Amendment-3B to Technical Specifications (Section VI) of SIPAT-III (1X800 MW) EPC Package

S. No.	SPECIFICATION REFERENCE				Instead of	Read as
	Sec/ Part	Sub Section	Page No.	Clause No.		
PU-01B	VIA	IIA-12	1 of 11	1.00.00 b)	**Centralized air-conditioning system for main plant TG building** There shall be one (1) ……. static excitation control rooms (if applicable), SWAS room, water analysis lab, etc.	**Centralized air-conditioning system for main plant TG building** There shall be one (1) ……. static excitation control rooms (if applicable), SWAS room, water analysis lab, **CEP VFD Room, office area in control tower,** etc.
PU-02B	VIA	IIA-12	1 of 11	1.00.00 f)	**Air-conditioning system for office area in control tower** Air cooled condensing units (D-X type) mainly comprising scroll compressor, drive unit, condenser, AHUs, interconnected refrigerant piping, controls, instruments, base frame, etc.	……**Deleted**……
PU-03B	VIA	IIA-12	6 of 11	4.00.00 e)	One (1) No. automatic total flooding inert gas fire extinguishing system ……..programmer/server rooms, **PC rooms**, panel room, ……associated civil works **like shed** for inert gas storage cylinders, etc. as per the detailed specifications in Part-B of technical specification.	One (1) No. automatic total flooding inert gas fire extinguishing system ……..programmer/server rooms, ~~**PC rooms**~~, panel room, ……associated civil works ~~**like shed**~~ for inert gas storage cylinders, etc. as per the detailed specifications in Part-B of technical specification.

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S. No.	SPECIFICATION REFERENCE				Instead of	Read as
	Sec/ Part	Sub Sec-tion	Page No.	Clause No.		
PU-04B	VIA	IIA-12	9 of 11	4.00.00 h)	**Power Supply System** The DC Power Supply system shall consists of the following system(s):- i)…….. ii)…… **Necessary redundant transformers shall be provided by the contractor to derive the power supply from 415V, 3 phase, 3 wire incomers for (i) & (ii) above.** For detailed specification of power supply system, please refer part B of technical Specification.	**Power Supply System** The DC Power Supply system shall consists of the following system(s):- i)…….. ii)……. ~~**Necessary redundant transformers shall be provided by the contractor to derive the power supply from 415V, 3 phase, 3 wire incomers for (i) & (ii) above.**~~ For detailed specification of power supply system, please refer part B of technical Specification.
PU-05B	VIA	IIA-12	6 of 11	4.00.00 d), 2)	Coal transfer points, coal conveyors (excluding open coal conveyors) and biomass conveyors & TPs.	Coal transfer points, coal conveyors (excluding open coal conveyors) and biomass conveyors & TPs **including take-up area**.
PU-06B	VIA	IIA-12	7 of 11	4.00.00 h), 4)	Infra-red detectors (IRD) shall be provided in all coal conveyors and all biomass conveyors **before TP** under bidder's scope for detection of moving fire.	Infra-red detectors (IRD) shall be provided in all coal conveyors and all biomass conveyors **(before TP, before Silo)** under bidder's scope for detection of moving fire.
PU-07B	VIA	IV	21 of 73	1.01.07.02, b)	Power consumption at motor input terminals of …… ……system of water system control building, **office area in control tower**. Power consumption at rated duty point for water cooled chillers & air cooled condensing units shall be based on site test and for other drives like chilled water pumps, Condenser water Pumps & AHU/centrifugal fans shall be based on shop test. **(Duty factor for power consumption of A/C equipments of office area in control tower shall be 0.5)**	Power consumption at motor input terminals of …… ……system of water system control building~~**, office area in control tower**~~. Power consumption at rated duty point for water cooled chillers & air cooled condensing units shall be based on site test and for other drives like chilled water pumps, Condenser water Pumps & AHU/centrifugal fans shall be based on shop test. ~~**(Duty factor for power consumption of A/C equipments of office area in control tower shall be 0.5)**~~
PU-08B	VIA	IV	31 of 73	1.03.04 B., 2)	Capacity (TR) of Air cooled condensing (D-X) unit for A/C system of water system control building, **office area in control tower**.	Capacity (TR) of Air cooled condensing (D-X) unit for A/C system of water system control building, ~~**office area in control tower**~~.

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S. No.	SPECIFICATION REFERENCE				Instead of	Read as
	Sec/ Part	Sub Sec-tion	Page No.	Clause No.		
PU-09B	VI/A	VI Ch-07	3 of 16	1.06.00	4. Dew Point meters - 1 No.	4. Dew Point meters with sensor - 1 No.
PU-10B	VI/A	VI Ch-07	9 of 16	3.00.00	2.9 Scrapper rings	2.9 Scrapper rings (if applicable)
PU-11B	VI/A	VI Ch-07	10 of 16	3.00.00	6.0 DELUGE VALVE ASSEMBLIES	6.0 DELUGE VALVE ASSEMBLIES (as applicable)
PU-12B	VI/B	G-06	10 of 14	3.03.19 a)	a) Following shall be demonstrated at Site: i)……. ii)…… iii) ……..	a) Following shall be demonstrated at Site: i)……. ii)…… iii) …….. **iv)Commissioning and performance test of all Deluge valves.**
PU-13B	VI/B	A-01	59 of 87	3.12.02 iii)	Coal/biomass conveyors at ground level shall be provided with external …… ……. Further, fixed water monitors shall also be provided for coal conveyors / transfer points, etc. having elevation **20M** or more.	Coal/biomass/**limestone/gypsum** conveyors at ground level shall be provided with external …… …….. Further, fixed water monitors shall also be provided for coal/**biomass conveyors** / transfer points, etc. having elevation **15M** or more. **Combination of hydrant valves and Water monitor shall be provided alternately in coal stockpile.**
PU-14B	VI/B	A-01	59 of 87	3.12.02 iv)	All the landings of boiler staircases, turbine building, office area in control tower, crusher house (if applicable), track hopper/wagon tippler (if applicable), transfer points/junction house of CHP, bunker floors, etc. and other multi-storied structures of the entire plant shall be provided with hydrant landing valves.	All the landings of boiler staircases, turbine building, office area in control tower, crusher house (if applicable), track hopper/wagon tippler (if applicable), transfer points/junction house**/take-up belt area** of CHP/**Biomass**, bunker floors, etc. and other multi-storied structures of the entire plant shall be provided with hydrant landing valves.

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S. No.	SPECIFICATION REFERENCE				Instead of	Read as
	Sec/ Part	Sub Sec-tion	Page No.	Clause No.		
PU-15B	VI/B	A-01	60 of 87	3.12.02 v)	Each of the landing valves and external hydrant valves associated with the main plant (transformer yard, TG building, boiler and ESP area) areas shall be provided with a hose box. Each hose box shall contain two (2) numbers of 15M long hoses & coupling, branch pipes & nozzles, spanner etc as per TAC guidelines. For landing valves of various off-site buildings, the hose box shall have two (2) numbers 7.5 m long hoses, branch pipes, couplings, nozzles, spanners, etc. as per TAC guidelines.	Each of the landing valves and external hydrant valves associated with the main plant (transformer yard, TG building, boiler and ESP area) areas shall be provided with a hose box. Each hose box shall contain two (2) numbers of 15M long hoses & coupling, branch pipes & nozzles, spanner etc as per TAC guidelines. For landing valves of various off-site buildings, the hose box shall have two (2) numbers 7.5 m long hoses, branch pipes, couplings, nozzles, spanners, etc. as per TAC guidelines. **For offsite areas, 15M long hoses, branch pipes, couplings, nozzles, spanners, etc. in central hose stations of suitable quantity shall be provided for yard hydrants as per TAC guidelines.**
PU-16B	VI/B	A-01	64 of 87	3.12.06.01	**Pressure Venting:** Since huge quantity of ……..dampers, etc. shall be provided by the contractor. Required openings in the civil structure shall be provided by the owner. The contractor shall ……. engineering for approval.	**Pressure Venting:** Since huge quantity of ……..dampers, etc. shall be provided by the contractor. Required openings in the civil structure shall be provided ~~**by the owner**~~. The contractor shall ……. engineering for approval.
PU-17B	VI/B	A-01	67 of 87	3.13.01	21. As per ECBC codes minimum coefficient of performance (COP) for the chiller shall be as follows (based on AHRI conditions): A.COP of the water-cooled chiller: …….. …….. B.COP of the air-cooled chiller: …….. ……..	21. As per ECBC codes minimum coefficient of performance (COP) and star rating for the chillers shall be as per BEE. Minimum Star Rating/Co-efficient of performance (COP) of the Chillers shall be as per ECSBC/BEE regulations/guidelines.
PU-18B	VI/B	A-16	2 of 7	4.02.05	Any superior material & type (as per proven practice and relevant standard) of various components of **screw** compressor is also acceptable.	Any superior material & type (as per proven practice and relevant standard) of various components of **centrifugal** compressor is also acceptable.

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S. No.	SPECIFICATION REFERENCE				Instead of	Read as
	Sec/ Part	Sub Section	Page No.	Clause No.		
PU-19B	VI/B	A-17	1 of 30	2.02.00	Unless otherwise specified, equipment shall conform to the latest applicable Indian or IEC standard. Equipment complying with other authoritative standards such as British, USA, ASHRAE etc. will also be considered if it ensures performance equivalent or superior to Indian Standard.	Unless otherwise specified, equipment shall conform to the latest applicable **BEE, ECBC,** Indian or IEC standard. Equipment complying with other authoritative standards such as British, USA, ASHRAE etc. will also be considered if it ensures performance equivalent or superior to Indian Standard.
PU-20B	VI/B	A-17	1 of 30	3.01.00 a)	For Main Plant Areas [control room, control equipment room, UPS room, battery charger, static excitation control room (if applicable) SWAS room & water analysis lab]: i) Vapor compression type water chilling units: 2X100% ii) Chilled water pumps: 2X100% iii) Condenser water pumps: 2X100% iv) Cooling Towers: 2X100% v)AHUs: At least one (1) no. unit, capacity same as each working unit shall be provided as common standby.	For Main Plant Areas [control room, control equipment room, UPS room, battery charger, static excitation control room (if applicable) SWAS room & water analysis lab, CEP VFD Room, office area in control tower, etc.]: i) Vapor compression type water chilling units: 3X50% ii) Chilled water pumps: 3X50% iii) Condenser water pumps: 3X50% iv) Cooling Towers: 3X50% v)AHUs: At least one (1) no. unit, capacity same as each working unit shall be provided as common standby.
PU-21B	VI/B	A-17	1 of 30	3.01.00 c)	For office area in control tower: i) Air cooled (D-X Type) condensing units: 2X100% ii) AHUs: 2x100%	……**Deleted**……
PU-22B	VI/B	A-17	2 of 30	4.01.01	Each chilling unit shall …….. control. The screw compressor based chilling unit to be supplied shall be ARI /Eurovent/Equivalent standard certified (if applicable).	Each chilling unit shall …….. control. The screw compressor based chilling unit to be supplied shall be **BEE**, ARI /Eurovent/Equivalent standard certified (if applicable).
PU-23B	VI/B	A-17	5 of 30	4.05.01	Notes: (2) Split air conditioner shall conform to minimum three (3) star (***) rating and above of latest version of Bureau of Energy Efficiency (BEE) HVAC code issued by Ministry of Power, Govt of India.	Notes: (2) Air conditioners shall conform to minimum star rating as per latest code/standard/ guidelines issued by Bureau of Energy Efficiency (BEE), Ministry of Power, Govt of India.

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S. No.	SPECIFICATION REFERENCE				Instead of	Read as
	Sec/ Part	Sub Section	Page No.	Clause No.		
PU-24B	VI/B	A-17	13 of 30	6.05.04 i)	Where ever horizontal ducts …….. by the bidder. For vertical ducts running outside the building, bidder to take support from building columns and beams which is in Employer scope. However, all other auxiliary steel members, hooks, rods, etc. for supporting the duct work with **the employer's** beam & columns shall be provided by the bidder.	Where ever horizontal ducts …….. by the bidder. For vertical ducts running outside the building, bidder to take support from building columns and beams ~~**which is in Employer scope**~~. Further, all other auxiliary steel members, hooks, rods, etc. for supporting the duct work with ~~**the employer's**~~ beam & columns shall **also** be provided by the bidder.
PU-25B	VI/B	A-17	20 of 30	7.02.04	Air-Conditioning system for "Water system control room" shall be controlled through microprocessor based Distributed Digital Control Monitoring and Information System (DDCMIS). **For Air Conditioning System of "office area in control tower" Contractor shall provide Microprocessor /PLC/ controller integrated GIU based Control System as per Manufacturer's standard & proven practice.**	Air-Conditioning system for "Water system control room" shall be controlled through microprocessor based Distributed Digital Control Monitoring and Information System (DDCMIS). ~~**For Air Conditioning System of "office area in control tower" Contractor shall provide Microprocessor /PLC/ controller integrated GIU based Control System as per Manufacturer's standard & proven practice.**~~

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S. No.	SPECIFICATION REFERENCE				Instead of	Read as
	Sec/ Part	Sub Section	Page No.	Clause No.		
PU-26B	VI/B	A-17	21 of 30	7.04.00	b) Humidity sensor and gyserstat located in the return air duct shall actuate the PAN humidifier to obtain the desired degree of humidification. d)Heater banks shall be interlocked with the running of AHU, temperature of return air, humidity of return air and safety thermostat (airstat - located in front of the each heater in the supply air duct) e) AHU shall be started either locally or from the main control room of AC system by means of Remote / Manual selection facility. g) Each AHU shall be provided with temperature indicators and pressure transmitter in the chilled water piping inlet and outlet to monitor the air-conditioning load of each area.	b) Humidity and temp. sensor shall actuate the PAN humidifier to obtain the desired degree of humidification. d)Heater banks shall be interlocked with the running of AHU, temperature of return air, humidity of return air and safety thermostat (airstat). e) AHU shall be started either locally or from the main control room of AC system by means of Remote / Local selection facility. g) Each AHU room shall be provided with temperature transmitters in the chilled water piping inlet & outlet and flow transmitter at chilled water outlet to calculate and display air-conditioning load of each area in control system.
PU-27B	VI/B	A-17	22 of 30	8.01.02	The Ventilation system for main Plant area, (excluding roof extraction fans, standalone Air supply and Air Exhaust fans) …… ……of operation, status indication, annunciation, interlock and protection of pumps/drives, etc.	The Ventilation system for main Plant area**, ESP/FGD control building area** (excluding roof extraction fans, standalone Air supply and Air Exhaust fans) …… ……of operation, status indication, annunciation, interlock and protection of pumps/drives, etc..
PU-28B	VI/B	A-18	2 of 14	3.03.00	**For Stacker-Reclaimer machines:** Water for spray system shall be tapped from hydrant header running along the stockyard. For this, combination of **butterfly valves** & quick cam couplings ……. flexible hose shall be permanently connected to deluge valve.	**For Stacker-Reclaimer machines:** Water for spray system shall be tapped from hydrant header running along the stockyard. For this, combination of **gate valves** & quick cam couplings ……. flexible hose shall be permanently connected to deluge valve.

