



BHARAT HEAVY ELECTRICALS LIMITED
PROJECT ENGINEERING MANAGEMENT, NOIDA

Date-17-Jun-25

CORRIGENDUM- 05

PROJECT	:	1 X 800 MW NTPC Sipat STPP Stage-III
PACKAGE	:	WATER TREATMENT PACKAGES
ENQUIRY NO	:	77/25/6032/SAN Dated 23.05.2025
SUBJECT	:	TECHNICAL AMENDMENT 01 + PRE-BID CLARIFICATIONS

Type of Corrigendum			
Technical Corrigendum -	☒	Commercial Corrigendum -	☐

Bidders are requested to note that

1. TECHNICAL AMENDMENT NO # 1 to Technical specification PE-TS-520-404-W001 is enclosed.
2. Replies to pre-bid queries are enclosed.

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

Amit Kumar
Manager/BOP



**AMENDMENT TO TECHNICAL SPECIFICATION FOR
WATER TREATMENT PACKAGES
SIPAT SUPER THERMAL POWER PROJECT STAGE-III (1X800 MW)**

BHEL DOCUMENTS NO.: PE-TS-520-404-W001

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The following modifications with respect to Technical Specification for Water Treatment Packages for SIPAT SUPER THERMAL POWER PROJECT STAGE-III (1X800 MW), BHEL's Technical specification no PE-TS-520-404-W001 shall apply.

Bidder to note that existing clauses as appearing in the specification stands modified. Bidder to note and follow the same.

MODIFIED CLAUSES.

SL NO.	SECTION	SUB-SECTION/ DESCRIPTION	CLAUSE NO.	PAGE NO.	EXISTING	ADDITION/ MODIFICATION
1.	I	Sub Section – IA/ ANNEXURE – XII/ DRAWINGS	P & I DIAGRAM OF PRE-TREATMENT PLANT (SHEET 2 OF 2)	984 of 4283	Chemical House Length is indicated as 25000 mm in Ground Floor Plan of PTP & ETP - Chemical House.	Ground floor plan of Chemical house for PTP & ETP – The length of the building shall be read as 29,000 mm in place of 25,000 mm.
2.	I	Sub Section – IA/ Oxygen Dosing System	3.1	23 of 4283	Racks (1 No.) hold 40 cylinders, cylinders (40 Nos.), injector assemblies (4 nos.), tees (20 nos.), elbows (20 nos.), tubing (300 meter), compression fittings (60 nos.) for loose tubing.	Racks (1 No.) hold 40 cylinders, filled cylinders (40 Nos.), injector assemblies (4 nos.), tees (20 nos.), elbows (20 nos.), tubing (300 meter), compression fittings (60 nos.) for loose tubing.
3.	I	Sub Section – IA/ Technical Specification for Condenser on Load Tube Cleaning System (COLTCS)	-	147 of 4283	SIPAT STPP Stage-III (1x800 MW) Water Analysis	Please treat this information/ page as null and void. Clarified water analysis and circulating water analysis shall be derived by bidder from raw water analysis enclosed as Annexure- X/ Page No. 931-933/ Section-1 of Technical Specification.
4.	I	Technical Specification for Water Treatment Packages	-	-	Water Treatment Packages Bidder/ Water Treatment Packages Vendor/ BOP Vendor/ Supplier	All these shall be read as 'Bidder' for Water Treatment Packages.
5.	I	Sub Section – IB/ Specific Technical Requirements – Electrical	1.05.03	1447 & 1448 of 4283	-	AMC for switchgear is also included in bidder's scope. Bidder to refer the Technical Specification/ Sub-section -IB for AMC scope. These two pages (Page No. 1447 & 1448) of technical specification are replaced with the Pages attached as Annexure-1.
6.	I	Sub-Section – IA/ Specific	12. B) I. a.	91 of 4283	Two (2) numbers (3X100%)	Three (3) numbers (3X100%) (1Working



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		Technical Requirements – Mechanical/ DM Plant			(1Working + 1Standby) DM Plant Supply (Feed) pumps (Filtered Water Pumps/ UF Feed Pumps) along with motors, piping, valves, fittings, instrumentation & all other accessories as required.	+ 2Standby) DM Plant Supply (Feed) pumps (Filtered Water Pumps/ UF Feed Pumps) along with motors, piping, valves, fittings, instrumentation & all other accessories as required.
7.	I	Section – ID/ Specific Technical Requirement – CIVIL	-	2763-2813 & 2831-2838 of 4283	-	Page Nos. 2763 to 2813 and 2831-2838 of 4283 stands deleted from Technical Specification.
8.	I	Sub-Section – IA/ P&ID – PLANT WATER SYSTEM	-	456 - 458 of 4283	P&ID – PLANT WATER SYSTEM (3 sheets) (Clarified & Service Water System)	These drawings/ P&IDs are replaced with the attached ones as Annexure-II.
9.	I	Section – ID/ Specific Technical Requirement – CIVIL	-	3700 & 3701 of 4283	-	These two pages are not applicable for SIPAT project and hence, stands deleted.
10.	I	Sub-Section – IA/ Specific Technical Requirements – Mechanical/ Effluent Treatment Plant (ETP or LET)	7.1.7	41 of 4283	Two (2) nos. (1W+1S) SG UNIT-1 WASTE WATER TRANSFER PUMPS complete with all instrumentation, valves, piping, fittings, motor, base plate, coupling, re-circulation line etc.	Two (2) nos. (2W+0S) SG UNIT-1 WASTE WATER TRANSFER PUMPS-1 and Two (2) nos. (1W+1S) SG UNIT-1 WASTE WATER TRANSFER PUMPS-2, complete with all instrumentation, valves, piping, fittings, motor, base plate, coupling, re-circulation line etc.
11.	I	Sub-Section – IA/ Specific Technical Requirements – Mechanical/ DATASHEET - A FOR EFFLUENT TREATMENT PLANT (ETP OR LET)	12	1037 of 4283	SG UNIT-1 FLOOR WASH WATER TRANSFER PUMPS	SG UNIT-1 FLOOR WASH WATER TRANSFER PUMPS-1 and SG UNIT-1 FLOOR WASH WATER TRANSFER PUMPS-2
12.	I	Sub-Section – IA/ Specific Technical Requirements – Mechanical/ DATASHEET - A FOR EFFLUENT TREATMENT PLANT (ETP OR LET)	12 a.	1037 of 4283	Number required: Two (2W) nos.	Number required: Two (2) nos. (2W+0S) SG UNIT-1 WASTE WATER TRANSFER PUMPS-1 and Two (2) nos. (1W+1S) SG UNIT-1 WASTE WATER TRANSFER PUMPS-2



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13.	I	Sub-Section – IA/ Specific Technical Requirements – Mechanical/ DATASHEET - A FOR EFFLUENT TREATMENT PLANT (ETP OR LET)	12 f.	1037 of 4283	Rated capacity, each m ³ / hr.: 110	Rated capacity of each pump: • 420 m³/ hr. for SG UNIT-1 WASTE WATER TRANSFER PUMPS-1. • 10 m³/ hr. for SG UNIT-1 WASTE WATER TRANSFER PUMPS-2.
14.	I	Sub Section – IA/ ANNEXURE – XII/ DRAWINGS	P & ID - EFFLUENT TREATMENT PLANT	975 of 4283	PE-DG-520-164-W001 R0	P&ID of Effluent Treatment Plant (PE-DG-520-164-W001 R0) is now replaced with updated P&ID of Effluent Treatment Plant (PE-DG-520-164-W001 R1). This is enclosed as Annexure – III.
15.	I	Sub-Section – IA/ Specific Technical Requirements – Mechanical/ DATASHEET - A FOR EFFLUENT TREATMENT PLANT (ETP OR LET)	11 b.	1037 of 4283	Effective Capacity, m ³ : 110 M ³	Effective Capacity , m ³ : 210 M ³
16.	I	Sub-Section – IA/ Specific Technical Requirements – Mechanical/ Technical Specification for Misc. Pumps (Vertical)	-	Page No. 290 - 294 of 4283	Technical Data – Part – A	Technical Data – Part – A is replaced with Technical Data – Part – A (Revised). This is enclosed as Annexure – IV.
17.	I	Sub-Section – IA/ Specific Technical Requirements – Mechanical/ Technical Specification for Misc. Pumps (Horizontal)	-	Page No. 366 – 370 of 4283	Technical Data – Part – A	Technical Data – Part – A is replaced with Technical Data – Part – A (Revised). This is enclosed as Annexure – V.
18.	I	Sub-Section – IA/ Specific Technical Requirements – Mechanical/ Technical Specification COLTCS	Cl. No. 1	Page No. 181 of 4283	The bidder should have designed, manufactured, erected and commissioned COLTCS with ball collecting strainer having diameter of not less than 2100 mm, which is in successful operation in at least one (1) station for a minimum period of one (1) year prior to date 10-07-2024 and bidder is in business of COLTCS	The bidder should have designed, manufactured, erected and commissioned COLTCS with ball collecting strainer having diameter of not less than 2100 mm, which is in successful operation in at least one (1) station for a minimum period of one (1) year prior to date 20.09.2024 and bidder is in business of COLTCS on continuous



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on continuous basis.

