guaranteed by the UF manufacturer.	UF membrane manufacturer recommend the Guarantee from UF plant outlet shall be: a) Colloidal Silica as SiO₂ - <10 ppb b) Total Silica as SiO₂- <20 ppb i.e. 10 ppb of colloidal silica + 10 ppb of reactive silica. Find UF Vendor response:  UF vendor reponse_.pdf	In case, no UF membrane suppliers is able to meet the guarantee the relevant supporting documents shall be shall be submitted by the vendor subject to customer approval during detail engineering without commercial & delivery implication to BHEL & end customer.

Project: DM Plant For 1X660 MW UPRVUNL PANKI TPS EXT
Tender No.: PE/PG/PA1/E-6217/2019 dated JUNE 03, 2019
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Sr. No.	Section	Clause No.	Page No.	Specification Requirement	Additional Clarification dated 01-July-2019	Reason for Bidder's Clarification / Assumption	BHEL Reply dated 20/07/2019
2.	I	Datasheet A	291 of 612	7.4 Capacity- 25 m3/hr 7.5 Pump total head excluding losses in the pump- 62 MWC 7.6 Pump speed - 1500 rpm	Due to low capacity and high head requirement, pump manufacture recommended 2900 rpm instead of 1500 rpm. We request you to consider pump speed as 1500/2900 rpm.		Acceptable, subjected to acceptance by customer without commercial and delivery implication to BHEL & end customer.

1X660 MW PANKI TPS EXT.PROJ. UTTAR PRADESH RAJYA VIDYUT UTPADAN NIGAM LIMITED									
PRE BID CLARIFICATION SCHEDULE FOR DM PLANT (2X65 m3/hr)									
S.N	VOLUME	SECTION	CLAUSE No	PAGE No	SPECIFIC ACTION	REQUIREMENT	CLARIFICATION REASONS FOR	CLARIFICATION	BHEL REPLY DATED 20/07/2019
1	Part 1	SECTION : I	1.02	Page 159 of 612	ANNEXURE VI	MANDATORY SPARES LIST FOR DM PLANT PACKAGE	1.02 - Horizontal Pumps - Impeller, shaft, Packing rings, shaft sleeves, Pump & Motor bearing, Mechanical seal - One no. each for each type of pump	We would like to highlight that, as per the tender we have various pumps like UF feed pump, DG water transfer pump, UF & DMF back wash pump etc. which all comes under Horizontal pumps category. We request the client to kindly confirm whether the bidder should consider spares for each type of pump (Horizontal Pump) or each service /application of the pump (UF feed pump, DG water transfer pump, UF & DMF back wash pump etc) as per the spares list, please confirm.	Tender specification requirement is clear, bidder to follow the same.