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S. No.	SPECIFICATION REFERENCE				Instead of	Read as
	Sec/ Part	Sub Section	Page No.	Clause No.		
PU-29B	VI/B	A-18	2 of 14	3.02.00	Spray system shall mainly comprise of the following: • …… • …… • …… • …… • …… • …… • …… • …… • …… • ……	Spray system shall mainly comprise of the following: • …… • …… • …… • …… • …… • …… • …… • …… • …… • …… • **Additional pressure switch (wherever required) on wet-detection line (near respective protected area having high elevation) shall be provided for required interfacing and operations of solenoid valves to facilitate deluge valve operations.**
PU-30B	VI/B	A-18	14 of 14	Annexure-II	5. Water line Gate / Sluice Valve b) BS:5150 (for valves at other locations) - Pressure rating: PN1.6 (as per IS:14846) / PN16 (as per BS:5150) -Working Pr. :12Kg/cm2	5. Water line Gate / Sluice Valve b) BS:5150 (for valves at other locations)- **valves shall be of rising spindle type.** - Pressure rating: PN1.6 (as per IS:14846) / PN16 (as per BS:5150) -Working Pr. :12Kg/cm2
PU-31B	VI/E	Tender Drawing	-	-	Schematic Diagram for A/C system for Main Plant TG Building (0000-000-POM-A-054 Rev-A)	Schematic Diagram for A/C system for Main Plant TG Building (0000-000-POM-A-054 Rev-B)

S. No.	SPECIFICATION REFERENCE				Instead of	Read as
	Section / Part	Sub-Section	Clause No.	Page No.		
D1B-4	E	Tender Drawing			WORKER'S ACCOMODATION FLOOR PLAN & ELEVATION tender draing no. 9551-XXX-POC-A-019	Deleted
D1B-5	VI/B	D-1-5	5.39.00		-	**HARD CRUSTING** Hard crusting in preassembly area and any other areas shall be done with 63mm to 45mm graded stone aggregate, watering and compacting each layer (not exceeding 200mm in thickness) to minimum of 85% of original volume of stone stack including filling the interstices of stone aggregate with moorum/locally available non-expansive soil. The minimum compacted thickness of stone aggregate layer shall be 200mm. The compacted subgrade below stone aggregate shall be 85% of standard proctor density
D1B-6	IID		1.00.00		7.m. Main Power House building.	7.m. Main Power House building. Air Conditioned Office of 250 sqm shall be provided in MPH building above CR in addition to other facilities specified.
D1B-7	IID		1.00.00			7. w. VFD Room in transformer Yard area, for CEP.
D1B-8	B	D-1-5	5.02.07		**ESP Control Building**	**ESP cum FGD electrical building**
D1B-9	B	D-1-5	5.02.11.01.10		2.0m wide walkway with M25 grad……	For **areas other than paved area**, 2.0m wide walkway with M25 grad……..
D1B-10	B	D-1-5	**5.23.02**		**Overhead / Ground Conveyor Galleries and Trestles** …….. …….. The steel structures using tubular	**Overhead / Ground Conveyor Galleries and Trestles** …… ……..

					sections shall be designed as per limit state method as per IS 800:2007. The properties and fabrication of tubular sections shall be as per IS 806 "Code of Practice for use of steel tubes in general building construction." and EN 1993-1-8:2005.	The steel structures using tubular sections shall be designed as per limit state method as per IS 800:2007. The properties and fabrication of tubular sections shall be as per IS:806 – "Code of Practice for use of steel tubes in general building construction." and EN 1993-1-8:2005.
D1B-11	B	D-1-5	**5.23.03**		For trestles…….. Encasement of the pedestal shall be done above the top of the stiffener plate.	For trestles ….. Encasement of the pedestal shall be done upto 75 mm(minimum) above the top of the stiffener plate.
D1B-12	B	D-1-5	5.23.17.01		Drainage System:- …… For Crusher House, pent house, transfer house each down comer shall lead the water / coal slurry/lime slurry into the peripheral drains (Brick drains with steel gratings provided around the building) which will lead the water / coal slurry to water / coal slurry to RCC pit (of 2 Cu.M capacity) to allow settling of coal. The water from the pit shall overflow into contractor's R.C.C drain, which will lead the discharge finally to the coal slurry settling pond. For Track hopper/Wagon Tippler & transfer houses peripheral drains (Brick drains with steel gratings provided around the building) shall lead the water / coal slurry to a local RCC pit (of 2 Cu. M. capacity) near each facility to allow settling of coal. The water from the pit shall overflow into contractor's R.C.C drain, which will lead the discharge to a coal slurry settling pit. Drainage of the complete biomass handling system facilities shall be discharged into coal settling pond after separation of biomass in biomass separation Pit. Drainage of the complete	Drainage System:- …… For Crusher House, pent house, transfer house each down comer shall lead the water / coal slurry/lime slurry into the peripheral drains which will lead the water / coal slurry to water / coal slurry to RCC pit (of 2 Cu.M capacity) to allow settling of coal. The water from the pit shall overflow into contractor's R.C.C drain, which will lead the discharge finally to the coal slurry settling pond. (a.) For **Track Hopper** & transfer houses peripheral drains shall lead the water / coal slurry to a local RCC pit (of 2 Cu. M. capacity) near each facility to allow settling of coal. The water from the pit shall overflow into contractor's R.C.C drain, which will lead the discharge to a coal slurry settling pit. In case of Control rooms and MCC buildings, Pump houses, etc water / coal slurry coming from down comers shall discharge into peripheral drains (which will lead the water / coal slurry into contractor's RCC drain, which will lead the discharge finally into coal slurry settling pond.

					Lime handling system facilities shall be discharged into bottom ash slurry sump after separation of lime in lime separation Pit. In case of Control rooms and MCC buildings, Pump houses, etc water / coal slurry coming from down comers shall discharge into peripheral drains (Brick drains with steel gratings provided around the building) which will lead the water / coal slurry into contractor's RCC drain, which will lead the discharge finally into coal slurry settling pond. …… Contractor's scope shall also include construction of necessary culverts under the rail lines / roads as per railway / IRC standards and approval of Railway culverts from concern Railway authorities.	Drainage of the complete biomass handling system facilities shall be discharged into coal settling pond after separation of biomass in biomass separation Pit. …… Contractor's scope shall also include construction of necessary culverts under the rail lines / roads as per railway / IRC standards and approval of Railway culverts from concern Railway authorities.
D1B-13	B	D-1-5	5.23.18		**Internal and external water supply, drainage etc.:-** The scope……. …… All buildings (including transfer houses, crusher house, MCC rooms, pump house etc.) shall be provided with open surface brick drains of minimum size of 300 mm width and 300 mm depth with removable steel gratings all around the periphery. All drains excepting the peripheral drains around the transfer points, crusher house, control / MCC. buildings, pumps house etc., shall be of RCC construction. Minimum 850 mm Width RCC drain shall be provided around crusher house area and its succeeding drains. All open RCC drains shall have removable steel gratings designed for loads as specified under loading clause. Minimum size of main bar of steel grating (Galvanised to 610 gm/m2) shall be 40 mm x 5mm and cross bars 6mm. At all entry or road/rail crossing point's RCC box/pipe culvert shall be provided. The opening size of	**Internal and external water supply, drainage etc.:-** The scope……. …… All buildings (including transfer houses, crusher house, MCC rooms, pump house etc.) shall be provided with open surface RCC drains of minimum size of 300 mm width and 300 mm depth with removable steel gratings all around the periphery. All drains shall be of RCC construction. Minimum 850 mm Width and 450 mm depth RCC drain shall be provided around stock pile area. Minimum 850 mm Width RCC drain shall be provided around crusher house area and its succeeding drains. All open RCC drains carrying coal/limestone/biomass slurry except in the stockpile area shall have removable steel gratings designed for loads as specified under loading clause. Moreover, all open drains around periphery of the CHP/LHP.GHP/BHP buildings shall have removable steel gratings designed for loads as specified under loading clause. All open RCC

					grating shall not be more than 90 mm x 35 mm. All drains as well as pre - cast covers shall be provided with edge protection angles and lifting hooks. …… …….. For sewerage below ground stoneware pipes conforming to IS: 651 with concrete bedding and haunch.	drains shall have removable steel gratings designed for loads as specified under loading clause. Minimum size of main bar of steel grating (Galvanised to 610 gm/m^2) shall be 40 mm x 5mm and cross bars 6mm. At all entry or road/rail crossing point's RCC box/pipe culvert shall be provided. The opening size of grating shall not be more than 90 mm x 35 mm. All drains as well as pre - cast covers shall be provided with edge protection angles and lifting hooks. …… …… For sewerage below ground stoneware pipes conforming to IS: 651 with concrete bedding and haunch.
D1B-14	B	D-1-5	5.02.24		**……..** Bidder **shall** integrate the boiler supporting structure with Mill & Bunker Building Structure. **……**	**……** Bidder **may** integrate the boiler supporting structure with Mill & Bunker Building Structure. **……..**
D1B-15	**VI/Part B**	D-1-10	10.05.00		Only fly ash bricks shall be used in all construction, except for elevator shafts, which can be either of burnt clay bricks or RCC construction as per functional / codal provisions. Bricks shall be table moulded/ machine made of uniform size, shape and sharp edges and shall have minimum compressive strength of 75kg/cm2. Burnt clay fly ash bricks and fly ash lime bricks shall conform to IS: 13757 and IS: 12894 respectively. Minimum fly ash content in fly ash based bricks shall be 25%	Only fly ash bricks shall be used in all construction, except for elevator shafts, which can be either of burnt clay bricks or RCC construction as per functional / codal provisions. Bricks shall be table moulded/ machine made of uniform size, shape and sharp edges and shall have minimum compressive strength of 75kg/cm2**. Burnt clay fly ash bricks conforming to IS: 13757, or Fly ash lime bricks conforming to IS: 12894 or Fly ash Cement Brick confirming to IS 16720 shall be used.** Minimum fly ash content in fly ash-based bricks shall be 25%."
D1B-16	**VI/Part B**	D-1-5	5.08.00		Complete storm water drainage system of Plant area is in bidder's scope. Storm water drain shall be designed taking into account the finished ground levels of the plant & surrounding area, drainage pattern, intensity of rainfall, etc. with a return period of 50 years**.** These values shall be based on minimum rainfall intensity of 75mm/hr. All RCC drains shall be either RCC Cast-in-Situ or	Complete storm water drainage system of Plant area is in bidder's scope. Storm water drain shall be designed taking into account the finished ground levels of the plant & surrounding area, drainage pattern, intensity of rainfall, etc. with a return period of 50 years**.** These values shall be based on minimum rainfall intensity of 75mm/hr. All RCC drains shall be either RCC Cast-in-Situ

					RCC Pre-cast drains. The minimum grade of concrete shall be M25 for RCC Cast-In-Situ drains and M30 for RCC Pre-cast drains.The maximum velocity for RCC open drains shall be limited to 1.8 metre per second. However, minimum velocity of 0.6 metre per second for self - cleansing shall be ensured. Bed slope not milder than 1 in 1000 shall be provided. The inside drain dimension at any point should not be less than 0 .45m (height) x 0.75m (breadth). ……	or RCC Pre-cast drains. The minimum grade of concrete shall be M25 for RCC Cast-In-Situ drains and M30 for RCC Pre-cast drains.The maximum velocity for RCC open drains shall be limited to 1.8 metre per second. However, minimum velocity of 0.6 metre per second for self - cleansing shall be ensured. Bed slope not milder than 1 in 1000 shall be provided. The inside drain dimension at any point should not be less than 0 .45m (height) x 0.75m (breadth). **The runoff coefficient of paved and unpaved area shall be 0.9 and 0.6 respectively.** **……**
D1B-17	**VI/Part B**	D-1-8	8.09.00		**A) Ingredients**: Geo-Polymer Concrete is a special type of concrete where no cement is used unlike……. Fly ash produced by coal-based power stations of NTPC, if available, will be issued free of cost for the production of Geo-polymer concrete on 'as is where is' basis.	**A) Ingredients**: Geo-Polymer Concrete is a special type of concrete where no cement is used unlike……. Fly ash produced by coal-based power stations of NTPC, if available, will be issued **at a cost of Rs. 1/Ton** for the production of Geo-polymer concrete on 'as is where is' basis.
D1B-18	Section VI, Part B	D-1-5 D-1-8, Civil works	5.06.05 5.32.20.2 8.01.02.017 8.02.01		It consists of 50 mm thick **P.C.C. M-20 grade** It consists of 50 mm thick **P.C.C. M-25 grade** **PCC (M-15)** shall be provided around all buildings, pits / sumps, clarifiers, tanks, etc. PCC encasement of Pylon supports and CW Pipes; **Plinth protection - M20**	PCC for plinth protection shall be M20 grade of 100 mm thickness.
D1B-19	General					Thickness of Brick wall mentioned any where as 250 mm thick shall be read as minimum thickness of 230mm
D1B-20	General					Brand names mentioned any where in civil specification part B sub-section D shall be null & void.

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Sl. No.	Specification Reference				Existing	Read as
	Part	Sub Sec	Page No	Clause No		
C-05B	VI/B	VI Chapter-A-05	17 of 27	7.07.07	All piping, valves & instrumentation shall be in the contractor's scope. Provision…..**A pH monitor shall be provided at the discharge of the pumps for measurement and control.** Complete….room. Feeding of lime to bucket elevator can be manual.	All piping, valves & instrumentation shall be in the contractor's scope. Provision…..**A pH monitor shall be provided in the waste water tank for measurement and control.** Complete….room. Feeding of lime to bucket elevator can be manual.
C-06B	VI/A	VI Chapter-2	25 of 30	4.00.00	6. Fittings for HPBP, high pressure LPBP etc. - 1 complete set	6. Fittings for HPBP, ~~**high pressure**~~ LPBP etc. - 1 complete set
C-07B	VI/A	IIC	16 of 20	5.03.00	For Main Plant, UPS System has to be supplied on per unit basis as per Cl. No 1.05.00 (A), Part B, IIIC-05 of the Technical Specification. For other offsite common control locations Water System CER, AHP CER (s) and CHP Control Room (s), UPS Configuration shall be as per Cl. No 1.05.00 (B), Part B. For all other operator locations with OWS UPS with configuration as per Cl. No 1.05.00 (C), Part B to be provided. Manual discharge resistance bank of adequate capacity shall be provided for Main Plant UPS & offsite common areas (Max rating). UPS of minimum 5 KVA rating to be provided for powering UPS loads of Air Compressors". Accessories and devices required for maintenance and testing of batteries shall be supplied on as required basis.	For Main Plant, UPS System has to be supplied on per unit basis as per Cl. No 1.05.00 (A), Part B, IIIC-05 of the Technical Specification. For other offsite common control locations Water System CER, AHP CER (s) and CHP Control Room (s) **and FGD CER**, UPS Configuration shall be as per Cl. No 1.05.00 (B), Part B. **For all other operator locations (like FOPH, AWRS & Ash SILO etc.) with OWS/Servers UPS with configuration as per Cl. No 1.05.00 (C), Part B to be provided. UPS of minimum 5 KVA rating to be provided for powering UPS loads of Air Compressors.** Manual discharge resistance bank of adequate capacity shall be provided for Main Plant UPS & offsite common areas (Max rating). ~~**UPS of minimum 5 KVA rating to be provided for powering UPS loads of Air Compressors".**~~ Accessories and devices required for maintenance and testing of batteries shall be supplied on as required basis.
C-08B	VI/B	IIIC-05	2 of 10	1.03.00	**(B1)** DC power supply system for UNIT (BOP) Area: DC power supply system shall comprise of two sets. Each set shall……. **(B2)** DC power supply system for areas other than Unit (**BOP**): DC power supply system shall comprise of two sets. Each set shall…….	**(B1)** DC power supply system for UNIT (**SG, TG & BOP**) Area: DC power supply system shall comprise of two sets. Each set shall……. **(B2)** DC power supply system for areas other than Unit (**SG, TG & BOP**): DC power supply system shall comprise of two sets. Each set shall…….
C-09B	VI/B	IIIC-04	1 of 36	1.05.00	All instruments envisaged for sea water applications, shall be provided with wetted parts made of	All instruments envisaged for sea water applications, shall be provided with wetted parts made of Monel/ Hastelloy C

					Monel/ Hastelloy C or any other material (if provenness experience of the proposed material for such applications is established by contractor). For Chlorine application: Instruments shall be provided with wetted parts (e.g., diaphragm seal, etc.) made of Hastelloy C. Also, filled liquid shall be Fluorolube oil/ Inert Hydrocarbon / CTFE etc., for these applications. For applications of FECL3 solution: Instruments shall be provided with wetted parts (e.g., diaphragm seal, etc.) made of Tantalum.	or any other material (if provenness experience of the proposed material for such applications is established by contractor). For Chlorine application: Instruments shall be provided with wetted parts (e.g., diaphragm seal, etc.) made of Hastelloy C. Also, filled liquid shall be Fluorolube oil/ Inert Hydrocarbon / CTFE etc., for these applications. For applications of FECL3 solution: Instruments shall be provided with wetted parts (e.g., diaphragm seal, etc.) made of Tantalum. **For limestone and gypsum slurry application instruments shall be provided with wetted parts MOC of Hastelloy or better.**
C-10B	VI/B	IIIC-04	10 of 36	6.00.00	**CONTINUOUS EMISSION MONITORING SYSTEM (CEMS): -** AS PER CONTRACTOR'S STANDARD AND PROVEN PRACTICE FOR MEETING SYSTEM AND LATEST CPCB REQUIREMENT. TOTAL NOX VALUES SHALL BE REPORTED AS NO2 I.E., NOX = NO + NO2 = NO X 1.53 + NO2 = NOX AS NO2.	**CONTINUOUS EMISSION MONITORING SYSTEM (CEMS): -** AS PER CONTRACTOR'S STANDARD AND PROVEN PRACTICE FOR MEETING SYSTEM AND LATEST CPCB REQUIREMENT. **Measurement for NO and NO2 shall be provided for correct reporting of NOx and NO2**. TOTAL NOX VALUES SHALL BE REPORTED AS NO2 I.E., NOX = NO + NO2 = NO X 1.53 + NO2 = NOX AS NO2.
C-11B	VI/A	VI Chapter-2	25 of 30	4.00.00	6. FITTINGS FOR HPBP, HIGH PRESSURE LPBP ETC. - 1 COMPLETE SET	6. FITTINGS FOR HPBP, ~~**HIGH PRESSURE**~~ LPBP ETC. - 1 COMPLETE SET
C-12B	VI/B	IIIC-02G	4 of 4	5.0	**Training**: 1. Developer/ Administrator level training: The Contractor…… 2. User level training: The Contractor shall…….. Training Material shall be…….	**Training**: 1. Developer/ Administrator level training: The Contractor…… 2. User level training: The Contractor shall…….. Training material shall be…….