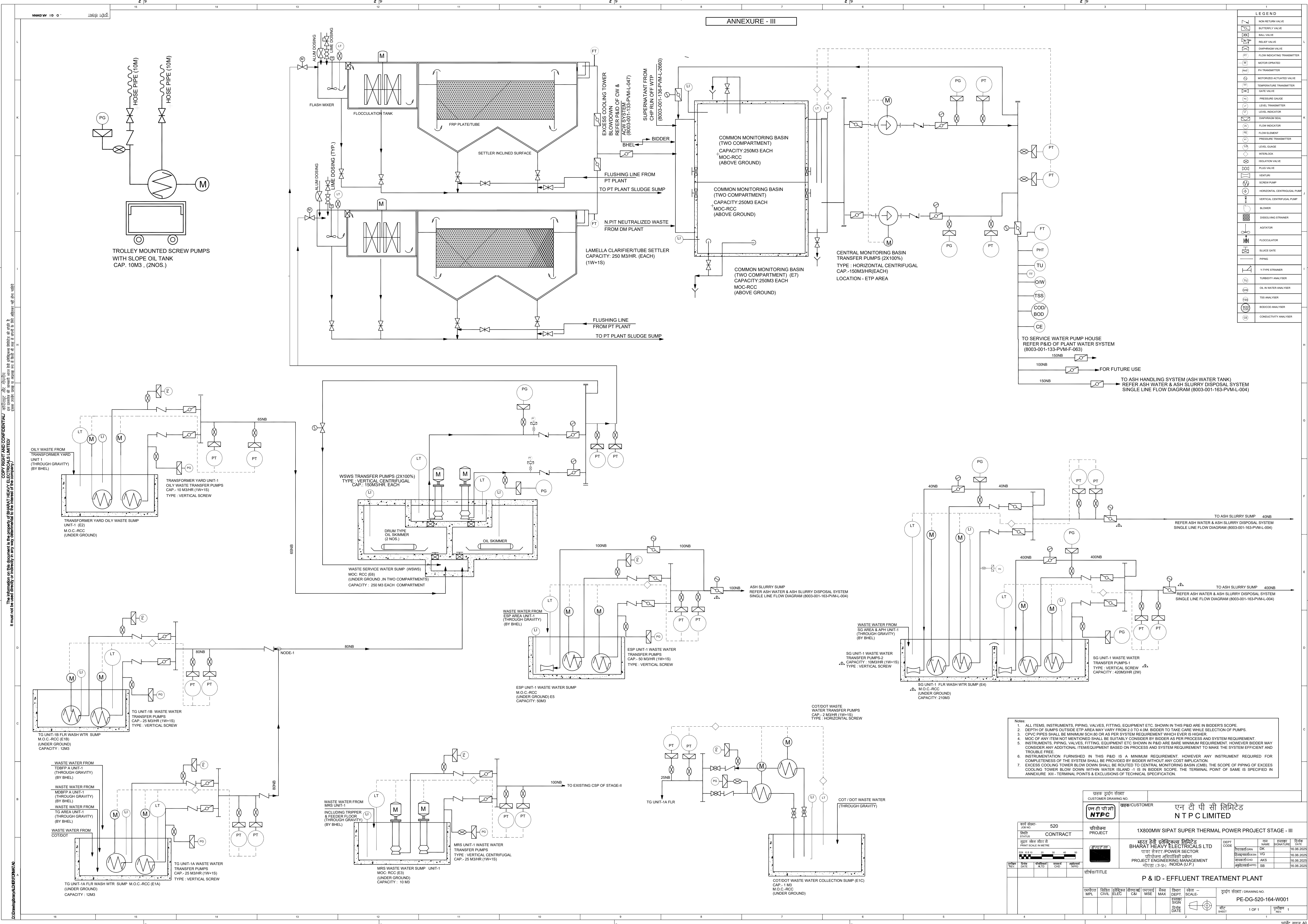
In support of successful performance of COLTCS for one year, bidder shall furnish Satisfactory Performance feedback certificates from End Customer (Owner) (in English) for at least one successfully executed contract which has been in use for at least One year prior to date 10.07.2024, indicating salient features like year of commissioning of COLTCS, rating of project, Size of COLTCS ball collecting strainer, project name etc., date of issue of certificate and name/ designation of the certificate issuer for power plant/ similar application industry.

basis.

In support of successful performance of COLTCS for one year, bidder shall furnish Satisfactory Performance feedback certificates from End Customer (Owner) (in English) for at least one successfully executed contract which has been in use for at least One year prior to date 20.09.2024, indicating salient features like year of commissioning of COLTCS, rating of project, Size of COLTCS ball collecting strainer, project name etc., date of issue of certificate and name/ designation of the certificate issuer for power plant/ similar application industry.

	SCOPE OF SUPPLY AND SERVICES एनटीपीसी NTPC		
1.05.03	The scope of work includes the following for feeding all the LV Loads of the power plant as required (a typical key single line diagram for Aux Power Supply Drawing No. 9500-999-POE-J-002 enclosed). The design and sizing criteria of the Switchboards shall be as detailed at Chapter B-0/B-06. The LV switchgears is of Intelligent type for Motor controller. The major LT Switchgear shall include the following: 415 Volt Switchgears 415 Volt Motor Control Centers 415 Volt AC Distribution Boards 220 V DC/110 V DC Distribution Boards 415 Volt AC MCCB Boxes 220/110/ Volt DC MCCB Boxes and Local Motor Starters -for ventilation fans (up to 5.5 KW) Local Emergency Push Buttons (EPB) -for all motors except ventilation fans Telescopic Trolley for Breaker Handling MLDB/WLDB with Lighting/Welding Transformers (2 no's of MCCB both at Primary and Secondary End of Transformer shall be provided) Intelligent Motor control device Wall mounted Power Distribution Board. LV Bus ducts & Associated Support Structure Sandwich Busduct and Support Structure Spares (MCCB Modules less than 100 A and MPCB Modules): All Switchgears, Motor Control Centres (MCCs) & AC/DC distribution boards, etc. shall have at least twenty per cent (20%) or minimum two (whichever is higher) fully equipped MCCB/MPCB modules of each rating as spares which shall be uniformly distributed over different vertical sections. Spares (MCCB modules—100A and higher—Starter/DAE-OG/DM Modules): In addition, all Switchgears, MCCs and AC distribution boards shall have as spares at least twenty per cent (20%) of starter modules/MCCB/DAE-OG/DM modules or at least one module (whichever is higher) of each rating range of the selection table, equipped for the rating of the largest auxiliary fed from that range. It is preferable to supply LT Switchgears and LT Bus ducts from one/ two manufacturers. In addition to above, LV Switchgears/MCCs/feeders as indicated under Clause 1.19.00, required for Employer's requirement, shall also be in Contractor scope. Contractor's scope also include supply and laying of the Insulating mat in front of LT Switchgears in switchgear rooms. Switchgear /Numerical Relay Networking The Contractor's scope of work shall include the following for all the 11KV/ 3.3KV and LV Switchgears under this package. The communication architecture and design criteria have been explained in chapter B-05(B) of the specification. The Contractor's scope of work shall include complete design, engineering, supply, installation,		
SIPAT SUPER THERMAL POWER PROJECT STAGE- III (1X800 MW) EPC PACKAGE		TECHNICAL SPECIFICATION SECTION – VI, PART-A BID DOC NO. :	SUB-SECTION-IIB ELECTRICAL SYSTEM / EQUIPMENTS
			PAGE 3 OF 20