						Above Training period to be considered over and above Training man-months mentioned in PART-C of Technical Specification
C-13B	VI/A	IV	2 of 78	1.00.01 g)	Instruments for PG test…… Control system loop tuning required to limit the variation of parameters during performance guarantee testing shall be completed prior to **PG Test & during** initial operation.	Instruments for PG test…… Control system loop tuning required to limit the variation of parameters during performance guarantee testing shall be completed prior to **PG Test during** initial operation.
C-14B	VI/A	IIC	13 of 20	4.00.00 (d) i	These TTs shall be mounted as defined in subsection **IIC-04**, PART-B & tender drawing part-E of the specifications.	These TTs shall be mounted as defined in subsection **IIIC-04**, PART-B & tender drawing part-E of the specifications.
C-15B	VI/B	IIIC-02	11-17 of 17	22.00.00 to 32.00.00	24.00.00 System Software Requirements **22.00.00 Data Communication System** **23.00.00 Grounding** **24.00.00 System Cabinets / Panels** **25.00.00 Marshalling, Relays & Relay Cabinets** **26.00.00 HART System** **27.00.00 Requirement for SOE functionality (Refer Scope of Supply and Services for applicability)** **28.00.00 System Documentation** **29.00.00 Warranty** **30.00.00 Annual Maintenance Service (AMS)** **31.00.00 Remote Service Center** **32.00.00 Testing & Commissioning Tool**	24.00.00 System Software Requirements **25.00.00 Data Communication System** **26.00.00 Grounding** **27.00.00 System Cabinets / Panels** **28.00.00 Marshalling, Relays & Relay Cabinets** **29.00.00 HART System** **30.00.00 Requirement for SOE functionality (Refer Scope of Supply and Services for applicability)** **31.00.00 System Documentation** **32.00.00 Warranty** **33.00.00 Annual Maintenance Service (AMS)** **34.00.00 Remote Service Center** **35.00.00 Testing & Commissioning Tool**
C-16B	VI/B	IIIC-02C	3 of 6	1.01.11	Firewall: Next generation Firewall (NGFW) shall have features of Packet filtering, Stateful inspection and deep packet inspection, high availability and load balancing, data encryption support for AES 128-256 bit, support for NAT, PAT and policy based NAT/PAT with…….. min. firewall throughput of 4 Gbps, min. **3DES**/AES VPN throughput of 400 Mbps…	Firewall: Next generation Firewall (NGFW) shall have features of Packet filtering, Stateful inspection and deep packet inspection, high availability and load balancing, data encryption support for– AES 128-256 bit, support for NAT, PAT and policy based NAT/PAT with…….. min. firewall throughput of 4 Gbps, min. ~~**3DES**~~/AES VPN throughput of 400 Mbps…
C-17B	VI/B	IIIC-02C	4 of 6	1.01.14	Necessary KVM switches for controlling multiple operator workstations/LVS workstations (up to four nos.) from single keyboard/mouse/video placed at UCD in Control Room shall be supplied. **For quantity of switches refer Part A**. These switches are intended to be used only for keyboard multiplexing.	Necessary KVM switches for controlling multiple operator workstations/LVS workstations (up to four nos.) from single keyboard/mouse/video placed at UCD in Control Room shall be supplied. ~~**For quantity of switches refer Part A.**~~ These switches are intended to be used only for keyboard multiplexing.

<table>
<tr><td>C-18B</td><td>VI/A</td><td>Attachment-3K</td><td>330 of 347</td><td>8.00.00</td><td>8.00.00 UPS system
8.01.00 We/our sub-vendor (M/s……) confirm that we meet the provenness requirements specified in Cl. No.6.6(c) of provenness requirements in the Sub-Section-IA, Part-A, Section-VI of Bidding Documents.</td><td>8.00.00 UPS system
8.01.00 We/our sub-vendor (M/s……) confirm that we meet the provenness requirements specified in Cl. No.6.6(d) of provenness requirements in the Sub-Section-IA, Part-A, Section-VI of Bidding Documents.</td></tr>
<tr><td>C-19B</td><td>VI/A</td><td>Attachment-3K</td><td>331 of 347</td><td>9.00.00</td><td>9.00.00 24 V DC Modular Charger
9.01.00 We/our sub-vendor (M/s……...) confirm that we meet the provenness requirements specified in Cl. No.6.6(d) of provenness requirements in the Sub- Section-IA, Part-A, Section-VI of Bidding Documents.</td><td>9.00.00 24 V DC Modular Charger
9.01.00 We/our sub-vendor (M/s……...) confirm that we meet the provenness requirements specified in Cl. No.6.6(e) of provenness requirements in the Sub- Section-IA, Part-A, Section-VI of Bidding Documents.</td></tr>
<tr><td>C-20B</td><td>VI/A</td><td>Attachment-3K</td><td>332 of 347</td><td>10.00.00</td><td>10.00.00 CCTV SYSTEM
10.01.00 We/our sub-vendor (M/s……) confirm that we meet the provenness requirements specified in Cl. No.6.6(e) of provenness requirements in the Sub-Section-IA, Part-A, Section-VI of Bidding Documents.</td><td>10.00.00 CCTV SYSTEM
10.01.00 We/our sub-vendor (M/s……) confirm that we meet the provenness requirements specified in Cl. No.6.6(f) of provenness requirements in the Sub-Section-IA, Part-A, Section-VI of Bidding Documents.</td></tr>
<tr><td>C-21B</td><td>VI/A</td><td>IV</td><td>48 of 78</td><td>1.03.26.02(IV)</td><td>All runback conditions listed below shall be proved by the Contractor without anyoil support.
-- FD/ID/PA fan trip
-- BFP/CEP/ trip
-- One mill and two mill trip
……...</td><td>All runback conditions listed below shall be proved by the Contractor without any oil support.
-- FD/ID fan trip
-- BFP/CEP trip
-- One mill and two mill trip.
……</td></tr>
<tr><td>C-22B</td><td>VI/A</td><td>VI
Ch-12</td><td>8 OF 9</td><td>7.00.00</td><td>
<table>
<tr><th>Sl No</th><th>Item</th><th>Quantity</th></tr>
<tr><td>(i)</td><td>PTZ camera</td><td>20 nos.</td></tr>
<tr><td>(ii)</td><td>Explosion proof camera</td><td>1 nos.</td></tr>
<tr><td>(iii)</td><td>Fixed Camera</td><td>2 nos.</td></tr>
</table>
</td><td>
<table>
<tr><th>Sl No</th><th>Item</th><th>Quantity</th></tr>
<tr><td>(i)</td><td>PTZ camera</td><td>20 nos.</td></tr>
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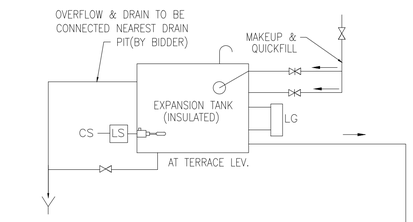
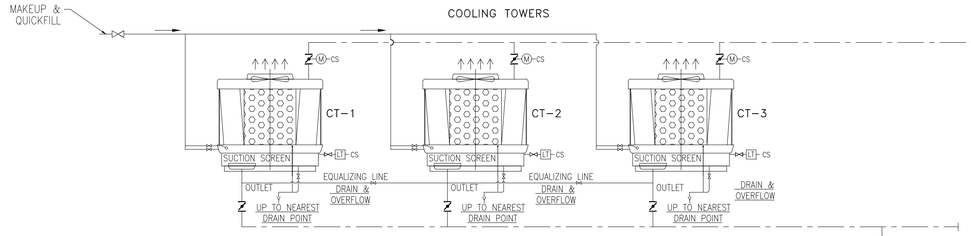
<tr><td>(iii)</td><td>Fixed Camera</td><td>20 nos.</td></tr>
</table>
</td></tr>
</table>

C-23B	VI/A	IIA-01	25 of 28	3.01.06	Ash hoppers complete with curved panel heating elements, matching with curved surfaces of conical hopper, **level monitors and indicators,** outlet flanges, jointing material, poke holes, access doors and walkways beneath the hoppers.	Ash hoppers complete with curved panel heating elements, matching with curved surfaces of conical hopper, **level switches for Ash level high and low measurements in all ESP hoppers. Additionally, Acoustic 3D Level Scanner Based Level Monitoring System/ NOGS (Naturally Occuring Gamma Sensor) based level monitoring system for ESP hoppers of first three fields,** outlet flanges, jointing material, poke holes, access doors and walkways beneath the hoppers.

CLAUSE NO.	TECHNICAL REQUIREMENTS
2.02.00A	**Application of Metal Cladding** All metal cladding shall be fabricated and installed to ensure a neat appearance and no open-ended sections of cladding shall be left uncovered. The following provisions shall also be complied with: (a) Weatherproof flushing shall be installed where the panels intersect with columns and at other similar joints. (b) Removable insulated covers shall be provided over the manholes. (c) Cladding on top surface of Steam Generator/ESP/FGD system and ductwork and equipments shall be suitably reinforced to prevent damage by personnel walking thereon. (d) All cladding for outdoor application shall be with neoprene washers. (e) All openings and joints in outdoor cladding for piping connections, supports of access shall be suitably flashed and weatherproofed. Where such flushing or weatherproofing cannot effectively control the entry of moisture, then such openings and joints shall be weather proofed by application of aluminum pigmented sealer. (f) All insulation shall be protected by means of an outer covering of aluminum sheathing. All insulation/cladding joints shall be sealed and made effectively weather and waterproof. All flat surfaces shall be given suitable slope to prevent collection of pools of water on the cladding surface. (g) An asphalt and craft paper moisture barrier or PSMR (Polysurlin Moisture retardant) coating shall be provided to the aluminium cladding for ESP and the complete flue gas ducting downstream of the APH. Such moisture barriers shall be fixed to the inner surface of the cladding or shall be cemented to the outside surface of the insulation before application of cladding. (h) All longitudinal joints shall have a minimum overlap of 50 mm and shall be located at 45 degree or more below the horizontal for horizontal equipment. Joints shall be made with cheese headed self-tapping galvanized steel screws at 150 mm centers. (i) All circumferential joints shall have a minimum overlap of 100 mm and shall be held in position by stainless steel or anodized aluminum bands, stretched and clamped. (j) Removable box type cladding for valves and flanges shall be fitted on the connected pipe cladding, with bands. (k) Aluminum cladding shall not come directly into contact with either the equipment surface or with the supporting arrangement on the equipment surface. To this end, adequate layers of 3 mm thick ceramic board shall be provided between the cladding and any supporting arrangement equipment surface, and fitted with selftapping screws/metal bands, as applicable. (l) For bends, fittings etc. the cladding shall be provided in segments as to ensure a smooth finish of the cladding. (m) For cladding on vertical pipes/equipment, provision for load take up shall be made at every 2 to 4 meters along pipe/equipment axis. (n) All joints shall be sealed with acrylic emulsion weather barrier. Galvanic corrosion shall be prevented by carefully avoiding permanent contact of aluminium cladding with copper, copper alloys, tin, lead, nickel or nickel alloys including monel metal.



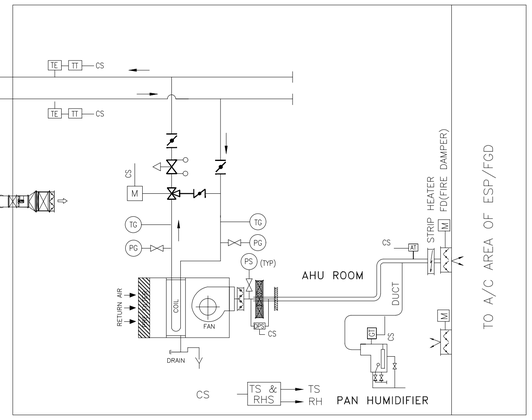


CHILLED WATER PUMP DETAIL	
NAME	QTY
CHWP-1,2 & 3	3 NOS(2W+1S/B)

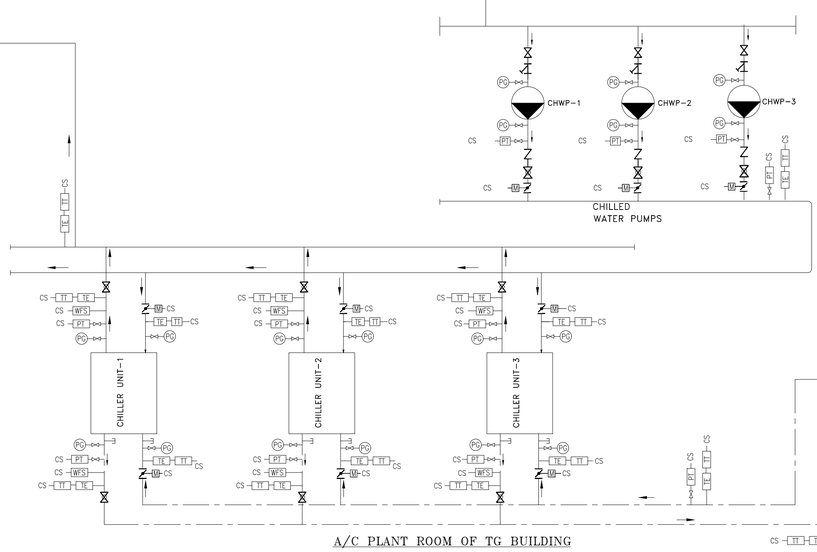
CONDENSER WATER PUMP DETAIL	
NAME	QTY
COND.WP-1,2 & 3	3 NOS(2W+1S/B)

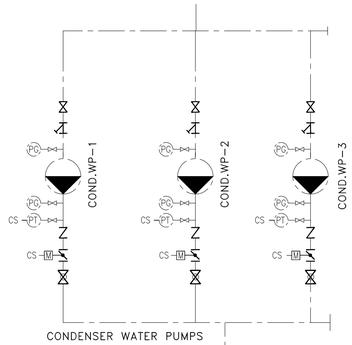
COOLING TOWER DETAILS	
NAME	QTY
CT-1,2 & 3	3 NOS(2W+1S/B)

TO OTHER AHU ROOMS



TYPICAL CONNECTION DETAIL FOR AHU ROOM





NOTE:

1) CAPACITY OF ALL THE A/C EQUIPMENTS SHALL BE FINALIZED DURING DETAILED ENGINEERING BASED ON HEAT LOAD CALCULATION.
2) SIZE OF PIPES, VALVES ETC SHALL BE FINALIZED DURING DETAILED ENGINEERING
3) NUMBER OF AHU AND AHU CAPACITY SHALL BE FINALIZED DURING DETAILED ENGINEERING BASED ON THE FINALIZED ARCHITECTURAL DRAWINGS.
4) CHILLED WATER PUMPS, PIPING, VALVES,EXPANSION TANK, AHU-DRAIN ETC. SHALL BE INSULATED AS PER SPECIFICATION.
5) ALL PIPING & VALVES OF SIZE 40 NB & BELOW SHALL BE PROVIDED AS PER SYSTEM REQUIREMENT BY THE BIDDER.
6) FOR FLOW BALANCING, BALANCING VALVE AND ORIFICE PLATE SHALL BE PROVIDED BY BIDDER AS PER SYSTEM REQUIREMENT.
7) 1X100% CAPACITY FRESH AIR FAN SHALL BE PROVIDED IN EACH AHU ROOM
8) TEMPERATURE SENSOR (TS) & RELATIVE HUMIDITY SENSOR (RHS) SHALL BE PROVIDED IN EACH AHU ROOM.
9) AIR RELEASE VALVES AS PER SYSTEM REQUIREMENT SHALL BE PROVIDED AT SUITABLE LOCATIONS.
10) TENDER DRAWINGS SHALL BE READ IN CONJUNCTION WITH TECHNICAL SPECIFICATIONS.

CS	CONTROL SYSTEM
TE	TEMPERATURE TRANSMITTER)
	CH.WATER SUPPLY & RETURN PIPE
	COND.WATER SUPPLY & RETURN PIPE
	OPEN DRAIN PIT
	ATMOSPHERIC VENT
	DESCALING CONNECTION
	STRIP HEATER
	FRESH AIR FAN WITH PRE FILTER & FINE FILTER
	CENTRIFUGAL FAN
	PUMP
	PAN HUMIDIFIER WITH 25NB GATE VAVE(3 NOS EACH),1 NO EACH FLOAT VALVE, M-UP/Q.FILL & DRAIN CON.
TG	TEMPARATURE GAUGE
LG	LEVEL GAUGE
LT-CS	LEVEL TRANSMITER
LS-CS	LEVEL SWITCH
GT-CS	GEYSER STAT
AT-CS	AIR STAT
DPS-CS	DIFFERENTIAL PRESSURE SWITCH
WFS-CS	WATER FLOW SWITCH
CS RS RHS TS RH	RH SENSOR &TEMP.SENSOR
TE-CS	TEMPARATURE ELEMENT(SENSOR)
PT-CS	PRESSURE TRANSMITTER
PG	PRESSORE GAUGE
	HEPA FILTER
	FINE FILTER
	PRE FILTER
FD M	ML TYPE FIRE DAMPER(MOTORISED)
VCD	VOLUME CONTROL DAMPER (ML TYPE)
NRD	NON RETURN DAMPER (ML TYPE)
	FLOW CONTROL VALVE
	GATE VALVE
	FLOAT VALVE
M	MOTORIZED GLOBE VALVE(INCHING TYPE)
	BALANCING VALVE
M	2 WAY VALVE (MODULATING WITH ACTUATOR)
	GLOBE VALVE
	CHECK VALVE
	'Y' STRAINER
M	BUTTERFLY VALVE(MOTORISED)
	BUTTERFLY VALVE
LEGEND	DESCRIPTION

FOR TENDER PURPOSE ONLY

REV.	DESCRIPTION	DRAWN	DESIGN	CHKD	L/O	TG	SG	LP	MH	WS	E	C	C&I	APPD	DATE
B	RELEASED FOR TENDER PURPOSE									CLEARED BY					

NTPC Limited
(A GOVT. OF INDIA ENTERPRISE)

PROJECT	SIPAT SUPER THERMAL POWER PROJECT **STAGE - III (1X800 MW)**
TITLE	SCHEMATIC DIAGRAM FOR A/C SYSTEM FOR TG BUILDING
SIZE A1 / SCALE	DRG.NO. **0000-000-POM-A-054** / REV. B

Amendment-2B to Technical Specifications (Section VI) of SIPAT-III (1X800 MW) EPC Package

S. NO.	SPECIFICATION REFERENCE				EXISTING	Read as
	SEC/ PART	SUBSEC.	PAGE NO.	CLAUSE NO.		
SG-01 B	VI/A	VI Chapter-01	1 to 38			The amended Chapter-01 is placed at **Annexure-SG-01B** to this amendment.

Amendment-2B to Technical Specifications (Section VI) of SIPAT-III (1X800 MW) EPC Package

Sl. No.	Specification Reference				Existing	Read as
	Section/Part	Sub Sec	Page No	Clause No		
TG-1 B.	VI/A	IIA-19	1 of 2	2.01.00 (a)	Feed water heaters & deaerator.	Feed water heaters & deaerator **(Applicable Hoists/Chain pully block for maintenance purpose shall be provided**).
TG-2 B.	VI/A	IIA-19 Elevators, Cranes and Hoist	2 of 2	2.01.00 (c)	Fans, motors, gear boxes etc., of Main Condenser, vacuum pumps, control fluid room etc.	~~Fans, motors, gear boxes etc., of Main Condenser, vacuum pumps, control fluid room etc.~~ **Condenser water boxes (Applicable If hinged type water box not envisaged) (front & rear), vacuum pumps, CW butterfly valves, control fluid system etc.**
TG-3 B.	VI/A	VI/Mandatory Spares Chapter-2	2 of 34	A.8	AC jacking oil pump complete assembly for Main Turbine along with complete coupling and Motor. — 1 No.	AC jacking oil pump complete assembly for Main Turbine along with complete coupling and Motor **(If applicable).** — 1 No.
TG-4 B.	VI/A	VI/Mandatory Spares Chapter-2	2 of 34	A.9	DC jacking oil pump assembly for Main Turbine along with complete coupling and Motor — 1 No.	DC jacking oil pump assembly for Main Turbine along with complete coupling and Motor **(If applicable)** — 1 No.
TG-5 B.	VI/A	VI/Mandatory Spares Chapter-2	12 of 34	C.1-xxi.	Duplex filter for Jacking oil system consisting of filter elements / cartridges, O-rings, gaskets except housing - 1 Sets	Duplex filter for Jacking oil system consisting of filter elements / cartridges, O-rings, gaskets except housing **(If applicable)** - 1 ~~Sets~~ **Set**
TG-6 B.	VI/A	VI/Mandatory Spares Chapter-2	15 of 34	11a-xi	Filters & Coolers for Mech. Seal Skid — 1 set (requirement for one pump)	Filters & Coolers for Mech. Seal Skid **(If applicable)** — 1 set (requirement for one pump)
TG-7 B.	VI/A	VI/Mandatory Spares Chapter-2	16 of 34	12-xi	Filters & Coolers for Mech. Seal Skid — 1 set (requirement for one pump)	

						Filters & Coolers for Mech. Seal Skid **(If applicable)** | 1 set (requirement for one pump)
TG-8 B.	VI/A	Sub-Section-VI Mandatory Spares Chapter-2	13 of 34	C.1-xxxi. **New clause**	-	**Hydraulic Power Pack complete assembly including all fittings & Hoses for Main Turbine Hydraulic coupling bolts (if applicable)** | **1 Set**
TG-9 B.	VI/A	I-A Provenness	11 of 35	4.18	**On-line Blade Vibration Monitoring System for Low Pressure (LP) Turbines (in case Free Standing Blades are offered)** The Bidder/sub-vendor ……. Detection of free standing blades of Low Pressure Turbine of Steam Turbine Generator set of 200 MW or above capacity. This integrated system* should have been in successful operation at each installation for at least 7000 operating hours prior to the date of techno-commercial bid opening. The Bidder should offer ……. meets the above requirement. OR The Bidder/sub-vendor ……. Detection of free standing blades of Compressor/Turbine of Gas Turbine Generator set** of 200 MW or above capacity. This integrated system* should have been in successful operation for at least 7000 operating hours prior to the date of techno-commercial bid opening. The Bidder should offer ……. meets the above requirement. * integrated system means ……. non-contact manner. ** In case of combined cycle …….Gas Turbine Generator set.	**On-line Blade Vibration Monitoring System for Low Pressure (LP) Turbines (in case Free Standing Blades are offered)** The Bidder/sub-vendor ……. Detection of free standing blades of Low Pressure Turbine of Steam Turbine Generator set of 200 MW or above capacity. This integrated system* should have been in successful operation at each installation for at least 7000 operating hours ~~prior to the date of techno-commercial bid opening~~. The Bidder should offer ……. meets the above requirement. OR The Bidder/sub-vendor ……. Detection of free standing blades of Compressor/Turbine of Gas Turbine Generator set** of 200 MW or above capacity. This integrated system* should have been in successful operation for at least 7000 operating hours ~~prior to the date of techno-commercial bid opening~~. The Bidder should offer ……. meets the above requirement. * integrated system means ……. non-contact manner. ** In case of combined cycle …….Gas Turbine Generator set.

TG-10 B.	VI/A	IIA-22	2 of 3	1.01.00 (g)	Submersible pumps shall be permanently fixed in the pits/sumps.	~~Submersible pumps shall be permanently fixed in the pits/sumps.~~
TG-11 B.	VI/A	Attachment 3K	87 of 361	1.02.09	**Details of manufacturer of equipment for units of atleast 500 MW rating as per clause 3.2 of Sub-Section-I-A, Section-VI, Part-A.** **……** Date of Commissioning of System/Package Whether the system/equipments are in successful operation prior to the date of techno-commercial bid opening Yes/No	**Details of manufacturer of equipment for units of atleast 500 MW rating as per clause 3.2 of Sub-Section-I-A, Section-VI, Part-A.** **……** Date of Commissioning of System/Package Whether the system/equipments are in successful operation ~~prior to the date of techno-commercial bid opening~~ **as on the date of LoA.** Yes/No
TG-12 B.	VI/A	Attachment 3K	87 of 361	1.02.13	**Details of manufacturer of equipment for units of at least 500 MW rating as per clause 3.2 of Sub-Section-I-A, Section-VI, Part-A** **……** Certificate from such Owner that aforesaid equipment has been supplied by the sub-vendor and is running satisfactorily prior to the date of techno-commercial bid opening is enclosed to this Attachment at Annexure..... Yes/No	**Details of manufacturer of equipment for units of at least 500 MW rating as per clause 3.2 of Sub-Section-I-A, Section-VI, Part-A** **……..** Certificate from such Owner that aforesaid equipment has been supplied by the sub-vendor and is running satisfactorily ~~prior to the date of techno-commercial bid opening~~ **as on the date of LoA** is enclosed to this Attachment at Annexure..... Yes/No
TG-13 B.	VI/A	Attachment 3K	111 of 361	1.12.00	**I. ONLINE BLADE VIBRATION MONITORING SYSTEM FOR LOW PRESSURE (LP) TURBINES (IN CASE FREE STANDING BLADES ARE OFFERED)** …… a) Whether the System/Equipments are in Successful Operation for at least 7000 operating hours prior to the date of techno commercial Bid opening b) End user certificate for successful	**I. ONLINE BLADE VIBRATION MONITORING SYSTEM FOR LOW PRESSURE (LP) TURBINES (IN CASE FREE STANDING BLADES ARE OFFERED)** …… a) Whether the System/Equipments are in Successful Operation for at least 7000 operating hours **as on the date of LoA** ~~prior to the date of techno-commercial Bid opening~~ b) End user certificate for successful operation is attached at Annexure_____

					operation is attached at Annexure_____ Yes*/No*	Yes*/No*
TG-14 B.	VI/A	Attachment-3K	85 of 361	3.	If the qualification sought…….such as, i)…….. ii)……. iii)…… Further, the details of collaborator or technology licenser or technology provider of the qualified equipment manufacturer who meets the requirement stipulated at 3.1, sub-section-IA, Part-A, Section-VI of Bidding Document shall be filled by the Bidder in the format A to F (format given at 1.00.00).	If the qualification sought…….such as, i)…….. ii)……. iii)…… Further, the details of collaborator or tech-nology licenser or technology provider of the qualified equipment manufacturer who meets the requirement stipulated at 3.1, sub-section-IA, Part-A, Section-VI of Bid-ding Document shall be filled by the Bidder in the format A to F (format given at ~~1.00.00~~ **3.00.00**).
TG-15 B.	VI/B	G-06	8 of 14	3.03.04 (ii) (g)	Condenser on load tube cleaning system shall be made ready before commercial operation of the plant. Life of sponge rubber balls & Number of balls lost during 336 hrs of plant operation shall be demonstrated by the bidder.	**Deleted**
TG-16 B.	VI/A	IV-FUNCTIONAL GUARANTEES	27 of 71	1.03.01	Not Used	Condenser on load tube cleaning system shall be made ready before commercial operation of the plant. Life of sponge rubber balls & Number of balls lost during 336 hours of continuous operation of COLTCS shall be demonstrated by the bidder.
TG-17 B.	VI/B	A-07	1 of 25	1.03.01	The turbine casing design shall have following features: (a) Adequate drainage …….. MSS SP61.	The turbine casing design shall have following features: (a) Adequate drainage …….. MSS SP61. **(b) Bearing inspection should be possible without necessity of dismantling the turbine casing.** **(c) Provide a completely self-contained exhaust hood spray system for L.P casing(s) to protect the turbine against excessive temperature due to windage at no load / low load and HP/LP bypass operations.**

TG-18 B.	VI/B	A-07	1 of 25	1.05.00	NOZZLES AND BLADES (a) …. (b) … (c) … (d) ….	NOZZLES AND BLADES (a) …. (b) … (c) … (d) …. **(e) Ensure quick & easy site replacement of blading.**
TG-19 B.	VI/B	A-07	2 of 25	1.06.00	**1.06.00 BEARINGS** (a) ….. (b) …… (c) …….	**1.06.00 BEARINGS** (a) ….. (b) …… (c) ……. **(d) Horizontally split with the ability to dismantle and replace lower half with minimum shaft lift.**
TG-20 B.	VI/B	A-07	7 of 25	1.18.01	----------	Additional HBD Added **v) 55% of rated load under turbine throttle main steam pressure of 150 Kg/cm^2 (abs) and rated main steam temperature / rated reheat steam temp. at turbine inlet at guaranteed condenser pressure with zero make-up with one TDBFP in operation.**
TG-21 B.	B	A-07	7 of 25	1.20.00	Type test(s) to be conducted: Life cycle test, meridional yield rupture test and squirm test on one each of following type of metallic expansion joints: (a) Condenser neck (if applicable) (b) Cross-over pipe (largest size) (c) LPH extraction line (highest pressure and temperature) (d) LPT Gland bellows (if applicable) (e) Hot-well interconnecting Bellows (If applicable)	Type test(s) to be conducted: ~~Life cycle test, meridional yield rupture test and squirm test on one each of following type of metallic expansion joints:~~ ~~(a) Condenser neck (if applicable)~~ ~~(b) Cross-over pipe (largest size)~~ ~~(c) LPH extraction line (highest pressure and temperature)~~ ~~(d) LPT Gland bellows (if applicable)~~ ~~(e) Hot-well interconnecting Bellows (If applicable)~~ **Following type tests are to be carried out:** **Life cycle test, meridional yield rupture test and squirm test on one metallic expansion joints of each type and size. For Life cycle test, minimum number of test cycles shall be 10,000.**

TG-22 B.	B	A-07	9 of 25	4.00.00	**CONDENSATE EXTRACTION PUMP** a) …… …….. b) …….. ……..	**CONDENSATE EXTRACTION PUMP** a) …… **a1) Shaft sealing** **Either mechanical seals or packed type with external water sealing designed to prevent air ingress to condenser even when the pump under shut down and exposed to condenser.** b)…… ……..
TG-23 B.	VI/B	G-01	2 of 4	1.03.00	The design…… specified elsewhere. The plant shall…… without affecting the design life of boiler and tur-bine-Generator systems. In addition to this, the plant shall also be capable of minimum N2 number of daily load cycles (N2 shall not be less than 1) from 55% to 40% of TMCR load (and vice versa) with a minimum ramp rate of 1% per minute. The main plant and its auxiliaries with their controls would be designed to permit operation of the units on house load without there being any necessity…….. system requirements (Refer clause 1.03.26.02 of Sub section IV, Part A, Section VI). To make unit capable…… requirements as defined above.	The design…… specified elsewhere. The plant shall…… without affecting the design life of boiler and tur-bine-Generator systems. In addition to this, the plant shall also be capable of minimum N2 number of daily load cycles (N2 shall not be less than 1) from 55% to 40% of ~~TMCR~~ **MCR** load (and vice versa) with a minimum ramp rate of 1% per minute. The main plant and its auxiliaries with their con-trols would be designed to permit opera-tion of the units on house load without there being any necessity…… system requirements (Refer clause 1.03.26.02 of Sub section IV, Part A, Section VI). To make unit capable…… requirements as defined above.
TG-24 B.	VI/B	G-04 Standard PG Test Procedure	9 of 227	3.3	**Test Method** The turbine generator performance test is carried out according to ASME PTC6-2004 or latest revision and technical specification. Uncertainty on the test results is not applicable on account of measuring instruments inaccuracy & Fluctuation of parameters during the conductance of test. Ageing correction is not applicable for TG Cycle Heat Rate &	**Test Method** The turbine generator performance test is carried out according to ASME PTC6-2004 or latest revision and technical specification. Uncertainty on the test results is not applicable on account of measuring instruments inaccuracy & Fluctuation of parameters during the conductance of test. Ageing correction is not applicable for TG Cycle Heat Rate & Output test. Test will be conducted ~~during~~