SCOPE OF SUPPLY AND SERVICES		एन टी पी सी NTPC	
1.06.00	testing and commissioning and AMC (Three Years) of the following. a) Communicable Numerical Relays (with IEC 61850) in all MV Switchgears & LV Switchgears. b) IEC 61850 Ethernet switches in Switchgear panels – Sufficient quantity of Ethernet switches as per requirement for all boards. At least 2 ports per switch shall be kept as spare ports. c) Cat5e Ethernet cable / FO cable for connection of Numerical Relays to Ethernet switches in all Switchgears. d) Optical Fibre Cable with fire-retardant outer sheath as required for the complete numerical relay network. e) Optical Fibre Cable termination equipment such as LIU, patch cord, etc. for the complete network. f) HMI stations - Bidder to install software corresponding in BHEL provided HMI station for bidder scope LT switchgear. AMC for software is in bidder scope.		
	The typical configuration of such a proposed system is as enclosed in Drawings 0000-205-POE-A-001. The numerical relay network shall include relays on all MV & LV switchgears being supplied under this package including Employer’s requirement indicated at 1.19.00. DC System: Battery and Battery Charger Lead acid plante type/ Nickel Cadmium batteries and Float cum boost chargers for main plant and all other areas in the scope of the contractor, as per system requirement. Following DC systems (Battery and Charger) shall be supplied to cater to various DC loads in the plant. The design and sizing criteria shall be as detailed out in the chapter B-0, Part-B of Technical specifications. 220V DC System for Main Plant and FGD 220V or 110V DC System for Ash silos 220V DC System for CHP Any other DC system as per system requirement It is preferable to supply DC system from one/ two manufacturers.		
SIPAT SUPER THERMAL POWER PROJECT STAGE- III (1X800 MW) EPC PACKAGE		TECHNICAL SPECIFICATION SECTION – VI, PART-A BID DOC NO. :	SUB-SECTION-IIB ELECTRICAL SYSTEM / EQUIPMENTS
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ANNEXURE - III

LEGEND	
	NON RETURN VALVE
	BUTTERFLY VALVE
	BALL VALVE
	RELIEF VALVE
	DEMINOR VALVE
	FLOW INDICATING TRANSMITTER
	MOTOR OPERATED VALVE
	PH TRANSMITTER
	MOTORIZED ACTUATED VALVE
	TEMPERATURE TRANSMITTER
	GATE VALVE
	PRESSURE GAUGE
	LEVEL TRANSMITTER
	LEVEL INDICATOR
	DEMINOR SEAL
	FLOW ELEMENT
	PRESSURE TRANSMITTER
	LEVEL GAUGE
	INTERLOCK
	ISOLATION VALVE
	PLUG VALVE
	VENTURI
	SCREW PUMP
	HORIZONTAL CENTRIFUGAL PUMP
	VERTICAL CENTRIFUGAL PUMP
	BLOWER
	DISSOLVING STRAINER
	AGITATOR
	FLOCCULATOR
	SLUDGE GATE
	PIPING
	Y-TYPE STRAINER
	TURBIDITY ANALYSER
	OIL IN WATER ANALYSER
	TSS ANALYSER
	BOD/COD ANALYSER
	CONDUCTIVITY ANALYSER

TO SERVICE WATER PUMP HOUSE
REFER P&ID OF PLANT WATER SYSTEM
(8003-001-133-PVM-F-063)

150NB

100NB

FOR FUTURE USE

150NB

TO ASH HANDLING SYSTEM (ASH WATER TANK)
REFER ASH WATER & ASH SLURRY DISPOSAL SYSTEM
SINGLE LINE FLOW DIAGRAM (8003-001-163-PVM-L-004)

- Notes:
- ALL ITEMS, INSTRUMENTS, PIPING, VALVES, FITTING, EQUIPMENT ETC. SHOWN IN THIS P&ID ARE IN BIDDER'S SCOPE.
 - DEPTH OF SUMP'S OUTSIDE ETP AREA MAY VARY FROM 2.0 TO 4.0M. BIDDER TO TAKE CARE WHILE SELECTION OF PUMPS.
 - CPVC PIPES SHALL BE MINIMUM SCH 80 OR AS PER SYSTEM REQUIREMENT WHICH EVER IS HIGHER.
 - MOC OF ANY ITEM NOT MENTIONED SHALL BE SUITABLY CONSIDER BY BIDDER AS PER PROCESS AND SYSTEM REQUIREMENT.
 - INSTRUMENTS, PIPING, VALVES, FITTING, EQUIPMENT ETC SHOWN IN PAID ARE BARE MINIMUM REQUIREMENT. HOWEVER BIDDER MAY CONSIDER ANY ADDITIONAL ITEM/EQUIPMENT BASED ON PROCESS AND SYSTEM REQUIREMENT TO MAKE THE SYSTEM EFFICIENT AND TROUBLE FREE.
 - INSTRUMENTATION FURNISHED IN THIS P&ID IS A MINIMUM REQUIREMENT. HOWEVER ANY INSTRUMENT REQUIRED FOR COMPLETENESS OF THE SYSTEM SHALL BE PROVIDED BY BIDDER WITHOUT ANY COST IMPLICATION.
 - EXCESS COOLING TOWER BLOW DOWN SHALL BE ROUTED TO CENTRAL MONITORING BASIN (CMB). THE SCOPE OF PIPING OF EXCESS COOLING TOWER BLOW DOWN WITHIN WATER ISLAND - 1 IS IN BIDDER SCOPE. THE TERMINAL POINT OF SAME IS SPECIFIED IN ANNEXURE - XII. - TERMINAL POINTS & EXCLUSIONS OF TECHNICAL SPECIFICATION.

ग्राहक द्वारा संचालित CUSTOMER DRAWING NO.		ग्राहक/CUSTOMER	
एन टी सी लिमिटेड NTPC LIMITED			
ड्राफ्ट स्टेटस CONTRACT	परियोजना PROJECT	1X800MW SIPAT SUPER THERMAL POWER PROJECT STAGE - III	
भारत हेवी इलेक्ट्रिकल्स लिमिटेड BHARAT HEAVY ELECTRICALS LTD		DEPT CODE	
पावर सेक्टर (POWER SECTOR)		डिज़ाइनर DR	
प्रोजेक्ट इंजीनियरिंग मैनेजमेंट PROJECT ENGINEERING MANAGEMENT		ड्राफ्टिंग VS	
नोएडा (उ.प्र.) / NOIDA (U.P.)		डेटा 16.06.2025	
		डिज़ाइनर SB	
		डेटा 16.06.2025	
शीट/TITLE		शीट - SCALE	
कार्यालय MP		ड्राफ्टिंग संचालित / DRAWING NO.	
सिविल CIVIL		PE-DG-520-164-W001	
इलेक्ट्रिकल ELEC		शीट 1 OF 1	
CAI		पृष्ठिका REV 1	
MSE			
MAX			
DEPT.			
ड्राफ्टिंग SIGN			
डेटा DATE			

ANNEXURE-IV

	TECHNICAL SPECIFICATION MISC. PUMPS (VERTICAL) 1X800 MW SIPAT STPP STAGE-III	PE-TS-520-100-W002	
		REVISION NO.- 01	
		Dated : 16.06.2025	
TECHNICAL DATA - PART - A (REVISED)			
SL.NO	DESCRIPTION	UOM	DETAIL
	Designation/Name of the Pump		RAW WATER (PT & ASH) PUMP
1.0	Scope of Supply & Services		
	The scope covers the design, manufacture, assembly, inspection and testing at manufacturer's and/or his sub-contractors works, proper packing for delivery and Erection & commissioning at site for Miscellaneous Pumps complete with all accessories as per the requirements specified in this specification, PG Test at site and any other services, etc. if called for in the succeeding sections of the specification.		
1.1	Scope of supply of Pump Accessories and Spares:		
1.1.1	LT Electric motor with cable glands and lugs at motor end.		No (HT Motor is free issue by BHEL)
1.1.2	Strainer at Pump Bowl Assembly Inlet		As per Bidder's Standard Design
1.1.3	Pump motor coupling (Heavy duty) along with coupling guard		Yes
1.1.4	Common base/sole plate for pumps and motor		Yes
1.1.5	Thrust block assembly (Thrust pads, attachments) for transferring the pump thrust to concrete thrust block (concrete thrust block in purchaser scope)		No, Bidder to design the pump foundation system (base plate/ sole plate, discharge head, foundation bolts etc.) capable of transferring the pump thrust to the concrete pump foundation itself.
1.1.6	Self contained lubrication system along with all internal piping, valves, fittings, specialties etc. as required		Yes
1.1.7	Counter flanges for suction/ discharge nozzles along with fixing nuts, bolts and gaskets		Yes
1.1.8	Anchor bolts, nuts, seating steel works, shims etc. as necessary for mounting the pump-motor unit on civil foundations		Yes
1.1.9	Vent with piping, valves and Priming Connection on Pump Casing		Yes
1.1.10	Drain connections in Casing and Base Plate with piping & isolating valves/plugs		Yes
1.1.11	Lifting/ handling attachments/lugs for the pump and motor		Yes
1.1.12	Any fixtures, clamps, etc. necessary raising/ lowering of the pump assembly piece by piece		Yes
1.1.13	First fill of lubricants with topping requirements for one year of operation after commissioning and handing over of equipment		Yes