<table>
<tr><td></td><td></td><td></td><td></td><td></td><td>Output test. Test will be conducted during trial operations. No shutdown will be allowed on account of PG Test preparations.</td><td>~~trial~~ along with initial operations. No shutdown will be allowed on account of PG Test preparations.</td></tr>
<tr><td>TG-25 B.</td><td>VI/B</td><td>G-04 Standard PG Test Procedure</td><td>9 of 227</td><td>3.5</td><td>The acceptance test to be commenced during trial operations or during the period as defined in the contractual agreement.</td><td>The acceptance test to be commenced ~~during trial~~ along with initial operations or during the period as defined in the contractual agreement.</td></tr>
<tr><td>TG-26 B.</td><td>VI/B</td><td>G-04 Standard PG Test Procedure</td><td>28 of 227</td><td>5.7</td><td><u>Comparison with guarantees</u>
Comparison with guarantee should be made using corrected value of generator output and Heat Rate which are calculated in clause 5.4 and 5.6 as follows.
<u>Generator Output</u>
Generator…… (calculated in clause 5.6)
<u>Heat Rate</u>
Heat Rate guarantees are considered to be fulfilled when the following inequality is fulfilled.
HRa ≤ HRguar
Where,
HRguar: Value of Heat Rate according to the guarantee
HRa: Heat Rate which take into account the ageing allowance (calculated in clause 5.5).</td><td><u>Heat Rate</u>
Comparison with guarantee should be made using corrected value of generator output and Heat Rate which are calculated in clause 5.4 and 5.6 as follows.
<u>Generator Output</u>
Generator…… (calculated in clause 5.6)
Heat Rate guarantees are considered to be fulfilled when the following inequality is fulfilled.
~~HRa~~ HRc ≤ HRguar
Where,
HRguar: Value of Heat Rate according to the guarantee
~~HRa~~ HRc: Corrected Heat Rate on the specified condition ~~which take into account the ageing allowance~~ (calculated in clause ~~5.5~~ 5.4).</td></tr>
<tr><td>TG-27 B.</td><td>VI/B</td><td>G-04</td><td>93 of 227</td><td>PG Test Procedure for COLTCS

TEST RESULTS</td><td><table><tr><td colspan="2">TEST RESULTS</td></tr><tr><td>After expiry ..... condition (2.0 (A), Page 3)</td><td>336 hours of continuous operation of COLTCS
Test Results:</td></tr></table></td><td><table><tr><td colspan="2">TEST RESULTS</td></tr><tr><td>After expiry ..... condition (2.0 (A), Page 3)</td><td>336 hours of continuous operation of COLTCS Test Results:</td></tr></table></td></tr>
</table>

					Initial Balls Charged Qty. ' B ' =…….. ..... Healthy Balls observed ……against specified > 90% Initial Balls Charged Qty. ' B ' =…….. ..... % of Ball lost after 336 hours of continuous operation of COLTCS. = C X 100 / B Balls Lost observed ……..against specified within	Initial Balls Charged Qty. ' B ' =…….. ..... Healthy Balls observed ……against specified > 90% Initial Balls Charged Qty. ' B ' =…….. ..... % of Ball lost after 336 hours of continuous operation of COLTCS= C X 100 / B Balls Lost observed ……..against specified limit ~~within~~ ≤ **10 %.**
TG-28 B.	VI/B	G-06 PRE-COMMISSIONING & COMMISSIONING ACTIVITIES	7 of 14	3.03.04 (i)	**H.P./L.P. Bypass Capabilities** The HP & LP Bypass system should satisfy the following……and accepted by the EMPLOYER. The same shall be demonstrated. Bidder shall demonstrate the degree of superheat at upstream of HP Bypass valve during cold start-up as per approved Boiler Turbine combined start-up curve (The degree of superheat at upstream of HP bypass valve as derived from boiler turbine startup curve will be specified by bidder in HPBP sizing document). In case the degree of superheat is not achieved as per approved combined start-up curve and subsequently valve starts passing within defect liability period, Bidder shall reassess valve operating condition based on actual steam parameters during cold start-up. Accordingly necessary improvement	**H.P./L.P. Bypass Capabilities** The HP & LP Bypass system should satisfy the following……and accepted by the EMPLOYER. The same shall be demonstrated. Bidder shall demonstrate the degree of superheat at upstream of HP Bypass **& LP Bypass** valve during cold start-up as per approved Boiler Turbine combined start-up curve (The degree of superheat at upstream of HP bypass **& LP Bypass** valve as derived from boiler turbine start-up curve will be specified by bidder in HPBP **& LPBP** sizing document). In case the degree of superheat is not achieved as per approved combined start-up curve and subsequently valve starts passing within defect liability period, Bidder shall reassess valve operating condition based on actual steam parameters during cold start-up. Accordingly necessary improvement shall be done by the

					shall be done by the contractor to prevent further passing in the HP Bypass valves.	contractor to prevent further passing in the HP Bypass **& LP Bypass** valves.
TG-29 B.	VI/B	A-07	5 of 25	1.16.00 (k)	HP Bypass valves shall be designed as per degree of superheat based on Boiler- Turbine combined start-up curve i.e, degree of superheat based on Main steam pressure and Temperature at the time of HP Bypass valve opening during cold startup. For achieving degree of superheat as per approved combined start-up curve bidder shall make necessary arrangement for combination of drain lines with drain pots at the upstream of HP Bypass valves. Bidder shall provide necessary pressure and temperature measuring instruments near to HP Bypass valve for calculation of degree of superheat at upstream.	HP Bypass **and LP Bypass** valves shall be designed as per degree of superheat based on Boiler-Turbine combined start-up curve i.e, degree of superheat based on Main steam pressure & Temperature at the time of HP Bypass valve **and Reheater steam pressure & Temperature at the time of LP Bypass valve** opening during cold start-up. For achieving degree of superheat as per approved combined start-up curve bidder shall make necessary arrangement for combination of drain lines with drain pots at the upstream of HP Bypass **and LP** Bypass valves. Bidder shall provide necessary pressure and temperature measuring instruments near to HP Bypass **and LP Bypass valves** for calculation of degree of superheat at upstream.
TG-30 B.	VI/B	G-07 MDL Data Requirements	3 of 8	2.05.00 2. a.	6. Campbell diagrams (typical) for blading proposed, clearly indicating the resonant points and the operating frequency range (Ref. clause 1.05.00 (a), Sub-Section-A-07, Part-B, Section-VI.	6. Campbell diagrams (typical) for blading proposed, clearly indicating the resonant points and the operating frequency range (Ref. clause 1.05.00 (~~a~~ **b**), Sub-Section-A-07, Part-B, Section-VI.
TG-31 B.	VI/B	G-07 MDL Data Requirements	3 of 8	2.05.00 2. a.	9. Write up on criteria for back end loading of the turbine. Also furnish……back end loading etc. (Refer clause 1.06.00 (c), Sub-Section-A-07, Part- B, Section-VI).	9. Write up on criteria for back end loading of the turbine. Also furnish……back end loading etc. (Refer clause ~~1.06.00 (c)~~ **1.05.00 (d),** Sub-Section-A-07, Part- B, Section-VI).
TG-32 B.	VI/B	G-07 MDL Data Requirements	4 of 8	2.05.00 2. a.	11. furnish % over-pressure capability of the turbine generator under VWO condition and the corresponding continuous output and steam flow with rated steam temperature & 77 mm Hg Condenser pressure (Furnish Heat Balance Diagram) %	11. furnish % over-pressure capability of the turbine generator under VWO condition and the corresponding continuous output and steam flow with rated steam temperature & 77 mm Hg Condenser pressure (Furnish Heat Balance Diagram) ~~%~~
TG-33 B.	VI/B	G-07 MDL	43 of 43	Tentative Master Drawing List	----------	

						5119	**XXXX-001-110-PVM-P-xxx**	**Isometric for Extraction Steam Piping to all LPH's inside condenser**	
TG-34 B.	VI/B	G-07 MDL	43 of 43	Tentative Master Drawing List	-	**5120**	**XXXX-001-110-PVM-N-034**	**Design Ramp Rates of Steam Generator and Steam Turbine**	
TG-35 B.	VI/B	G-05 Standard Type Test Procedure	1 of 37	-	STANDARD TYPE TEST PROCEDURE …… ……			STANDARD TYPE TEST PROCEDURE **Standard type test procedure for the major equipment has been specified, however the Type test procedure not specified for equipment /system shall be submitted for approval by employer.** …… ……	
TG-36 B.	VI/B	G-05 Standard Type Test Procedure	2 of 37	1.03.00	**Acceptance Criteria:** 1. NPSH(R) (3% head drop) at --------- available. 2. NPSH(R) (3% head drop) at Design point shall not be less than the NPSH(R) determined by the suction specific of 10000 US unit and 9500 US unit for main pump and booster pump respectively calculated with the flow of Design point with Inter-stage closed.			**Acceptance Criteria:** 1. NPSH(R) (3% head drop) at ---------- available. 2. NPSH(R) (3% head drop) at Design point shall not be less than the NPSH(R) determined by the suction specific **speed** of 10000 US unit and 9500 US unit for main pump and booster pump respectively calculated with the flow of Design point with Inter-stage closed.	
TG-37 B.	VI/B	A-01 Equipment Sizing Criteria	31 of 87	2.01.01	**Type** The steam turbine shall be tandem compound, single reheat, regenerative, condensing, multi cylinder design with separate HP, separate IP & separate LP casings OR combined casings for HP - IP and separate casings for LP Turbine, directly coupled with generator, suitable for indoor installation.			**Type** The steam turbine shall be tandem compound, single reheat, regenerative, condensing, multi cylinder design with separate HP, separate IP & separate LP casings OR combined ~~casings~~ **casing** for HP - IP and separate casings for LP Turbine, directly coupled with generator, suitable for indoor installation.	
TG-38 B.	VI/B	A-01 Equipment Sizing Criteria	41 of 87	2.06.03	**2.06.03** NPSH Margin: (a) The ratio between NPSH (A) and NPSH (R) at 3% head drop for booster pump and main pump shall be not less than 2.5 at design point corresponding to Low-Low level of deaerator.			**2.06.03** ~~NPSH Margin~~ (a) **NPSH Margin**: The ratio between NPSH (A) and NPSH (R) at 3% head drop for booster pump and main pump shall be not less than 2.5 at design point corresponding to Low-Low level of deaerator.	

					(b) Trip speed of TDBFP: 10% above the design speed of the feed pump.	(b) Trip speed of TDBFP: 10% above the design speed of the feed pump.
TG-39 B.	VI/B	A-07	2 of 25	1.08.02 **New clause**	----------	**Bypass arrangements of Gland steam condenser from steam side, as per standard practice of turbine manufacturer, may be provided.**
TG-40 B.	VI/B	A-07	14 of 25	6.04.00	(2) **Material and other accessories** Complete with stainless steel impellers, bearings, …….. steel scoop tube, 1x100% lube oil cooler, 1x100% Working oil cooler, one portable type ……..be as specified in drive turbine section.	(2) **Material and other accessories** Complete with stainless steel impellers, bearings, …….. steel scoop tube, ~~1~~ **2**x100% lube oil cooler, ~~1~~ **2**x100% Working oil cooler, one portable type ……..be as specified in drive turbine section.
TG-41 B.	VI/B	A-07	2 of 25	1.10.0	**TURBINE GOVERNING SYSTEM** Provide adjustable steady state speed regulation between +3% to +8% of rated speed. Ensure dead band at rated speed and at any power output within rated output shall not exceed 0.06% of rated speed.	**TURBINE GOVERNING SYSTEM** Provide adjustable steady state speed regulation between +3% to ~~+8%~~ **+6%** of rated speed. Ensure dead band at rated speed and at any power output within rated output shall not exceed 0.06% of rated speed.
TG-42 B.	E	Tender Drawings (Mechanical)			**XXXX-999-POM-A-005 Rev A**	**XXXX-999-POM-A-005 Rev B** Refer Annexure TG-01B
TG-43 B.	E	Tender Drawings (Mechanical)			**XXXX-999-POM-A-006 Rev B**	**XXXX-999-POM-A-006 Rev C** Refer Annexure TG-01B
TG-44 B.	E	Tender Drawings (Mechanical)			**XXXX-999-POM-A-009 Rev A**	**XXXX-999-POM-A-009 Rev B** Refer Annexure TG-01B
TG-45 B.	E	Tender Drawings (Mechanical)			**XXXX-999-POM-A-010 Rev A**	**XXXX-999-POM-A-010 Rev B** Refer Annexure TG-01B
TG-46 B.	E	Tender Drawings (Mechanical)			**XXXX-999-POM-A-012 Rev A**	**XXXX-999-POM-A-012 Rev B** Refer Annexure TG-01B
TG-47 B.	E	Tender Drawings (Mechanical)			**XXXX-001-POM-A-015A Rev A**	**XXXX-001-POM-A-015A Rev B** Refer Annexure TG-01B
TG-48 B.	VI/A	I-A (Provenness)	1 of 35	1.0 (Provenness of Turbine set)	(a) The turbine set offered shall be built…….their provenness along with the techno commercial bid.	(a) The turbine set offered shall be built……. their provenness along with the techno commercial bid.

					(b) The turbine to be supplied under this……..Qualified Steam Turbine Generator Manufacturer.	(b) The turbine to be supplied under this……. Qualified Steam Turbine Generator Manufacturer. **Note:** In case bidder is seeking qualification through Route 1.8.0, the consortium partner meeting the qualification requirements for Steam Turbine Generator shall be required to meet the above turbine provenness requirements and shall furnish experience list of HP, IP (or Combined HP-IP) and LP turbine modules offered to substantiate their provenness along with the techno commercial bid.
TG-49 B.	VI/A	Attachment 3K	80 of 361		……Certificate(s) from Owner that the aforesaid Steam Turbine Modules are in successful operation for atleast one (1) year prior to the date of Techno- ommercial bid opening and caused no serious problem in past, are furnished alongwith techno-commercial Bid at **Annexure 1 to this Attachment-3K.** ---------- ---------- Date: Place: (Signature)..... (Printed Name) ..... (Designation)..... (Common Seal)	……..Certificate(s) from Owner that the aforesaid Steam Turbine Modules are in successful operation for atleast one (1) year prior to the date of Techno- ommercial bid opening and caused no serious problem in past, are furnished alongwith techno-commercial Bid at **Annexure 1 to this Attachment-3K.** ---------- ---------- Date: Place: (Signature)..... (Printed Name) ..... (Designation)..... (Common Seal) ..... Note: In case bidder is seeking qualification through Route 1.8.0, the consortium partner meeting the qualification requirements for Steam Turbine Generator shall be required to furnish the desired data/details of HP, IP (or Combined HP-IP) and LP turbine modules

Amendment-2B to Technical Specifications (Section VI) of SIPAT-III (1X800 MW) EPC Package

<table>
<tr><th rowspan="2">Sl. No.</th><th colspan="4">Specification References</th><th rowspan="2">Existing</th><th rowspan="2">Read As</th></tr>
<tr><th>Part</th><th>Sub section</th><th>Page no</th><th>Clause no</th></tr>
<tr><td>MH-03 B</td><td>VI/A</td><td>PART-E/ Errata to Section VI Technical Specifications (Amendment-2)</td><td></td><td></td><td>Tender Drawings:
SLD:
BOTTOM ASH HANDLING SYSTEM (JET PUMP SYSTEM)- XXXX-001-POM-A-025-RevA/ B.
XXXX-001-POM-A-028-Rev A XXXX-001-POM-A-028- (FLY ASH HANDLING PRESSURE SYSTEM –Rev A/B
XXXX-001-POM-A-029-Rev B CLASSIFIER SYSTEM (VACCUME SYSTEM) - XXXX-001-POM-A-029-Rev A/B
XXXX-001-POM-A-029-Rev B CLASSIFIER SYSTEM (PRESSURE SYSTEM) - XXXX-001-POM-A-029-Rev A/B</td><td>Updated Tender Drawings:
SLD:
BOTTOM ASH HANDLING SYSTEM (JET PUMP SYSTEM)-XXXX-001-POM-A-025-Rev C.
XXXX-001-POM-A-022-Rev A XXXX-001-POM-A-028-FLY ASH HANDLING PRESSURE SYSTEM –Rev C
XXXX-001-POM-A-029-Rev B CLASSIFIER SYSTEM (VACCUME SYSTEM) - XXXX-001-POM-A-029-Rev C
XXXX-001-POM-A-029-Rev B CLASSIFIER SYSTEM (PRESSURE SYSTEM) - XXXX-001-POM-A-029-Rev-C</td></tr>
<tr><td>MH-04 B</td><td colspan="4">Sn-MH-40,
Errata to Section VI Technical Specifications (Amendment-2)</td><td>Two numbers Semi-automatic Bagging machines with capacity of 200 bags/Hr/Nozzle having two Nozzles per Machines. The bagging plant shall have provision for mechanized bagging of this fine ash. Fine ash shall be bagged in 50 kg cement bags. The quantity of fine ash shall be 35 kg in cement bag of 50 kg.</td><td>Two numbers fully automatic Bagging machines with capacity of 200 bags/Hr/Nozzle having two Nozzles per Machines. The bagging plant shall have provision for mechanized bagging of this fine ash. Fine ash shall be bagged in 50 kg cement bags. The quantity of fine ash shall be 35 kg in cement bag of 50 kg. The intended bagging system shall be fully automatic with facility of automatic loading of filled bags to conveyors or nearby platform of fly ash silo, as applicable:
<table>
<tr><th>Requirements</th><th>Description/Details</th></tr>
<tr><td>Name of product</td><td>Automatic bagging machine</td></tr>
<tr><td>Target bags</td><td>Bags of 50 Kg (standard cement bags. Suitable correction for feed material may be considered)</td></tr>
<tr><td>Filling Capacity</td><td>400 bags/Hr /Machine</td></tr>
<tr><td>Number of spouts</td><td>Suitable to meet the Filling capacity</td></tr>
</table></td></tr>
</table>

			Bulk Density of fly ash	Compacted Density up to 1.3 MT/ Cubic meter. Loose bulk Density:0.8-0.9 MT/ Cubic meter.
			Particle Size Distribution	Minimum 5 micron to maximum 250 microns. Average: 50 microns
			Temperature of Material	Maximum- 100oC, Average: 50OC
			Working Conditions	Ambient up to 55 degrees Celsius, RH-100%, Environment- Dusty. The machine should be waterproof. Machine shall be designed to withstand against environment conditions like rainwater, and temperature variation from 0- 55degree Celsius. (if required, shed / canopy may also be provided by bidder)
			Is material / Dust being Flammable / Explosive	No
			Is material Hygroscopic	Yes. Moisture Contain: Up to 5%
			Is material hazardous	No
			Abrasive Material	Yes
			Stickiness	Non-sticky in dry and warm condition.
			Flow ability	Free Flowing (However, successful bidder may collect sample from NTPC site for testing &design purpose)
			Bag Filling	Self-Closing valve type filling (Other types like Open mouth type bag, etc. may also be accepted based on supporting data/details for suitability in fly ash applications)
			Accuracy	+/- 0.25% or better with digital scale bag filling machines.