	TECHNICAL SPECIFICATION MISC. PUMPS (VERTICAL) 1X800 MW SIPAT STPP STAGE-III	PE-TS-520-100-W002	
		REVISION NO.- 01	
		Dated : 16.06.2025	
TECHNICAL DATA - PART - A (REVISED)			
SL.NO	DESCRIPTION	UOM	DETAIL
	Designation/Name of the Pump		RAW WATER (PT & ASH) PUMP
1.1.14	Set of “Special” Tools & Tackles for Pumps and motors, if any		Yes
1.1.15	Erection and commissioning spares, “on as required” basis		Yes
1.1.16	1 No. RTD for Pump Thrust Bearing		Yes
1.1.17	1 No. Reverse Rotation Indicating Switch for each Pump		Yes
1.1.18	Ratchet for protection from Reverse Rotation		Yes
1.1.19	Mandatory Spares (Details as per BOQ Schedule)		NIL
1.2	Scope of Services at Site:		
1.2.1	Erection and commissioning at site		Yes
1.2.2	Performance Testing at Site		Yes
1.3	Physical Sump Model Study of Pump House		No
1.4	CFD Sump Model Study of Pump House		No
2.0	DESIGN CODES & STANDARDS		
2.1	Design Standard		IS-1710/IS-5120/IS-5659/HIS
2.2	Performance Standard		IS-9137/IS-5120/HIS/ASME PTC 8.2
2.3	Flange & Counter Flange		AWWA class - C-207
2.4	Structural steel		IS 2062
2.5	Cast Iron		IS 210
2.6	Threaded Steel Fasteners		IS 1367
2.7	Alloy-Steel and Stainless Steel Bolting		ASTM A193
2.8	Carbon Steel, Alloy Steel, and Stainless Steel Nuts for Bolts		ASTM A194
2.9	Carbon Steel Castings		ASTM A216
2.10	Carbon Steel Forgings		ASTM A105
2.11	Stainless Steel Castings		ASTM A351
2.12	Stainless Steel Forgings		ASTM A276
2.13	Duplex Stainless Steel Castings		ASTM A890 / ASTM A995
2.14	Corrosion Resistance Alloy Steel Castings		ASTM A743
3.0	DESIGN /SYSTEM PARAMETERS		
3.1	KKS Number (TAG NO.)/Description		-
3.2	Total No. of pumps (Nos.)		1
3.3	No. of working & standby pumps		1 Working + 0 Standby
3.4	Location		Outdoor
3.5	Pump suitable for parallel operation		Not Applicable
3.6	Pump Duty		Continuous

	TECHNICAL SPECIFICATION MISC. PUMPS (VERTICAL) 1X800 MW SIPAT STPP STAGE-III	PE-TS-520-100-W002	
		REVISION NO.- 01	
		Dated : 16.06.2025	
TECHNICAL DATA - PART - A (REVISED)			
SL.NO	DESCRIPTION	UOM	DETAIL
	Designation/Name of the Pump		RAW WATER (PT & ASH) PUMP
3.7	Rated capacity (No negative tolerance permitted)	cu.m/hr	3500
3.8	Total Dynamic Head (TDH) at rated capacity (At Bowl, excluding Pumps Internal frictional losses upto discharge) (No negative tolerance permitted)	MWC	26.21
3.9	Max. limit on shut off head Corresponding to pump TDH at 51.5 Hz	MWC	115-130% of the rated head
3.10	Required Range of Operation of the Pump (% of Rated Capacity)		40% to 120% of the rated flow
3.11	The pumps offered have continuously rising head capacity curves from the duty point towards shut off point.		Yes
3.12	The pumps offered have stable rising H-Q curves within the "Range of Operation"		Yes
3.13	Pump characteristics		Non Overloading type & stable
3.14	Maximum permissible speed of pump	RPM	1500
3.15	Floor Level - for Pump Mounting	M	RL 282 M
3.16	Minimum Water Level	M	RL 272.5 M
3.16 (a)	Minimum Submerged Water Level	M	RL 272.0 M
3.17	Maximum Water Level	M	RL 280.5 M
3.18	Sump Invert Level	M	RL 269.1 M
3.19	Crane Hook Level	M	RL 288 M
3.20	Crane Capacity Available	Ton	5 Ton
3.21	Max. Handling Weight Limit	Ton	4 Ton
3.22	System Design Pressure	kg/cm2 (g)	10
3.23	Design Temperature	Deg. C	60
3.24	Specific Gravity of fluid to be handled		1
3.25	Quality of Water Handled		Raw water
4.0	CONSTRUCTION FEATURES		
4.1	Type of Pump to be offered		Vertical turbine, Wet pit & Non-Pull out type
4.2	Type of Impeller to be offered		Closed / Semi-open
4.3	Pump Discharge		Above Floor
4.4	Cooling/Lubrication Arrangement to be provided for Mechanical Seal/Gland		By Forced Water Lubrication
4.5	Cooling/Lubrication Arrangement to be provided for Thrust Bearing		By Oil & Forced Water Lubrication

	TECHNICAL SPECIFICATION MISC. PUMPS (VERTICAL) 1X800 MW SIPAT STPP STAGE-III	PE-TS-520-100-W002	
		REVISION NO.- 01	
		Dated : 16.06.2025	
TECHNICAL DATA - PART - A (REVISED)			
SL.NO	DESCRIPTION	UOM	DETAIL
	Designation/Name of the Pump		RAW WATER (PT & ASH) PUMP
4.6	Cooling/Lubrication Arrangement to be provided for Line Shaft Bearing		By Forced Water Lubrication
4.7	Shaft Sealing Arrangement		Gland Packing
4.8	Pump Discharge Connecting Pipe Size (OD x Thk)	mm x mm	813 X 8
4.9	Minimum Column Pipe Thickness	mm	10
4.10	Motor rating selection criteria		Continuous motor rating (at 50 deg C ambient) for all pumps shall be at least ten per cent (10%) above the maximum load demand of the driven equipment in the complete operating range (including run out condition) to take care of the system frequency/voltage variation
4.11	Type of coupling between pump & motor		Flexible Type
4.12	Material of Construction		
4.12.1	Casing & Suction Bell		2.5% Ni Cl to IS 210 GR FG-260 (S-0.1% max and P-0.15% max) with ss casing liner
4.12.2	Column Pipe & Discharge Head		Fabricated steel as per IS: 2062 (minimum thickness 10 mm) with 2 coats of epoxy coating inside & outside
4.12.3	Impeller		Austenitic SS ASTM A743 CF8M Grade
4.12.4	Shaft / Line Shaft		SS 410
4.12.5	Shaft sleeves		SS 410
4.12.6	Shaft Coupling		SS 410
4.12.7	Wear ring		SS 316
4.12.8	Fasteners (Wetted)		SS-316
4.12.9	Fasteners (Non-Wetted)		MS-High Tensile Steel
4.12.10	Pump/Motor Coupling		CI
4.12.11	Intermediate stage bearings		Cutless rubber with bronze retainer for below minimum water level and Thordon type for above minimum water level.
4.12.12	Gland Plate & Stuffing Box		2.5% Ni Cl to IS 210 GR FG-260
4.12.13	Lantern ring		As per Manufacturer standard
4.12.14	Mechanical seals (faces)		NA

	TECHNICAL SPECIFICATION MISC. PUMPS (VERTICAL) 1X800 MW SIPAT STPP STAGE-III	PE-TS-520-100-W002	
		REVISION NO.- 01	
		Dated : 16.06.2025	
TECHNICAL DATA - PART - A (REVISED)			
SL.NO	DESCRIPTION	UOM	DETAIL
	Designation/Name of the Pump		RAW WATER (PT & ASH) PUMP
4.12.15	Gland packing		Teflon Impregnated (Non-Asbestos type)
4.12.16	Base/ Sole Plate		MS Fabricated IS-2062 (min. thk.-12 mm) Epoxy Coated
4.12.17	Thrust pad (if applicable)		Carbon Steel with White Metal Lining
4.12.18	Counter Flange		Carbon Steel
4.13	Design Life of Bearing	Hrs	20000 Hrs
4.14	Sealing of Stuffing Box		By Gland Packing
4.15	Type of Mechanical Seal (If applicable)		Cartridge Type
4.16	The bidder shall make provisions for mounting following on the pump/ pump shaft: a. Purchaser's probes in bearings of pumps b. Flat surface with dimensions 60 MM x60 MM on bearing Housing for mounting vibration measuring block c. Key slots of dimensions 30MM (L) X 15 MM (W) X 3 MM (D) on each pump shaft or some other suitable location		Yes
5.0	PERFORMANCE PARAMETERS		
5.1	Performance Guarantee Tests at Shop/Works		Yes, To be performed by Manufacturer
5.2	Performance Guarantee Tests at Site		Yes, To be performed by Manufacturer
5.3	Maximum Limit on Auxiliary Power Consumption (Benchmark kW value) for each Continuous Duty Pump as per sl no.3.6 above		350 KW
5.4	Maximum Efficiency for HT motors / LT motors which are not in bidder's scope	%	94
5.5	LIQUIDATED DAMAGES RATE	Rs./kW	Rs 854250.0
5.6	Guaranteed vibration at manufacturer's works on any pump /motor bearing w.r.t. velocity (Vrms) as per ANSI/ HIS 9.6.4	Vrms	5.3
5.7	Guaranteed vibration at site on any pump /motor bearing w.r.t. velocity (Vrms) as per ANSI/ HIS 9.6.4	Vrms	4.3
5.8	Max. noise Level (Guaranteed at site)	dB	85 dB at 1 M distance

ANNEXURE-V

	TECHNICAL SPECIFICATION MISC. PUMPS (HORIZONTAL) 1X800 MW SIPAT STPP STAGE-III												PE-TS-520-100-W001
													REVISION NO.- 01
													Dated: 16.06.2025
TECHNICAL DATA - PART - A (REVISED)													
SL.NO	DESCRIPTION	UOM	DETAIL -TYPE 1	DETAIL -TYPE 2	DETAIL -TYPE 3	DETAIL -TYPE 4	DETAIL -TYPE 5	DETAIL -TYPE 6	DETAIL -TYPE 7	DETAIL -TYPE 8	DETAIL -TYPE 9	DETAIL -TYPE 10	DETAIL -TYPE 11
	Designation/Name of the Pump		DMCW TG PUMPS	DMCW SG PUMPS	ACW PUMPS	BOILER FILL PUMPS	Condensate transfer PUMPS	DM MAKE UP PUMPS	CW MAKEUP PUMPS	SERVICE WATER PUMPS	HVAC MAKE UP PUMPS	APH/ ESP WASH PUMPS	FGD GYPSUM WASH PUMPS
1.0	Scope of Supply & Services												
	The scope covers the design, manufacture, assembly, inspection and testing at manufacturer's and/or his sub-contractors works, proper packing for delivery and Erection & commissioning & replacement of gland packing with Mechanical Seal arrangement (if applicable) at site for Miscellaneous Pumps complete with all accessories as per the requirements specified in this specification, PG Test at site and any other services, etc. if called for in the succeeding sections of the specification.												
1.1	Scope of supply of Pump Set (Accessories and Spares);												
1.1.1	Electric motor with cable glands and lugs at motor end.		No (HT Motor is free issue by BHEL)	No (HT Motor is free issue by BHEL)	No (HT Motor is free issue by BHEL)	Yes	Yes	Yes	Yes	Yes	Yes	Yes (HT motor in Bidder scope)	Yes
1.1.2	Strainer at Pump Suction with Drain/Vent Valves		Yes, Simplex Basket Type	Yes, Simplex Basket Type	No	Yes, Conical Type	Yes, Conical Type	Yes, Conical Type	No	No	No	No	No
1.1.3	Pump motor coupling (Heavy duty) along with coupling guard		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
1.1.4	Common base plate for pumps and motor		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
1.1.5	Self contained lubrication system along with all internal piping, valves, fittings, specialties etc. as required		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
1.1.6	Counter flanges for suction/ discharge nozzles along with fixing nuts, bolts and gaskets		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
1.1.7	Anchor bolts, nuts, seating steel works, shims etc. as necessary for mounting the pump-motor unit on civil foundations		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
1.1.8	Vent with piping, valves and Priming Connection on Pump Casing		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
1.1.9	Drain connections in Casing and Base Plate with piping & isolating valves/plugs		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
1.1.10	Lifting/ handling attachments/lugs for the pump and motor		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
1.1.11	First fill of lubricants with toping requirements for one year of operation after commissioning and handing over of equipment		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
1.1.12	Set of "Special" Tools & Tackles for Pumps and motors, if any		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
1.1.13	Erection and commissioning spares, "on as required" basis		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
1.1.14	1 No. RTD for each Pump Bearing		Yes	Yes	Yes	No	No	No	No	No	No	Yes	No
1.1.15	1 No. Reverse Rotation Indicating Switch for each Pump		No	No	No	No	No	No	No	No	No	No	No
1.1.16	Mandatory Spares (Details as per BOQ Schedule)		NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
1.2	Scope of Services:												
1.2.1	Erection and commissioning at site		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
1.2.2	Replacement of Gland Packing with Mechanical Seal at Site after commissioning		Yes	Yes	NO	Yes	Yes	Yes	NO	NO	NO	NO	NO

	TECHNICAL SPECIFICATION MISC. PUMPS (HORIZONTAL) 1X800 MW SIPAT STPP STAGE-III												PE-TS-520-100-W001	
													REVISION NO.- 01	
													Dated: 16.06.2025	
TECHNICAL DATA - PART - A (REVISED)														
SL.NO	DESCRIPTION		UOM	DETAIL -TYPE 1	DETAIL -TYPE 2	DETAIL -TYPE 3	DETAIL -TYPE 4	DETAIL -TYPE 5	DETAIL -TYPE 6	DETAIL -TYPE 7	DETAIL -TYPE 8	DETAIL -TYPE 9	DETAIL -TYPE 10	DETAIL -TYPE 11
	Designation/Name of the Pump			DMCW TG PUMPS	DMCW SG PUMPS	ACW PUMPS	BOILER FILL PUMPS	Condensate transfer PUMPS	DM MAKE UP PUMPS	CW MAKEUP PUMPS	SERVICE WATER PUMPS	HVAC MAKE UP PUMPS	APH/ ESP WASH PUMPS	FGD GYPSUM WASH PUMPS
1.2.3	Performance Testing at Site			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
1.3	Note:			-	-	-	-	-	-	-	-	-	1 no. RTD (along with their mounting arrangement on motor) for each motor bearing in bidder scope. 1 no. RTD (along with their mounting arrangement on motor) for motor winding temperature in bidder scope	-
2.0	DESIGN CODES & STANDARDS													
2.1	Design Standard			IS-6595/IS-5120/IS-5659/HIS										
2.2	Performance Standard			IS-9137/IS-5120/HIS/ASME PTC 8.2										
2.3	Strainer Housing/Body excluding Flange			ASME Sec VIII, DIV I										
2.4	Flange/Counter Flange			AWWA class - C-207										
2.5	Structural steel			IS 2062										
2.6	Cast Iron			IS 210										
2.7	Threaded Steel Fasteners			IS 1367										
2.8	Alloy-Steel and Stainless Steel Bolting			ASTM A193										
2.9	Carbon Steel, Alloy Steel, and Stainless Steel Nuts for Bolts			ASTM A194										
2.10	Carbon Steel Castings			ASTM A216										
2.11	Carbon Steel Forgings			ASTM A105										
2.12	Stainless Steel Castings			ASTM A351										
2.13	Stainless Steel Forgings			ASTM A276										
2.14	Duplex Stainless Steel Castings			ASTM A890 / ASTM A995										
2.15	Corrosion Resistance Alloy Steel Castings			ASTM A743										
3.0	DESIGN /SYSTEM PARAMETERS													
3.1	KKS Number (TAG NO.)/Description			-	-	-	-	-	-	-	-	-	-	-
3.2	Total No. of pumps (Nos.)			3 (three) nos. for station	3 (three) nos. for station	3 (three) nos. for station	2 (two) nos. for station	2 (two) nos. for station	2 (two) nos. for station	2 (Two) nos. for station	2 (Two) nos. for station	2 (Two) nos. for station	2 (Two) nos. for station	2 (Two) nos. for station
3.3	No. of working & standby pumps			(2 Working + 1 Standby)	(2 Working + 1 Standby)	(2 Working + 1 Standby)	1 Working + 1 Standby	1 Working + 1 Standby	1 Working + 1 Standby	1 Working + 1 Standby	1 Working + 1 Standby	1 Working + 1 Standby	1 Working + 1 Standby	1 Working + 1 Standby
3.4	Location			Outdoor	Outdoor	Outdoor	Outdoor	Outdoor	Outdoor	Outdoor	Outdoor	Outdoor	Outdoor	Outdoor
3.5	Pump suitable for parallel operation			Yes	Yes	Yes	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
3.6	Pump Duty			Continuous	Continuous	Continuous	Intermittent	Intermittent	Continuous	Continuous	Continuous	Continuous	Intermittent	Continuous