			Input Requirement	Design Air flow/Pressure in kgf/sq.cm as per design requirement of OEM. Power Supply:415V AC (+-10%), 3 Phase,50+-5Hz AC.
			Other Requirements	The equipment should be waterproof. Equipment shall be designed to with-stand against environment conditions like rainwater, and temperature variation from 0- 55 degree Celsius. The equip-ment shall be provided with control panel and starter, voltmeter, ammeter, single phase preventer, overload protection, emergency push button and all other safety devices to protect the man and machine & other safety devices to pro-tect the man and machine.
			Type of packer:	Tentatively combination of gravity and auger packer. Bidder can opt for superior type of the two.
				Provision for installing suitable type de-dusting system shall be envisaged.
				Either common or individual conveying system along with truck loaders shall be provided below each bagging machine for automatic picking of filled ash bags and loading into trucks, considering the layout constraints below silo area (shall not affect movement of trucks/rail at silo area)
In case of Conveying of Ash Bags, all necessary instruments/devices required for safe and continuous operation of the Conveyors as per the standard and proven practice of the supplier and as specified shall be provided.				

Amendment-2B to Technical Specifications (Section VI) of SIPAT-III (1X800 MW) EPC Package

S. No.	SPECIFICATION REFERENCE				Instead of	Read as
	Sec/ Part	Sub Section	Page No.	Clause No.		
LA-01B	VI/B	G-03	1 of 15	1.01.02	In case of rail track minimum **3m** horizontal clearance between face of adjacent structure to centre line of rail	In case of rail track minimum **3.5m** horizontal clearance between face of adjacent structure to centre line of rail

Amendment-2B to Technical Specifications (Section VI) of SIPAT-III (1X800 MW) EPC Package

	Specification Reference				Existing	Read as
Amendment no	Part	Sub Sec	Page No	Clause No		
C-01 B	VI/B	A-02	31 of 67	10.08.07 (d)	Three nos. Duplex Pt-RTD (100 ohm at 0 deg.) with **dual input temperature transmitters** shall be provided for local and remote monitoring of each bearing metal temperature of fans.	Three nos. Duplex Pt-RTD (100 ohm at 0 deg.) with **1 no of dual input TT and 2 nos of Single input TT** shall be provided for local and remote monitoring of each bearing metal temperature of fans.
C-02 B	VI/B	A-02	37 of 67	12.05.00 (c)	Three nos. Duplex Pt-RTD (100 ohm at 0 deg.) with **dual input temperature transmitters** shall be provided for local and remote monitoring of each bearing metal temperature of fans.	Three nos. Duplex Pt-RTD (100 ohm at 0 deg.) with **1 no of dual input TT and 2 nos of Single input TT** shall be provided for local and remote monitoring of each bearing metal temperature of fans.
C-03 B	VI/A	IIB	24 of 34	1.17.00	7) One set of "NO" & "NC" contacts (suitably wired up to field JBs) of High- and Low-level switches of each ESP ash hopper (except hoppers in First Field to third field) shall be provided for remote use. In First Field to third field of each ESP ash hopper, Radar based, or Acoustic Frequency Waves based 3D Level Scanner System shall be provided for continuous level monitoring.	7) One set of "NO" & "NC" contacts (suitably wired up to field JBs) of High- and Low-level switches of each ESP ash hopper ~~**(except hoppers in First Field to third field)**~~ shall be provided for remote use. **Additionally, in First Field to third field of each ESP ash hopper, Acoustic 3D Level Scanner Based Level Monitoring System/ NOGS (Naturally Occurring Gamma Sensor) based level monitoring system**, shall be provided for continuous level monitoring.
C-04 B	VI/B	IIB-02	3 of 5	7.07.00	In HT motors, at least four numbers simplex / two numbers duplex platinum resistance type temperature detectors shall be provided in each phase stator winding. Each bearing of HT motor shall be provided with 3 numbers duplex RTDs connected to **three numbers dual input transmitters** with display. However for air compressor, being high speed drive, each motor bearing shall be provided with minimum two numbers of duplex RTDs connected to two numbers dual input transmitters with display unit.	In HT motors, at least four numbers simplex / two numbers duplex platinum resistance type temperature detectors shall be provided in each phase stator winding. Each bearing of HT motor shall be provided with 3 numbers duplex RTDs connected to 1 no of dual input TT and 2 nos. of Single input TT with display. However, for air compressor, being high speed drive, each motor bearing shall be provided with minimum two numbers of duplex RTDs connected to two numbers dual input transmitters with display unit.

Amendment-2B to Technical Specifications (Section VI) of SIPAT-III (1X800 MW) EPC Package

S. No.	SPECIFICATION REFERENCE				Existing	Read as
	Section / Part	Sub-Section	Clause No.	Page No.		
D1B-1	VI/B	D-1-5	5.10.00	29 of 69	All roads shall be of rigid pavements unless otherwise specified. Rigid pavements shall be constructed with Geopolymer concrete. Concrete road/pavement or rigid pavement, mentioned in specification, shall mean road /pavement constructed with Geopolymer Concrete. All concrete roads shall be unreinforced jointed plain concrete pavement having dowels in transverse joints and tie bars at longitudinal joints……..	All roads shall be of rigid pavements unless otherwise specified. Rigid pavements shall be constructed with **either conventional cement concrete or** with Geopolymer concrete. Concrete road/pavement or rigid pavement, mentioned in specification, shall mean road /pavement constructed with **either Cement Concrete (CC) or** Geopolymer Concrete. All concrete roads shall be unreinforced jointed plain concrete pavement having dowels in transverse joints and tie bars at longitudinal joints……
D1B-2	VI/B	D-1-5	5.10.00.01	29 of 69	For road to be constructed with Geopolymer Concrete	For road to be constructed with **Conventional Cement Concrete** or Geopolymer Concrete
D1B-3	VI/B	D-1-5	5.10.00.02	30 of 69	Geo-polymer concrete road…… is provided in Chapter D-1-8.	**Conventional Cement Concrete or** Geo-polymer concrete road…… is provided in Chapter D-1-8.

Amendment-2B to Technical Specifications (Section VI) of SIPAT-III (1X800 MW) EPC Package

S.No	Specification Reference				Existing	Read as
	Part	Sub Sec	Page No	Clause No		
EE- 01B	VI/A	SUB-SECTION-VI CHAPTER-02 STEAM TURBINE GENERATOR	20 of 34	19.3.J	Filter element of stator water cooling system -1 set	Deleted
EE-02B	VI/A	SUB-SECTION-VI CHAPTER-02 STEAM TURBINE GENERATOR	32 of 34	Mandatory spares for VFD for CEP S.No : 5	Power device (Thyristor, IGBT etc.): 1 Set of devices in one bridge leg	Power device (Thyristor, IGBT, Power cell etc.): 1 Set of devices in one bridge leg (complete quantity for one phase)
EE-03B	VI/A	SUB-SECTION-VI CHAPTER-03: **ASH HANDLING PLANT**	13 of 14	11.01.02 II-2	Complete Thyristor bridge leg: 1 set	Complete Thyristor bridge leg: 1 set (complete quantity for one phase)
EE-04B	VI/A	SUB-SECTION-VI CHAPTER-01: **SG & AUXILIARIES**	20 of 38	1.22.06 (2)	Thyristor bridge leg: 1 no. (Qty. for one ph.)	Thyristor bridge leg: 1 set (complete Qty. for one phase)
EE-05B	VI/A	SUB-SECTION-I-A	1/35	2.0 Provenness of Generator	a) The generator offered shall be……. to the date of techno commercial bid opening. b) The offered generator shall be similar……. Type of Excitation system. c) The generator to be supplied under……. along with the techno commercial bid.	a) The generator offered shall be……. to the date of techno commercial bid opening. b) The offered generator shall be similar……. Type of Excitation system. c) The generator to be supplied under……. along with the techno commercial bid. **Note:**

S.No	Specification Reference				Existing	Read as
	Part	Sub Sec	Page No	Clause No		
						In case bidder is seeking qualification through Route 1.8.0, the consortium partner/it's associate for generator, meeting the qualification requirements for Steam Turbine Generator in respect of generator, shall be required to meet the above generator provenness requirements and shall furnish experience list for offered Generator to substantiate it's provenness along with the techno commercial bid.
EE-06B	VI/A	Attachment-3K	208 of 361	2.0 (t)	List of above Generators (with date of supply) already manufactured, assembled & tested in the factory/works mentioned at S.No.(R1) above is enclosed at Annexure.... to this Attachment-3K ---------- Date : (Signature)..... Place : (Printed Name)..... (Designation)..... (Common seal).....	List of above Generators (with date of supply) already manufactured, assembled & tested in the factory/works mentioned at S.No.(R1) above is enclosed at Annexure.... to this Attachment-3K ---------- ---------- Date : (Signature)..... Place : (Printed Name)..... (Designation)..... (Common seal)..... **Note:** In case bidder is seeking qualification through Route 1.8.0, the consortium partner/it's associate for generator, meeting the qualification requirements for Steam Turbine Generator in respect of generator, shall be required to meet the above generator provenness requirements and shall furnish experience list for offered Generator to substantiate it's provenness along with the techno commercial bid.

Annexure- SG 01B

LIST OF MANDATORY SPARES FOR SG & AUXILIARIES

SI. NO.	PARTICULARS	QUANTITY
1.00.00	**STEAM GENERATOR & AUXILIARIES**	
1.01.00	**PRESSURE PARTS**	
	A. Economiser	
	1. Economiser coils*	10% of each size, type of coil of one unit
	* the coils and panels are to be fabricated and supplied in dismantled condition	
	2. Straight Tube	250 Mtr. of each size, type, thickness & material
	3. Coil end bends	30 Nos. of each size, type, thickness, radius & material.
	4. Coil Saddle Clamp/Alignment band / Male & Female sliding Spacers / Sliding Hooks /Straight Shields for boiler tubes & Profile Shields for Boiler tube bends/ Tube clamps	50 nos of each type, size, material 5% of population tube clamps of each type and size
	B. Water Wall / Evaporator	
	1. Straight tube/Spiral tube	750 m of each type, thickness, size and material.
	2. Bends for Burner elevation	25 Nos. for each size, type, thickness, radius and material
	3. Screen water wall tube (if applicable)	100 m of each size, type, thickness and material
	4. Screen water wall tube bends (if applicable)	5 Nos. for each size, type, thickness, radius and material
	5. Bends for S-panel Area	50 Nos. for each size, type, thickness, radius and material
	6. Forged Elbow and Other Forged item forming integral part of pressure parts	25 nos. for each type
	7. Swage tube (if applicable)	10 Nos. for each size, type, thickness, radius and material
	8. Profile Shield bends for Screen water wall tube bends	30 Nos. for each size, type and material
	C. Low Temperature Super Heater (LTSH) (As applicable)	
	1. Straight tube of 8-10 m length	300 mtr. of each size, thickness, types & material
	2. Bends	a) 100Nos. of each size, type, thickness, radius and material. b) 50 Nos supply tubes, bends/offset bends (not covered in above)
	3. Connection tube Bends/ Antlers in penthouse	5 Nos. of each type and size
	4. Coil Saddle Clamp/alignment band / Male & Female sliding Spacers / Male and Female connectors/ Sliding Hooks/ Shields for boiler tubes & Profile Shields for Boiler tube bends/	50 nos. of each type, size, material

SI. NO.	PARTICULARS	QUANTITY
	Swage tube/ Forged items forming integral part of pressure parts	
	D. Low Temperature Reheater (LTRH)	
	1. Straight tube of 8-10 m length	500 mtr. of each size, thickness, types & material
	2. Bends	a) 100 Nos. of each size, type, thickness, radius and material. b) 50 Nos for supply tubes, bends/offset bends (not covered in above)
	3. Coil saddle clamp/alignment Band / Male & Female sliding Spacers / Male and Female connectors/ Sliding Hooks/ Shields for boiler tubes & Profile Shields for Boiler tube bends/ Swage tube/ Forged items forming integral part of pressure parts/ Expansion bellow	100 nos. of each type, size, material
	E. Intermediate Temperature Superheater (ITSH) / Platen Super Heater	
	1. Straight tube of 8-10 m length	200 m of each size, thickness, type & material
	2. Straight tube above roof	100 m of each size, thickness, type & material
	3. Bends below roof	30 nos. of each size, thickness, radius, type and material
	4. Bends which are integral part of header (above roof)	25 Nos. of each size, thickness, radius, type and material
	5. Male & Female connectors, male female couplings spacers and alignment bands	25% of total population of each type and size in one boiler
	6. Dissimilar joint spot pcs.	25 Nos. of each size, thickness, type, radius & material
	7. Acromat Tube with acromat	10% of each type, size thickness and radius
	8. Spacer Tube for Superheaters	100 mtr each type and size.
	9 Spacer Tube connectors and stoppers	100% of population of one boiler
	10 Alignment Band / Male & Female sliding Spacers / Male and Female connectors/ Sliding Hooks/ Shields for boiler tubes & Profile Shields for Boiler tube bends/ Swage tube/ Forged items forming integral part of pressure parts/ Expansion Bellow	50 nos. of each type, size, material Expansion Bellow – 2 Nos. of each type/ size and material in one boiler
	F. High Temperature Superheater (HTSH)/ Final Superheater	

SI. NO.	PARTICULARS	QUANTITY
	1. Straight tube of 8-10 m length	100 mtr. of each size, thickness, type & material
	2. Straight tube above roof	50 m of each size, thickness, type & material
	3. Bends below roof	20 nos. of each size, thickness, type, radius & material
	4. Bends which are integral part of header (above roof)	50 Nos. of each size, thickness, radius, type and material
	5. Male & Female connectors, male female couplings spacers and alignment bands	50% of total population of each type and size in one boiler
	6. Dissimilar metal weld joint spot pcs.	50 Nos. of each size, thickness, type, radius & material
	7. Acromat tube with Acromat	10% of each type, size thickness and radius
	8. Spacer Tube for Superheaters	100 mtr each type and size
	9 Spacer Tube connectors and stoppers	200% of population of one boiler
	10 Alignment Band / Male & Female sliding Spacers / Male and Female connectors/ Sliding Hooks/ Shields for boiler tubes & Profile Shields for Boiler tube bends/ Swage tube/ Forged items forming integral part of pressure parts/ Expansion Bellow	50 nos. of each type, size, material Expansion Bellow – 2 Nos. of each type/ size and material in one boiler.
	G. Reheater (Other than LTRH given in D above)	
	1. Straight tube of 8-10 m length	200 mtr. of each size, thickness, type & material
	2. Straight tube above roof	50 m of each size, thickness, type & material
	3. Bends below roof	30 Nos. of each size, thickness, type, radius & material (including offset bend)
	4. Bends which are integral part of header (above roof)	30 Nos. of each size, thickness, radius, type and material
	5. Male & Female connectors, male female couplings spacers and alignment bands	50% of total population of each type and size in one boiler
	6. Dissimilar joint spot pcs.	50 Nos. of each size, thickness, type, radius & material
	7 Acromat tube with acomat	10% of each type, size, thickness and radius
	8. Spacer Tube for Superheaters	100 mtr each type and size
	9 Spacer Tube connectors and stoppers	200% of population of one boiler