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	TECHNICAL SPECIFICATION MISC. PUMPS (HORIZONTAL) 1X800 MW SIPAT STPP STAGE-III												PE-TS-520-100-W001
													REVISION NO.- 01
													Dated: 16.06.2025
TECHNICAL DATA - PART - A (REVISED)													
SL.NO	DESCRIPTION	UOM	DETAIL -TYPE 1	DETAIL -TYPE 2	DETAIL -TYPE 3	DETAIL -TYPE 4	DETAIL -TYPE 5	DETAIL -TYPE 6	DETAIL -TYPE 7	DETAIL -TYPE 8	DETAIL -TYPE 9	DETAIL -TYPE 10	DETAIL -TYPE 11
	Designation/Name of the Pump		DMCW TG PUMPS	DMCW SG PUMPS	ACW PUMPS	BOILER FILL PUMPS	Condensate transfer PUMPS	DM MAKE UP PUMPS	CW MAKEUP PUMPS	SERVICE WATER PUMPS	HVAC MAKE UP PUMPS	APH/ ESP WASH PUMPS	FGD GYPSUM WASH PUMPS
4.9	Material of Construction												
4.9.1	Casing		ASTM-A-351 CF 8M	ASTM-A-351 CF 8M	2.5% Ni Cl to IS 210 GR FG-260	ASTM-A-351 CF 8M	ASTM-A-351 CF 8M	ASTM-A-351 CF 8M	2.5% Ni Cl to IS 210 GR FG-260	2.5% Ni Cl to IS 210 GR FG-260	2.5% Ni Cl to IS 210 GR FG-260	2.5% Ni Cl to IS 210 GR FG-260	2.5% Ni Cl to IS 210 GR FG-260
4.9.2	Impeller		ASTM-A-351 CF 8M	ASTM-A-351 CF 8M	Bronze to IS 318 Gr. I/II or CF8M	ASTM-A-351 CF 8M	ASTM-A-351 CF 8M	ASTM-A-351 CF 8M	ASTM-A-351 CF 8M	ASTM-A-351 CF 8M	ASTM-A-351 CF 8M	ASTM-A-351 CF 8M	ASTM-A-351 CF 8M
4.9.3	Shaft		SS 316	SS 316	EN-8 (BS-970)	SS 410	SS 410	SS 410	SS 410	SS 410	SS 410	SS 410	SS 410
4.9.4	Shaft sleeves		SS 410	SS 410	SS 410	SS 410 (Hardened)	SS 410 (Hardened)	SS 410 (Hardened)	SS 410 (Hardened)	SS 410 (Hardened)	SS 410 (Hardened)	SS 410 (Hardened)	SS 410 (Hardened)
4.9.5	Impeller Wear ring (as applicable)		SS 316	SS 316	High leaded bronze to IS-318 Gr. V / SS 316 in case of SS impeller	SS 316	SS 316	SS 316	SS 316	SS 316	SS 316	SS 316	SS 316
4.9.6	Casing Wear ring (as applicable)		SS 316	SS 316	SS 316	SS 316	SS 316	SS 316	SS 316	SS 316	SS 316	SS 316	SS 316
4.9.7	Fasteners (Wetted)		SS-316	SS-316	SS-316	SS-316	SS-316	SS-316	SS-316	SS-316	SS-316	SS-316	SS-316
4.9.8	Fasteners (Non-Wetted)		SS-316	SS-316	SS-316	SS-316	SS-316	SS-316	SS-316	SS-316	SS-316	SS-316	SS-316
4.9.9	Coupling		CI	CI	CI	CI	CI	CI	CI	CI	CI	CI	CI
4.9.10	Gland		SS 316	SS 316	2.5% Ni Cl to IS 210 GR FG-260	SS 316	SS 316	SS 316	2.5% Ni Cl to IS 210 GR FG-260	2.5% Ni Cl to IS 210 GR FG-260	2.5% Ni Cl to IS 210 GR FG-260	2.5% Ni Cl to IS 210 GR FG-260	2.5% Ni Cl to IS 210 GR FG-260
4.9.11	Stuffing Box		ASTM-A-351 CF 8M	ASTM-A-351 CF 8M	2.5% Ni Cl to IS 210 GR FG-260	ASTM-A-351 CF 8M	ASTM-A-351 CF 8M	ASTM-A-351 CF 8M	2.5% Ni Cl to IS 210 GR FG-260	2.5% Ni Cl to IS 210 GR FG-260	2.5% Ni Cl to IS 210 GR FG-260	2.5% Ni Cl to IS 210 GR FG-260	2.5% Ni Cl to IS 210 GR FG-260
4.9.12	Lantern ring		SS-316	SS-316	Bronze	SS-316	SS-316	SS-316	SS-316	SS-316	SS-316	SS-316	SS-316
4.9.13	Mechanical seals (faces)		As per Manufacturer standard	As per Manufacturer standard	Not applicable	As per Manufacturer standard	As per Manufacturer standard	As per Manufacturer standard	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
4.9.14	Gland packing		Teflon Impregnated (Non-Asbestos type)	Teflon Impregnated (Non-Asbestos type)	Teflon Impregnated (Non-Asbestos type)	Teflon Impregnated (Non-Asbestos type)	Teflon Impregnated (Non-Asbestos type)	Teflon Impregnated (Non-Asbestos type)	Teflon Impregnated (Non-Asbestos type)	Teflon Impregnated (Non-Asbestos type)	Teflon Impregnated (Non-Asbestos type)	Teflon Impregnated (Non-Asbestos type)	Teflon Impregnated (Non-Asbestos type)
4.9.15	Water seal tube		SS tube	SS tube	SS tube	SS tube	SS tube	SS tube	SS tube	SS tube	SS tube	SS tube	SS tube
4.9.16	Base plate		MS fabricated IS-2062 IS2062 E250 (min. thickness 12 mm), Epoxy Coated										
4.9.17	Counter Flange		Carbon Steel	Carbon Steel	Carbon Steel	SS 304	SS 304	SS 304	Carbon Steel	Carbon Steel	Carbon Steel	Carbon Steel	Carbon Steel
4.9.18	Suction Strainer Housing/Body		CS as per IS :2062	CS as per IS :2062	NA	SS304	SS304	SS304	NA	NA	NA	NA	NA
4.9.19	Suction Strainer Element / Basket including Basket Stiffeners and Handle		SS316	SS316	NA	SS316	SS316	SS316	NA	NA	NA	NA	NA
4.9.20	Suction Strainer Gasket		Nitrile Rubber / EPDM (Min. 3 mm thick)	Nitrile Rubber / EPDM (Min. 3 mm thick)	NA	Nitrile Rubber / EPDM (Min. 3 mm thick)	Nitrile Rubber / EPDM (Min. 3 mm thick)	Nitrile Rubber / EPDM (Min. 3 mm thick)	NA	NA	NA	NA	NA
4.10	Design Life of Bearing	Hrs	20000	20000	20000	20000	20000	20000	20000	20000	20000	20000	20000
4.11	Sealing/Cooling of Stuffing Box		By Self Water	By Self Water	By Self Water	By Self Water	By Self Water	By Self Water	By Self Water	By Self Water	By Self Water	By Self Water	By Self Water
4.12	Type of Mechanical Seal (If applicable)		Cartridge Type	Cartridge Type	Cartridge Type	Cartridge Type	Cartridge Type	Cartridge Type	Cartridge Type	Cartridge Type	Cartridge Type	Cartridge Type	Cartridge Type
4.13	Cooling/Lubrication Arrangement to be provided for Mechanical Seal		By Self Water	By Self Water	By Self Water	By Self Water	By Self Water	By Self Water	By Self Water	By Self Water	By Self Water	By Self Water	By Self Water
4.14	The bidder shall make provisions for mounting following on the pump/ pump shaft: a. Purchaser's probes in both DE/NDE bearings of pumps b. Flat surface with dimensions 60 MM x60 MM on bearing Housing for mounting vibration measuring block c. Key slots of dimensions 30MM (L) X 15 MM (W) X 3 MM (D) on each pump shaft or some other suitable location		Yes	Yes	Yes	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Yes	Not Applicable
4.15	Construction Features of Suction Strainer												
4.15.1	Type of Strainer		Simplex Basket Type	Simplex Basket Type	NA	Conical type	Conical type	Conical type	NA	NA	NA	NA	NA
4.15.2	Type of Strainer Element		Wire Mesh supported with Perforated Plate	Wire Mesh supported with Perforated Plate	NA	Wire Mesh supported with Perforated Plate	Wire Mesh supported with Perforated Plate	Wire Mesh supported with Perforated Plate	NA	NA	NA	NA	NA

[illegible]

BHEL Replies to Pre-Bid Queries

SL. NO.	VOLUME / SECTION	CLAUSE / PAGE NO.	SPECIFICATION REQUIREMENT	CLARIFICATION	REASONS FOR CLARIFICATION
1.			Reverse auction	As a company policy we do not bid for the tender where in the evaluation criteria is Reverse Auction. Hence, we request you to kindly remove the RA from this tender enable us to participate in the tender.	Please follow NIT Terms & Conditions
2.			Basic Engg packgae	Kindly confirm whether BEP shall be approved by BHEL or NTPC.	Final approval of BEP shall be of NTPC only.
3.			PG test and trail run	Kindly confirm the duration of trail run and PG test.	Bidder to refer Annexure – III/ Section - IA of tech. specification.
4.			Dosing system	Kindly confirm whether all the dosing system shall be kept in open space or under building.	Bidder's query is not clear. Clause and Page No. is to be mentioned/ referred against which query is raised.
5.			ERD in RO system	ERD is required in the RO system where the TDS is quite high. Since in this tender TDS is very low hence ERD will not be able to add any value to system. Hence request you to kindly remove the ERD from the RO plant.	Bidder to follow the tech. specification.
6.			PG test	Kindly confirm whether the PG test shall be applicable for Heat exchanger, COLTCS, self-cleaning strainer and other pumps etc as we understand that we need to supply these items.	Package/ System/ Item wise PG tests requirements have been specified in the tech. specification. Bidder to follow the tech. specification.
7.			Pre-qualification	Kindly confirm whether the eligible criteria of Heat exchanger, COLTCS, self-cleaning strainer and other pumps shall be applicable to WTP	Tech. PQR is very clear in this regard. Bidder to follow the same.

SL. NO.	VOLUME / SECTION	CLAUSE / PAGE NO.	SPECIFICATION REQUIREMENT	CLARIFICATION	REASONS FOR CLARIFICATION
				bidder at the time of bidding or it shall be asked after the award of contract.	
8.		286/4283	BOP	The scope is divided between BOP vendor and BHEL. Please clarify.	BOP Vendor is to be referred/ read as WTP bidder/ vendor. Bidder to refer Tech. Amendment – 1.
9.			Raw water parameters	The raw water parameters are different at different page. At page no 296 /4283 the TDS is 200 PPM whereas on page no 932 of 4283 it is 260 PPM. Please clarify.	Bidder to refer Tech. Amendment – 1.
10.		359/4283	Division of scope	The scope of pumps are divided between BOP vendor and BHEL. Please clarify.	BOP Vendor is to be referred/ read as WTP bidder/ vendor. Bidder to refer Tech. Amendment – 1.
11.		481/4283	Low pressure piping	Please elaborate the scope of low-pressure piping.	Package/ System wise scope has clearly been defined/ elaborated in the tech. specification. However, Low Pressure Piping Specification is to be referred by the bidder for designing and detailing purpose.
12.			Force majeure clause	We are not able to locate force majeure clause in the tender. Please clarify.	Please refer clause no-30 of GCTC of GCC BOP Rev-00
13.	Technical specification for water treatment packages- part 5	Clause no 2 Scope, Page 1982 of 4283	Collection and transport of construction debris and scrap upto pre-defined locations inside plant area in consultation with NTPC in a routine manner shall	Please specify the location of the disposal point. We understand that approach road upto the disposal point shall be provided by the client and disposal site shall be managed by the client for smooth running of the Vehicles/ tippers.	Please note that in many of the areas of this plant, the construction activities are already going on and suitable disposal procedure is also specified/ opted by NTPC

SL. NO.	VOLUME / SECTION	CLAUSE / PAGE NO.	SPECIFICATION REQUIREMENT	CLARIFICATION	REASONS FOR CLARIFICATION
			be in bidder's scope.		(owner). Thus, bidder is requested to visit the site to understand, before submitting their bid for this tender.
14.	Technical specification for water treatment packages-part 5	Clause no 2 Scope, Page 1982 of 4283	Batching Plant required for Islands-1, 2, 3 & 4 shall be in scope of bidder and shall be located within Islands-1, 2, 3 & 4 only.	We understand that client will provide required space for installation of the batching plant and storage of the materials thereof.	Tech. Specification requirement is clear in this regard.
15.	Technical specification for water treatment packages-part 5	Clause no 2 Scope, Page 1982 of 4283	D. Any excavation and backfilling, rock blasting and further disposal as required for Civil works of Water Treatment Package (Islands-1, 2, 3 & 4).	We understand that if required rock blasting shall be allowed to break the hard rock for the excavation and licence for the same shall be obtained by the client. Kindly confirm	Please note that the blasting may or may not be required based on excavation and rock strata. As per bore log enclosed with tech. specification, moderate weathered rock is available. For the blasting activity, procurement of charges/ detonator etc. and obtaining licence as required is under bidder's scope.
16.	Technical specification for water treatment packages-part 5	Clause no 2 Scope, Page 1983 of 4283	H. Pipe/ Cable/ Duct supporting structures, trenches, culverts, duct banks, pedestals, Hume pipe culverts and thrust blocks etc. associated with all systems covered under the scope of	Please provide details of Pipe rack inside (Water packages) and outside the water package boundary. We also understand that pipe rack shall be designed and constructed by the bidder to cater the laying of the pipe Pertaining to the water packages only.	Pipe supports within the Islands -1, 2, 3 & 4 are to be provided by the bidder meeting technical specification requirements. Outside Island boundaries, pipe racks are indicated in Plot Plan enclosed with Tech. Spec. which are not

SL. NO.	VOLUME / SECTION	CLAUSE / PAGE NO.	SPECIFICATION REQUIREMENT	CLARIFICATION	REASONS FOR CLARIFICATION
			this package (Islands-1, 2, 3 & 4).		in bidder's scope of supply. Tech. specification requirements are clear in this regard, Bidder to follow the same.
17.	Technical specification for water treatment packages-part 6	Page 2007 of 4283	Master drawing list PEM Civil (water system package)	Kindly provide the mentioned all drawing (General arrangement and Sizing drawing) for our estimation work.	As per tech. spec. requirement, CIVIL designing is in Bidder's scope only. Bidder to carryout/ conduct their own assessment for estimation.
18.	General		Space for Site office and labour Accommodation	We understand that space for labour accommodation and site office shall be provided by client near to the plant site.	Bidder to refer Cl. No. 2.0 V/ Page No. 1983 of 4283/ Tech. Specification.
19.	General		Levelled upto the FGL and Hindrances free site	We understand that Levelled upto FGL and hindrance free site shall be provided by client to the bidder.	Bidder to refer Cl. No. 3.0 VI/ Page No. 1983 of 4283/ Tech. Specification.
20.	Section1-B	Specific Technical Requirement-Electrical, Page 1116	Standard Electrical Scope Between BHEL and Vendor.	As per Tender document for Packages COLTCS Please clarify the following:- 1) Whether 415 V MCC Panel is in the Scope of BHEL. 2) Please share the Quantity of the following for considering the cost in the BOQ:- a) Starter Cum control Panel b) Junction Box for Control & Instrumentation cable. c) Any Special type of cable likes Compensating, Co-axial, Prefab, MICC, Fiber Optical etc. d) Cable Glands and Lugs	Tech. Spec. is clear. Bidder to follow the same.

SL. NO.	VOLUME / SECTION	CLAUSE / PAGE NO.	SPECIFICATION REQUIREMENT	CLARIFICATION	REASONS FOR CLARIFICATION
				e) Conduit and Conduit Accessories.	
21.	Section1-B	Specific Technical Requirement-Electrical, Page 1117	Standard Electrical Scope Between BHEL and Vendor.	As per Tender document for Packages Mis. Pump (Supply Package) Please clarify the following:- 1) Whether 415 V MCC Panel is in the Scope of BHEL. 2) Please share the Quantities and details of the following for considering the cost in the BOQ:- a) Cable Glands and Lugs b) Mandatory Spares c) Recommended O&M Spares d) Any Other equipment /Material/Service required for completeness of system but not specified above. e) Electrical equipment GA drawing.	Tech. Spec. is clear. Bidder to follow the same.
22.	Section1-B	Specific Technical Requirement-Electrical, Page 1118-1119	Standard Electrical Scope Between BHEL and Vendor.	As per Tender document for Packages CDS/LDS/ODS Please clarify the following:- 1) Whether 415 V MCC Panel is in the Scope of BHEL. 2) Please share the Quantity of the following for considering the cost in the BOQ:- a) Local control Panel b) Power Cables ,Ordinary Control Cables and Screened Control Cables c) Junction Box for Control & Instrumentation cable. d) Any Special type of cable likes Compensating, Co-axial, Prefab, MICC, Fiber Optical etc.	Tech. Spec. is clear. Bidder to follow the same.