SI. NO.	PARTICULARS	QUANTITY
	10 Alignment Band / Male & Female sliding Spacers / Male and Female connectors/ Sliding Hooks/ Shields for boiler tubes & Profile Shields for Boiler tube bends/ Swage tube/ Forged items forming integral part of pressure parts/ Expansion Bellow	50 nos. of each type, size, material
	H. Boiler roof and steam cooled wall	
	1. Straight tube of 8-10 m length	100 mtr. of each size, thickness, type & material
	2. Bends	40 Nos. of each size, thickness, type, radius & material (including offset bend)
1.02.00	**Spares for Header**	
	A. Water wall Header	
	1. Hand hole plate with cap / Inspection nozzle with end plate	2 nos. of each type
	2. Yoke plate with fasteners (if applicable)	2 sets* of each type
	B. Spares for Superheater Header	
	3. Hand hole plate with cap / Inspection nozzle with end plate	3 Nos. of each type
	4. Radiographic plug	4 nos. (wherever applicable)
	C. Spares for Reheater Header	
	5. Hand hole plate assembly / Inspection nozzle with end plate	3 nos. of each type
	6. Radiographic plug	4 nos. (wherever applicable)
*** One set means one complete replacement for one Unit**		
1.03.00	**Superheater / Reheater**	
	Attemperation System	
	1. Desuperheater liners	1 set* of each type
	2. Positioning screws for liners	1 set* of each type
*** One set means one complete replacement for one Unit**		
1.04.00 A	**Steam Generator startup re-circulation pump (for once through boiler)**	
	1. Complete Pump & Motor Assembly	1 Nos.
	2. Journal bearing	2 sets *
	3. Thrust bearing	3 sets *
	4. Casing wear rings	3 sets *
	5. Impeller wear rings (if applicable)	4 sets *
	6. Set of gaskets (All gaskets including heat exchanger)	4 sets*
	7. Set of 'O' rings	4 sets *

SI. NO.	PARTICULARS	QUANTITY
	8. Motor heat exchanger	2 sets*
	9. Strainers of BRP system	02 nos. of each type and size
	* One set means one complete replacement for one equipment.	
1.04.00 B	**Condensate Transfer Pumps and accessories**	
	a) Impeller of Pump	1 No.
	b) Impeller Wear Ring	2 Nos.
	c) Casing Wear Ring	2 Nos.
	d) Pump Gaskets and packings	3 sets*
	e) Pump Mechanical Seal	3 sets*
	f) Suction & Discharge expansion bellow	2 Nos. of each type, size
	* One set means one complete replacement for one equipment.	
1.05.00	**Fans**	
	A. ID Fans	
	1. Complete Fan rotor assembly (excluding fan body & Coupling) consisting of: -Rotor Hubs (drive & regulating end, as applicable) -Main Bearing Assy (Complete) -Hydraulic Actuating Device/Hydraulic Cylinder with Rotating Oil Seal Assy - Fan Blades with fixation parts (fastener, seals, clamp, pins etc.) Note: Complete Rotor assy to be supplied in assembled condition on a fixture/ transport stand. (Fan blades to be supplied in loose condition)	1 set
	2. ID fan motor complete	1 no.
	3. ID fan motor bearing	1 set
	4. Fan Main Bearing Assembly	
	4.1 Main bearing assembly (Complete assembled)	1 set
	4.2 Bearings for main bearing assembly	2 sets
	5. All internal Spares for blade bearing assembly (Excluding housing)	4 sets
	6. Lube Oil / Hydraulic Oil system	
	6.1 Pump assembly (excluding motor)	2 nos. of each type
	6.2 Motor	1 No of each type and rating
	6.3 Pressure regulator	3 nos. of each type and rating
	6.4 PRV	3 nos. of each type and rating
	6.5 Oil Filters	

SI. NO.	PARTICULARS	QUANTITY
	6.5.1 Filter housing Assembly (with changeover lever)	1 No of each type
	6.5.2 Filter Element	10 Nos of each type
	6.6 Coupling between oil pump & motor	4 nos. of each type
	6.7 Seals for pump	4 nos. of each type
	6.8 Lub Oil Cooler assembly (Complete)	1 set
	6.9 NRV of lub oil system	1 no. of each type
	7. Fan Blades with fixation parts (fastener, seals, clamp,pins etc.)	1 set
	8. Coupling between Fan & Motor (Including Intermediate shaft/ distance Piece)	2 sets
	9. Fan Blade Actuating Assembly	
	9.1 Hydraulic Actuating Device/Hydraulic Cylinder with rotating oil seal	4 Sets
	9.2 Regulating Linkage Assy	2 Sets
	9.3 Seal ring kit (complete)	10 Nos.
	10. Flexible oil hoses	4 sets
	B. FD Fans	
	1. Complete Fan rotor assembly (excluding fan body & Coupling) consisting of: -Rotor Hubs (drive & regulating end, as applicable) -Main Bearing Assy (Complete) -Hydraulic Actuating Device/Hydraulic Cylinder with Rotating Oil Seal Assy - Fan Blades with fixation parts (fastener, seals, clamp, pins etc.) Note: Complete Rotor assy to be supplied in assembled condition on a fixture/ transport stand. (Fan blades to be supplied in loose condition)	1 set
	2. Fan Main Bearing Assembly	
	2.1 Main bearing assembly (Complete assembled)	1 set
	2.2 Bearings for main bearing assembly	2 sets
	3. All internal Spares for blade bearing assembly (Excluding housing)	2 sets
	4. Lube Oil & Hydraulic Oil system	
	4.1 Pump assembly (excluding motor)	2 nos. of each type
	4.2 Motor assembly	1 no. of each type and rating
	4.3 Pressure regulator	4 nos. of each type
	4.4 PRV	4 nos. of each type
	4.5 Oil Filters	

SI. NO.	PARTICULARS	QUANTITY
	4.5.1 Filter housing Assembly (with changeover lever)	1 No.
	4.5.2 Filter Element	10 Nos.
	4.6 Coupling between oil pump & motor	4 nos.
	4.7 Seals of Pump	4 Nos. of each type
	4.8 Lub Oil Cooler assembly (Complete)	1 set
	4.9 NRV of lub oil system	1 No. of each type
	5. Fan Blades with fixation parts (fastener, seals, clamp,pins etc.)	1 set
	6. Coupling between Fan & Motor (Including Intermediate shaft/ distance Piece)	1 set
	7. Fan Blade Actuating Assembly	
	7.1 Hydraulic Actuating Device/Hydraulic Cylinder with rotating oil seal	1 set
	7.2 Regulating Linkage Assy	1 set
	7.3 Seal ring kit(complete)	10 Nos.
	8. Flexible Hoses	4 sets
	9. FD fan motor complete	1 No
	10. FD fan motor bearings	1 set
	C. PA Fan	
	1. Complete Fan rotor assembly (excluding fan body & Coupling) consisting of: -Rotor Hubs (drive & regulating end, as applicable) -Main Bearing Assy (Complete) -Hydraulic Actuating Device/Hydraulic Cylinder with Rotating Oil Seal Assy - Fan Blades with fixation parts (fastener, seals, clamp, pins etc.) Note: Complete Rotor assy to be supplied in assembled condition on a fixture/ transport stand. (Fan blades to be supplied in loose condition)	1 set
	2. Fan Main Bearing Assembly	
	2.1 Main bearing assembly (Complete assembled)	1 set
	2.2 Bearings for main bearing assembly	2 sets
	3. Coupling between fan & motor (Including Intermediate shaft/ distance Piece)	2 sets
	4. Fan Blades with fixation parts (fastener, seals, clamp, pins, Blade hub seals etc.)	1 set
	5. All internal Spares for blade bearing assembly (Excluding housing)	4 sets
	6. Lube Oil & Hydraulic Oil system	
	6.1 Pump assembly (excluding motor)	2 nos. of each type

SI. NO.	PARTICULARS	QUANTITY
	6.2 Motor	1 no. of each type and rating
	6.3 Pressure regulator	4 nos. of each type
	6.4 PRV	4 nos. of each type
	6.5 Oil Filters	
	6.5.1 Filter housing Assembly (with changeover lever)	1 no.
	6.5.2 Filter Element	10 nos.
	6.6 Coupling between oil pump & motor	4 nos.
	6.7 Seals for pump	4 Nos. of each type
	6.8 Lub Oil Cooler assembly (Complete)	1 set
	6.9 NRV of lub oil system	1 no. of each type
	7. Fan Blade Actuating Assembly	
	7.1 Hydraulic Actuating Device/Hydraulic Cylinder with rotating oil seal	4 sets
	7.2 Regulating Linkage Assy	1 set
	7.3 Seal ring kit(complete)	10 nos.
	8 Flexible Oil Hoses	4 Sets
	9. PA fan motor complete	01 no
	10. PA fan motor bearing	1set
	Note : In Clause 1.05.00 (A), (B) & (C) above, one set means one complete replacement for one fan	
	D. Scanner Air Fan	
	1. Fan assembly (excluding fan body)	1 no. of each type
	2. Motor for AC scanner air fan	1 no
	3. Motor for DC scanner air fan	1 no
1.06.00	**Coal Pulverizers**	
	1. Grinding elements	
	1.1 Rollers/tyres/grinding balls / roller liners (as applicable)	3 sets*
	1.2 Bull ring segments/ bowl / rings / Table liners (as applicable)	3 sets*
	Note: One set of grinding element at (1.1) & (1.2) above is defined as under :	
	1 Set = (Grinding elements needed for complete replacement of one mill) X A	
	Where	
	A= [8000 x N)/GWL, rounded off to nearest higher whole number.]	
	GWL = Guaranteed wear life of grinding element (1.1) & (1.2) as offered by the bidder.	
	N = Number of mills installed for one Steam generator unit.	
	2. Gear box all internals including input shaft (except bearings & seals)	1 set *
	3. Complete Gear Box	2 sets *
	4. Bearings for mills	5 sets *

SI. NO.	PARTICULARS	QUANTITY
	5. Seals & rings for gear box	4 sets *
	6. Seals & rings for mills	4 sets *
	7. Liners with brackets & fasteners for Mill internal and body	4 sets*
	8. Discharge valve assembly	2 sets *
	9. Multiport outlet with liners	4 sets *
	10. Mill main shaft/yoke for worm gear-worm shaft type mill (if applicable)	2 nos.
	11. Spring Assy (as applicable)	4 nos.
	12. Hydraulic loading cylinder(as applicable)	2 nos.
	13. Roller Journal Assembly (without grinding roll)	3 sets*
	14. Oil system Components for Hydraulic loading cylinder (if applicable)	
	14.1 Oil Filter	
	14.1.1 Filter assembly	2 nos.
	14.1.2 Filter Element	10 nos.
	14.2 Pump & Motor coupling	2 nos.
	14.3 Pump assembly (excluding motor)	2 nos.
	14.4 Motor	2 nos.
	14.5 Oil cooler assembly	1 no.
	14.6 Oil Cooler 3-way valve	2 nos.
	14.7 Oil block	1 no.
	14.8 Accumulator & Bladder with air fill valve	1 set*
	14.9 Pressure regulator	2 nos. each type
	14.10 PRV	2 nos. each type
	14.11 NRV of oil system	2 nos. each type
	14.12 Solenoid Valve	2 nos. each type
	14.13 Seal Set of Hydraulic cylinder	4 sets*
	15. Mill Bottom (if applicable)	2 no.
	16. Bowl hub assembly/Ring seat	1 no.
	17. Lube Oil System for Mill	
	17.1 Pump & Motor coupling	2 nos.
	17.2 Pump assembly (excluding motor)	2 nos.
	17.3 Oil Filter	
	17.3.1 Filter assembly	2 nos.
	17.3.2 Filter element	12 nos.
	17.4 Pressure regulator	4 nos. each type
	17.5 PRV	4 nos. each type
	17.6 Oil cooler assembly for coal mills	2 nos.
	17.7 Mill lube oil motor	2 nos.

SI. NO.	PARTICULARS	QUANTITY
	17.8 NRV of lub oil system	2 nos. each type
	18. Bearings for gear box	
	18.1 Anti-friction bearings	4 sets *
	18.2 Thrust pad and bush bearings	4 sets*
	19. Coupling between mill gearbox and motor	4 Nos.
	20. Mill motor complete	1 no
	21. Mill motor bearing	2 sets*
	22. VFD assembly for dynamic classifier	4 sets*
	23. Mill lower skirt/Lower air seal ring with gasket & fasteners (as applicable)	2 sets*
	24. Labyrinth seal assembly/Gland rope follower/Upper air seal ring with gasket & fasteners (as applicable)	5 sets*
	25. Classifier blades AND Rotor & rotor support assembly (as applicable)	1 set*
	26. Spares for Dynamic classifiers	
	26.1 Gearbox	1 no
	26.2 Belt & Pulley	2 sets*
	26.3 Bearing	1 set*
	27. Mill Scrapper assembly	2 sets*
	* One set means one complete replacement of one mill	
1.07.00	**Feeders**	
	1. Belt	8 sets *
	2. Belt drive reducer	3 nos.
	3. Clean out conveyor (COC) reducer	2 nos.
	4. Counter assembly (complete)/Belt takeup assembly (Complete) (as applicable)	2 nos.
	5. Head pulley assembly (complete)	2 nos.
	6. Weight sensing system	
	6.1 Weighing roll	2 nos.
	6.2 Weighing spare roller assembly	2 nos.
	6.3 Drag link assembly	2 nos.
	7. Tension roll/ Belt take-up pulley (as applicable)	2 nos.
	8. Gearbox all internals	2 nos.
	9. Feeder Inlet and outlet gate (complete assembly)	2 nos. of each type
	10. Mill feeder motor	2 nos. of each type
	11. Mill feeder COC motor (if applicable)	2 nos.
1.08.00 A)	**Coal Burners/ Coal Pipe Bends(for tangential firing)**	

SI. NO.	PARTICULARS	QUANTITY
	1. Coal compartment assembly	1 set**
	2. Inter air compartments	1/2 set**
	3. Oil compartments/oil nozzle tips	1/2 set**
	4. End air compartment	1/2 set**
	5. Coal nozzle castings	1 set**
	6. Adjustable coal nozzle tips	1 set**
	7. Coal pipe bends with liners	20% of population for each type size, thickness & radius for one unit.
	8. Coal pipe couplings	30 nos. of each type & size
	9. Coal pipe coupling gasket	30 nos. of each type & size
	** One set means one complete replacement for a unit	
1.08.00 B)	**Coal Burners/ Coal Pipe Bends (for front / rear wall firing)**	
	1. Complete Coal compartment assembly	1 set**
	2. Adjustable coal nozzle tips	1 set**
	3. Coal pipe bends with liners	20% of population for each type size, thickness & radius for one unit.
	4. Coal pipe couplings	30 nos. of each type & size
	5. Coal pipe coupling gasket	30 nos. of each type & size
1.08.00C	COFA/SOFA/AA Air nozzle assembly	
	1. COFA/SOFA/AA assembly	25% of total quantity of one unit
	** One set means one complete replacement for a unit	
1.09.00	**Seal Air Fan**	
	1. Fan assembly (excluding fan body)	2 nos.
	2. Bearings & seals	
	2.1 Bearing	2 sets*
	2.2 Bearing Housing	2 sets *
	2.3 Shaft Seal	2 sets*
	3. Seal air fan motor	1 no.
	4. Seal air fan motor bearing	1 set*
	5. Fan suction filters	2 nos.
	* One set means complete replacement of one fan	
1.10.00 A)	**Regenerative Air Preheater (Primary & Secondary APH)**	
	1. Support Bearing	Half of the total population
	2. Guide Bearing	Half of the total population
	3. Lubricating system of support & Guide Brg	
	3.1 Pump assembly (except motor)	2 nos. each for PAPH & SAPH
	3.2 Pump Motor	2 nos. each type & rating for PAPH & SAPH