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				e) Cable Glands, Lugs and bimetallic strip. f) Input Control Schedule (C&I) g) Cable Interconnection Details h) Cable Block Diagram i) Electrical equipment GA drawing and Skid GA Drawings.	
23.	Section1-B	Specific Technical Requirement-Electrical, Page 1120	Standard Electrical Scope Between BHEL and Vendor.	As per Tender document for Packages Mis. Pump (Supply Package) Please clarify the following:- 1) Whether 415 V MCC Panel is in the Scope of BHEL. 2) Please share the Quantities and details of the following for considering the cost in the BOQ:- a) Mandatory Spares b) Recommended O&M Spares c) Any Other equipment /Material/Service required for completeness of system but not specified above. d) Input Control Schedule (C&I) e) Cable Interconnection Details f) Cable Block Diagram g) Equipment Layout drawings h) Electrical equipment GA drawing.	Tech. Spec. is clear. Bidder to follow the same.
24.	EPC Packages	Electrical requirement, Pg 1246	Voltage Level for Motors	As per Tender document Voltage level for Motors above 200 KW and up to 1500 KW but below statement states that Bidder may offer 3.3 kV motors for drives above 160 kW “ Please clarify whether 3.3 kV voltage shall be considered for motors above 160 kW or 200 kw.	Technical Spec. requirements are clear, please follow the same. For Water treatment package please refer electrical single line diagram, only 2 no. 3.3kV motor feeders have been envisaged, all other system is

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					at 415V level.
25.	EPC Packages	Electrical requirement, Pg 1247	Voltage Level 11 kV	As per tender document “11 KV systems - 50 kA rms for 1 second is considered but as per engineering practices 25 kA is considered for 11 kV .Please consider the same.	Bidder to follow Tech. Specification.
26.	3.06.00	LV Switchgears, Pg 1252	Air Circuit Breaker	As per Tender document “Air circuit breakers shall be provided for supply feeders above 400 Amps.” As per discussion with vendor ACB is available in Min 630 Amp rating. Please consider the same.	Bidder to follow tech. specification. Bidder to provide breakers wherever required & mentioned in Tech. Specification.
27.	3.06.00	LV Switchgears, Pg 1252	Motor Starter	As per Tender document “The motor feeders for 90kW & above shall be Air Circuit Breaker controlled” The 90 kW Motor Max current is 200 A. As per discussion with vendor ACB is available in Min 630 Amp rating. Please consider the motor feeders for 250kW & above shall be Air Circuit Breaker controlled	Bidder to follow Tech. Specification.
28.	General	General	Motor Starter	Please clarify whether the VFD/Soft Starters Shall be considered as per process requirement or else Please clarify the Minimum rating above which VFD/Soft Starters are considered. Please clarify the same.	Bidder to follow Tech. Specification. VFD/ DOL shall be as per process requirement and will be finalised during detail engineering,
29.	2.01.00	Sub Section B -22	Bus Duct	As per tender document” Generator bus duct is specified”. Please clarify the following:- 1) Whether the Diesel Generator Supply/Emergency supply is being provided by the client in case of power failure.	Please refer scope split matrix (electrical portion), Annexure – 1, which clearly indicates that generator busduct is not in bidder’s scope. 1). If process of the bidder

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				2) As per SLD shared under Annexure-II there is not Diesel Generator supply shown in SLD. Please clarify. 3) Please share the SLD for Generator showing the Transformer and Unit transformer Interconnection.	scope of supply requires emergency power requirement then the emergency feeder (3 phase-3 wire) shall be provided by client. In that case uncabled feeder (3phase-3wire) shall be provided. Any other voltage level (AC/ DC/ Single phase AC) as required will derived by Bidder. 2). As clarify above DG supply is not in bidder's scope. 3). Query is not relevant. Details provided with the tech. specification are sufficient.
30.	General	General	Cable Laying	Kindly confirm the following:- 1) The Power/Control/Instrument Cable Laying Outside the Building. 2) The Power/Control/Instrument Cable Laying Inside the Building.	Bidder to refer Page No. 1114 - 1120 of 4283 of Tech. Spec. for cable laying scope.
31.	General	Specific Points applicable for Various Packages, Pg 1709-1712	CIO2,DM Plant, CPU,PT Package, CW Treatment Package ,ETP Package, STP Package, COLTCS Package, SCS&DF package, Chemical Dosing System, Oxygen Dosing System, CHP Water Treatment Plant, Water system	As per the tender document "CIO2, DM Plant, CPU,PT Package, CW Treatment Package, ETP Package, STP Package, COLTCS Package, SCS&DF package, Chemical Dosing System, Oxygen Dosing System, CHP Water Treatment Plant, Water system miscellaneous pumps inside Clarified water pump house Raw Water pumps inside Raw water pump house DM Make-up Water pumps inside DM Make-up pump house Lime Dosing System shall be operated from DCS	Bidder to refer Page No. 1722 and 1723 of 4283 of Tech. Spec. for Control System Scope.

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			miscellaneous pumps inside Clarified water pump house Raw Water pumps inside Raw water pump house DM Make-up Water pumps inside DM Make- up pump house Lime Dosing System	(DCS is in BHEL's scope) through operator work stations. Kindly Confirm the Following :- 1) Whether the Separate PLC System shall be considered for all the Packages specified above or direct cabling is considered in DCS System. Please clarify the same.	

Sr. No.	Page No. Clause No.	Bidder Query	BHEL Reply to Pre-Bid Queries
1	Page No. 17	Chemical dosing system Scope for Oxygen cylinder, Ammonia, for chlorine di – oxide required precursor chemicals HCL & NaClO2 chemical,	Refer Technical Amendment - 1 for Oxygen Cylinders. However, Technical specification requirements are clear for scope of other chemicals. Bidder to follow the tech. specification requirements.
2	Page No. 23	Can Bidder go with chlorine cylinders for dosing, if cylinders are provided by Client since the capacity is 23 kg/hr. min.	Bidder to follow the tech. specification requirements.
3	Page No. 62	Water parameters for design of dosing system	Water quality parameters have already been defined under 'Design Requirements for CPU'/ Clause no. 8.2/ Page No. 52 - 54 of 4283 of Technical Specification and mentioned elsewhere in the specification. Bidder to follow the tech. specification requirements.
4	Page No. 73 10.3.6	Filter press operation auto mode or manual mode.	Please refer S. No. 12/ DATASHEET A FOR CHP RUN OFF WTP/ PAGE No. 1066 OF 4283. Bidder to follow the technical specification requirements.
5	Page No. 73 10.3.7	Filter press building RCC work scope BHEL or bidder.	Technical Specification Requirements are clear in this regard. Bidder to follow the technical specification requirements.
6	Page No. 89 12.1	Option A – (z) One (1X100%) no. Brine Solution Preparation Tank with dissolving basket & motorised agitator and 2 (2X100%) nos. Brine solution transfer pumps complete with drive motors, piping, valves and instrumentation etc – requirement of Brine Since DM is not required brine (NaCl)	Technical Specification Requirements are clear. Bidder to follow the technical specification requirements.
7	Page No. 91	Ultrafiltration unit feed pump written 2 Nos and 3 x 100%	Refer Technical Amendment - 1 in this regard.
3.1.1	23 of 4283	Control of all dosing system shall also be done from SWAS room in addition to the CCR and one no. OWS shall be provided for control & operation of all dosing system from SWAS room.	Same is in BHEL's scope of supply.
1.00.00	1781 of 4283	STEAM AND WATER ANALYSIS SYSTEM (SWAS)	Same is in BHEL's scope of supply.
C&I ANNEXURE-1 Note. 1	1723 of 4283	All required accessories at PLC/MP based system end for interfacing with DDCMIS (BHEL scope) including fibre optical cable between PLC/MP based system and DDCMIS (BHEL scope) shall be in Bidder's scope of supply.	Please refer 'standard electrical scope between BHEL and vendor' of respective area for other than profibus cable. Profibus cable and Profibus JB shall be in BHEL scope.