SI. NO.	PARTICULARS	QUANTITY
	3.3 Pressure regulator	2 nos. each for PAPH & SAPH
	3.4 PRV	2 nos. each for PAPH & SAPH
	3.5 Oil Filters	
	3.5.1 Filter housing Assembly (with changeover lever)	1 no. each for PAPH & SAPH
	3.5.2 Filter Element	6 nos. each for PAPH & SAPH
	3.6 Pump Motor coupling	3 nos. each for PAPH & SAPH
	3.7 Lub Oil Cooler assembly (Complete)	2 nos. each for PAPH & SAPH
	3.8 NRV of lub oil system	1 no. each type and ratings for PAPH & SAPH
	4. Radial seals	4 sets* each for PAPH & SAPH
	5. Axial Seals	2 sets* each for PAPH & SAPH
	6. Circumferential or bypass seals	2 sets* each for PAPH & SAPH
	7. Rotor post seals	2 sets* each for PAPH & SAPH
	8. Air Motor	2 nos. each for PAPH & SAPH
	8.1 Air motor (Complete assembly)	2 nos. each for PAPH & SAPH
	8.2 Bearings	4 sets* each for PAPH & SAPH
	8.3 Seals for air motor	4 sets* each for PAPH & SAPH
	9. Main drive speed reducer	
	9.1 Speed reducer (Complete Assembly)	2 sets* each for PAPH & SAPH
	9.2 Speed reducer Gears, pinions & shaft	2 sets* each for PAPH & SAPH
	9.3 Speed reducer Bearings	2 sets * for PAPH & SAPH
	9.4 Speed reducer Seals & gaskets	4 sets* each for PAPH & SAPH
	9.5 Speed reducer Clutch assembly	4 nos. each for PAPH & SAPH
	10. Fluid coupling (if applicable)	4 nos. each for PAPH & SAPH
	11. Other couplings with inserts & fasteners (if applicable)	2 nos. each for PAPH & SAPH
	12. Spare for cleaning device for Hot end & Cold end (Corresponding equivalent item shall be considered for any non-applicable part)	
	12.1 Worm & worm wheel for gear reducer	1 set* each for PAPH & SAPH
	12.2 Coupling	1 set* each for PAPH & SAPH
	12.3 Bearing & seals for speed reducer	1 set* each for PAPH & SAPH
	12.4 Bearing for cleaning device	1 set* each for PAPH & SAPH
	12.5 Poppet valve assembly	1 No
	12.6 Carriage assembly	1No
	12.7 Rotary Chain Box Assembly	1No
	12.8 Lance and feed pipe	1 No
	13. Spare Kit for rotor stoppage (rotation sensor) alarm	2 sets*
	14. Spare kit for fire sensing device with fire fighting nozzle	2 sets*

SI. NO.	PARTICULARS	QUANTITY
	15. Bushings for all worm gear reducer (if applicable)	2 sets*
	16. Cold, intermediate & hot end baskets	1 set* each type and size
	17. Rack & pinion assembly (if applicable)	1 set* each for PAPH & SAPH
	18. Motor Bearing for all motors in APH	1 set* each type for PAPH & SAPH
	19. Air pre heater motor	1 no. of each type and rating for PAPH and SAPH
	20. Air pre heater soot blower motor	1 no. of each type and rating for PAPH and SAPH
	21. VFD system	1 no. of each type and rating for PAPH and SAPH
	22. Support bearing Housing	1 no. of each type and rating for PAPH and SAPH
	23. Guide bearing Housing	1 no. of each type and rating for PAPH and SAPH
	24. Seal Tube for Guide bearing	1 no. of each type and rating for PAPH and SAPH
	25. Sleeve for guide bearing	1 no. of each type and rating for PAPH and SAPH
	26. Sector Plate Actuators	1 set* each for PAPH & SAPH
	* One set means one complete replacement each for Primary & Secondary APH.	
	OR	
1.10.00 (B)	**Regenerative Air Preheater –Trisector type**	
	1. Support Bearing	2 nos.
	2. Guide Bearing	2 nos.
	3. Lubricating system of support & Guide Brg.	
	3.1 Pump assembly(except motor)	2 nos.
	3.2 Pump Motor	2 nos.
	3.3 Pressure regulator	2 nos.
	3.4 PRV	2 nos. of each type
	3.5 Oil Filters	
	3.5.1 Filter housing Assembly (with changeover lever)	1 no.
	3.5.2 Filter Element	4 nos.
	3.6 Pump Motor coupling	2 nos.
	3.7 Lub Oil Cooler assembly (Complete)	2 nos.
	3.8 NRV of lub oil system	1 no. each type
	4. Radial seals	4 sets*
	5. Axial Seals	2 sets*
	6. Circumferential or bypass seals	2 sets*
	7. Rotor post seals	2 sets*

SI. NO.	PARTICULARS	QUANTITY
	8. Air Motor	
	8.1 Air motor (Complete assembly)	2 nos.
	8.2 Bearings	2 sets*
	8.3 Seals for air motor	2 sets*
	9. Main drive speed reducer	
	9.1 Speed reducer (Complete Assembly)	2 sets*
	9.2 Speed reducer Gears, pinions & shaft	2 sets*
	9.3 Speed reducer Bearings	2 sets*
	9.4 Speed reducer Seals & gaskets	2 sets*
	9.5 Speed reducer Clutch assembly	2 nos.
	10. Fluid coupling (if applicable)	3 nos.
	11 Other couplings with inserts & fasteners (if applicable)	3 nos.
	12 Spare for cleaning device for Hot end & Cold end (Corresponding equivalent item shall be considered for any non-applicable part)	
	12.1 Worm & worm wheel for gear reducer	2 sets*
	12.2 Coupling	2 sets*
	12.3 Bearing & seals for speed reducer	2 sets*
	12.4 Bearing for cleaning device	2 sets*
	12.5 Poppet valve assembly	1 no.
	12.6 Carriage assembly	1 no.
	12.7 Rotary Chain Box Assembly	1 no.
	12.8 Lance and feed pipe	2 nos.
	13. Spare Kit for rotor stoppage (speed sensor) alarm	2 sets*
	14. Spare kit for fire sensing device with firefighting nozzle	2 sets*
	15. Bushings for worm gear reducer (if applicable)	3 sets*
	16. Cold, intermediate & hot end baskets	1 set each type and size*
	17. Rack & pinion assy (if applicable)	1 set*
	18. APH Main drive Motor (complete)	1 no. of each type and rating
	19. VFD system	1 no. of each type and rating
	20. Air preheater soot blower motor	1 no. of each type
	21. Support bearing Housing	1 no. of each type and rating for APH
	22. Guide bearing Housing	1 no. of each type and rating for APH
	23. Seal Tube for Guide bearing	1 no. of each type and rating for APH
	24. Sleeve for guide bearing	1 no. of each type and rating for APH

SI. NO.	PARTICULARS	QUANTITY
	25. Sector Plate Actuators	1 set*
	* One set means one complete replacement of one APH.	
1.11.00	**Fuel Oil System**	
	Light Fuel Oil System	
	1. Light Oil gun	1 Set **
	2. Oil gun nozzle (with back plate, mixing plate & cap nut)	2 sets**
	3. Oil gun flexible hoses (including for guide pipe, air line)	4 sets**
	4. Complete Pump & Motor Assembly	2 nos.
	5. Light Oil pump	
	5.1 Complete cartridge assembly	2 sets*
	5.2 Bearings including that of motor	2 sets*
	5.3 Mech. Seals	2 sets*
	5.4 Set of 'O' rings & seals	4 sets*
	5.5 Set of all types of bushes & sleeves	2 sets*
	5.6 Set of gaskets	4 sets*
	6. LDO pump relief valve complete accessories	2 nos.
	7. Spares for LDO pump relief valve	
	7.1 Valve spindle & disc	2 nos.
	7.2 Set of gaskets	4 sets*
	7.3 Sealing ring	2 sets*
	7.4 Springs	2 sets*
	8. Burner isolation valve	24 nos. or 20% which is less
	8.1 Gaskets for above valves	4 sets**
	8.2 Gland packing for above valves	4 sets**
	9. Light oil pressure control valve	1 no.
	10. Light oil main trip valve	1 no.
	11. Valves (each type & size)	(a) 1 no. where total quantity of particular type and size of valve is less than or equal to 10. (b) 2 Nos. where total quantity of a particular type & size of valve is less than 40 but more than 10
	12. Strainers of LDO System	02 of each type & Size
	* One set means one complete replacement of one pump	
	** One set means one complete replacement of one Unit	
1.12.00	**HEA Ignitors**	
	1. HEA retractor assembly (including power cylinder, HEA spark rod tip, solenoid valve, limit switches etc.	6 nos.
	2. HEA spark rod (including special cables from exciter)	12 nos.
	3. HEA spark tip	12 nos.
	4. HEA exciter	12 nos.

SI. NO.	PARTICULARS	QUANTITY
1.13.00	**Soot Blowers**	
	1. Complete assembly of water wall deslagger with motor	4 nos.
	2. Motor for water wall deslagger	01 (one no. of each type)
	3. Complete valve assembly for water wall deslagger.	4 nos.
	4. Long retractable soot blower assemblies complete with motor	2 nos. of each type
	5. Motor for long retractable soot blower	1 no.
	6. Complete valve assembly for long retractable soot blower.	2 nos.
	7. Reduction gear box & motor for air preheater soot blower oscillation	2 nos. of each type (If separate type & rating of SB are envisaged for primary & secondary APH, then 2 Nos. of each type.)
	8. Complete valve assembly for air preheater soot blower	4 nos. of each type (If separate type & rating of SB are envisaged for primary & secondary APH, then 2 Nos. of each type.)
	9. Bearings for	
	9.1 Long retractable soot blower	3 sets*
	9.2 Water wall deslagger	3 sets*
	10. Oil seal/other seals (as applicable) for	
	10.1 Long retractable soot blower	3 sets*
	10.2 Water wall deslagger	3 sets*
	11. Complete steam safety valve assembly	1 no.
	12. Steam control valve assembly	2 nos. of each type
	13. Sweep action/ swing arm/ Long retractable/ Semi retractable non-rotating/ Multimedia type blower for Air Preheater	3 nos. each for PAPH and SAPH or 3 nos. for Tri-sector APH
	14. Limit switches	4 nos. of each type & ratings.
	15. Complete power pack assembly for Long Retractable soot blower	(Two no. for rotary + Two no. for transverse)
	16. Spare set of rotary & transverse chain for long retractable soot blowers	2 nos. of each type and size
	17. Spares for rack gear assembly	
	17.1 Set of Gears & shaft	2 sets*
	17.2 Rack & pinion	2 sets*
	16. LRSB lance tube (SS)	02 nos.
	* One set means one complete replacement of one valve/Equipment.	

SI. NO.	PARTICULARS	QUANTITY
1.14.00	**VALVES**	
	A. Spares for Steam Separator / Separator outlet/ Primary Superheater Safety valves	
	1. Complete separator/ Separator outlet/ Primary Superheater safety valve assy.	1 no. of each type
	2. Upper adjusting ring	2 nos. of each type
	3. Lower adjusting ring	4 nos. of each type
	4. Locking pin set (Adjusting ring pin)	4 nos. of each type
	5. Safety valve Disc	8 nos. of each type
	6. Safety Valve Spindle	2 nos. of each type
	7. Disc Holder	4 nos. of each type
	8. Guide	2 nos. of each type
	9. Cotter Pins (If applicable)	10 nos. of each type
	10. Set of Washer	1 no. of each Type
	B. Spares for SH Safety Valves	
	1. Complete Superheater safety valve assy	2 nos. of each type
	2. Upper adjusting ring	4 nos. of each type
	3. Lower adjusting ring	4 nos. of each type
	4. Locking pin set (Adjusting ring pin)	4 nos. of each type
	5. Safety valve Disc	8 nos. of each type
	6. Safety Valve Spindle	4 nos. of each type
	7. Disc Holder	4 nos. of each type
	8. Guide	2 nos. of each type
	9. Cotter Pins (If applicable)	10 nos. of each type
	10. Set of Washer	4 nos. of each Type
	C. Spares for Hot RH safety Valves	
	1. Complete Hot Reheater safety valve assy	1 no. of each type
	2. Upper adjusting ring	2 nos. of each type
	3. Lower adjusting ring	2 nos. of each type
	4. Locking pin set (Adjusting ring pin)	4 nos. of each type
	5. Safety valve Disc	2 nos. of each type
	6. Safety Valve Spindle	1 no. of each type
	7. Disc Holder	2 nos. of each type
	8. Guide	2 nos. of each type
	9. Cotter Pins (If applicable)	10 nos. of each type
	10. Set of Washer	1 no. of each Type
	D. Spares for Cold RH safety Valves	
	1. Complete Cold Reheat safety valve assy	1 no. of each type
	2. Upper adjusting ring	2 nos. of each type
	3. Lower adjusting ring	2 nos. of each type
	4. Locking pin set (Adjusting ring pin)	2 nos. of each type
	5. Safety valve Disc	4 nos. of each type
	6. Safety Valve Spindle	2 nos. of each type
	7. Disc Holder	2 nos. of each type

SI. NO.	PARTICULARS	QUANTITY
	8. Guide	2 nos. of each type
	9. Cotter Pins (If applicable)	10 nos. of each type
	10. Set of Washer	1 no. of each Type
	E-1. Spares for Electromatic Relief Valves (If applicable)	
	1. Complete Electromatic relief valve	1 no. of each type
	2. Spares for above:	
	2.1 Disc for main valve	2 nos. of each type
	2.2 Spring for main valve	2 nos. of each type
	2.3 Seal rings for main valve	4 nos. of each type
	2.4 Seal bushing for main valve	4 nos. of each type
	2.5 Disc and stem assembly for pilot valve	2 Nos. of each type
	2.6 Bushing for pilot valve	4 nos. of each type
	2.7 Spring for pilot valve	4 nos. of each type
	2.8 Seal ring	4 nos. of each type
	3. Isolation valve for ERV	2 nos. of each type
	E-2. Spares for Electromatic Ball Valves (If applicable)	
	1. Complete Electromatic ball valve	2 nos. of each type
	2. Spares for above:	
	2.1 Ball and seat assembly	2 nos. of each type
	2.2 Gasket	4 nos. of each type
	2.3 Packing Gland Flange	2 nos. of each type
	2.4 Packing ring	4 nos. of each type
	F. Spares for Superheater spray control Valves	
	1. Complete superheater spray control valve	2 nos. of each type
	2. Spares for above:	
	2.1 Gland packing set	10 sets of each type*
	2.2 Pressure seal gasket	2 nos. of each type
	2.3 Stem	4 nos. of each type
	2.4 Control Valve Plug	4 nos. of each type
	G. Spares for Reheater spray control Valves	
	1. Complete Reheater spray control valve	2 nos. of each type
	2. Spares for above:	
	2.1 Gland packing set	10 sets of each type*
	2.2 Pressure seal gasket	10 nos. of each type
	2.3 Stem	4 nos. of each type
	2.4 Control Valve Plug	4 nos. of each type
1.15.00	**Superheater Spray Block Valve Spares**	
	1. Gland packing set	10 sets of each type*
	2. Pressure seal gasket	10 nos. of each type
	3. Stem	2 nos. of each type
	4. Block Valve plug	2 nos. of each type

SI. NO.	PARTICULARS	QUANTITY
	***Note:** one set means complete replacement for one valve	
1.16.00	**Reheater Spray Block Valve Spares**	
	1. Gland packing set	10 sets of each type*
	2. Pressure seal gasket	10 nos. of each type
	3. Stem	2 nos. of each type
	4. Block Valve plug	2 nos. of each type
	***Note:** one set means complete replacement for one valve	
1.17.00	**Spares for boiler main steam stop valve**	
	1. Boiler main stop valve(complete assy)	1 no.
	2. Set of gland packings	4 sets*
	3. Pressure seal gaskets	4 sets*
	4. Stem	1 no. of each type for main valve & 2 nos. of each type for integral bypass valve.
	5. Disc	2 sets*
	6. Seat rings (if applicable)	4 sets*
	7. Fasteners	2 sets*
	***Note:** one set means complete replacement for one valve including integral bypass valves.	
1.18.00	**Boiler Feed Check Valve**	
	1. Body seat rings	2 nos.
	2. Flap	1 no.
	3. Pressure seal ring for main body and Hinge Pin	4 nos. for each type
	4. Gland packings (if applicable)	4 sets* for each type
	5. Fasteners	2 sets*
	***Note:** one set means complete replacement for one valve	
1.19.00	**Start up vent valve**	
	1. Stem	1 no.
	2. Disc	2 nos.
	3. Body seat rings	4 sets*
	4. Gland packings	6 sets*
	5. Pressure seal rings	4 nos.
	6. Fasteners	3 sets*
	***Note:** one set means complete replacement for one valve	
1.20.00	**Auxiliary Steam Pressure Reducing & Desuperheating System**	
	I. High Capacity PRDS System (MS)	
	1. Steam pressure reducing cum desuperheating valves	1 no.
	1.1 Stem	1 no.