



# **TENDER SPECIFICATION**

**No. BHE/PW/PUR/DBBDT-CNI/984**

**FOR**

HANDLING AT SITE STORES/STORAGE YARD, TRANSPORTATION TO SITE OF WORK, COMPLETE ERECTION, CHECKING OF CALIBRATION, TESTING, COMMISSIONING AND HANDING OVER OF CONTROL & INSTRUMENTATION WORKS FOR BOILER AND ITS AUXILIARIES, TURBOGENERATOR AND ITS AUXILIARIES, STATION C&I FOR **2X600 MW DBPL RAIGARH PROJECT.**

**AT**

**BARADARHA IN JANJGIR - CHAMPA DISTRICT IN CHHATTISGARH STATE**

VOLUME-II-PRICE BID/REV-01 dated 08.06.2012

**BHARAT HEAVY ELECTRICALS LIMITED**

(A Govt. of India Undertaking)

POWER SECTOR - WESTERN REGION

345, KINGS WAY- NAGPUR 440 001

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THESE TENDER DOCUMENTS CONTAINING VOLUME-II PRICE BID IS ISSUED TO:

M/s.....

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(THESE TENDER DOCUMENTS ARE NOT TRANSFERABLE)

FOR BHARAT HEAVY ELECTRICALS LIMITED

ADDL. GENERAL MANAGER (PURCHASE)

PLACE: NAGPUR

DATE :

**TS NO BHE/PW/PUR/DBBDT-CNI/984**

**Volume-II-price bid/Rev-01 dated 08.06.2012 OF DB POWER 2X600MW FOR C&I PACKAGE**

<b>SL. NO.</b>	<b>DESCRIPTION</b>	<b>UO M</b>	<b>QTY</b>	<b>Unit Rate in Figures(in Rs)</b>	<b>Unit Rate in Words(in Rs)</b>	<b>Total Amount (in Rs)</b>
<b>I1.0</b>	<b>Cable tray and Accessories</b>					
<b>I1.0.1</b>	Perforated cable tray and accessories (with or without cover) 50mm	Met er	7975			
<b>I1.0.2</b>	Perforated cable tray and accessories (with or without cover) 100mm	Met er	15750			
<b>I1.0.3</b>	Perforated cable tray and accessories (with or without cover) 150mm	Met er	4615			
<b>I1.0.4</b>	Perforated cable tray and accessories (with or without cover) 300mm	Met er	190			
<b>I2.0</b>	<b>Cable laying including earthing wires</b>					
<b>I2.0.1</b>	Screened Copper Cable 2P x 0.5 sqmm armoured / unarmoured	Met er	123560			
<b>I2.0.2</b>	Screened Copper Cable 4P x 0.5 sqmm armoured / unarmoured	Met er	456960			
<b>I2.0.3</b>	Screened Copper Cable 6P x 0.5 sqmm armoured / unarmoured	Met er	50			
<b>I2.0.4</b>	Screened Copper Cable 8P x 0.5 sqmm armoured / unarmoured	Met er	175080			
<b>I2.0.5</b>	Screened Copper Cable 10P / 12P x 0.5 sqmm armoured / unarmoured	Met er	75300			
<b>I2.0.6</b>	Screened Copper Cable 16P x 0.5 sqmm armoured / unarmoured	Met er	4000			
<b>I2.0.7</b>	Screened Copper Cable 20P x 0.5 sqmm armoured / unarmoured	Met er	26000			
<b>I2.0.8</b>	Screened Copper Cable 24P x 0.5 sqmm armoured / unarmoured	Met er	50			
<b>I2.0.9</b>	Screened Copper Cable 1C x 0.5 sqmm armoured / unarmoured	Met er	2000			

<b>I2.0.10</b>	Screened Copper Cable 2P x 1.3 sqmm armoured / unarmoured	Met er	14000			
<b>I2.0.11</b>	Screened Copper Cable 1P/2C or 3C x 1.5 sqmm armoured / unarmoured	Met er	7200			
<b>I2.0.12</b>	Screened Copper Cable 2P/4C x 1.5 sqmm armoured / unarmoured	Met er	17800			
<b>I2.0.13</b>	Screened Copper Cable 5C/7C x 1.5 sqmm armoured / unarmoured	Met er	10200			
<b>I2.0.14</b>	Screened Copper Cable 10C/12C x 1.5 sqmm armoured / unarmoured	Met er	8200			
<b>I2.0.15</b>	Screened Copper Cable 19C x 1.5 sqmm armoured / unarmoured	Met er	9000			
<b>I2.0.16</b>	Screened Copper Cable 2C x 2.5 sqmm armoured / unarmoured	Met er	9000			
<b>I2.0.17</b>	Screened Copper Cable 3C x 2.5 sqmm armoured / unarmoured	Met er	4600			
<b>I2.0.18</b>	Screened Copper Cable 5C x 2.5 sqmm armoured / unarmoured	Met er	26000			
<b>I2.0.19</b>	Screened Copper Cable 19C x 2.5 sqmm armoured / unarmoured	Met er	5000			
<b>I2.0.20</b>	Screened Copper Cable 3C x 6 sqmm armoured / unarmoured	Met er	4600			
<b>I2.0.21</b>	Copper Cable 2 or 3 triad, 0.5/1.5 sqmm armoured/unarmoured	Met er	200			
<b>I2.0.22</b>	Copper Cable 6 triad, 0.5/1.5 sqmm armoured/unarmoured	Met er	200			
<b>I2.0.23</b>	Compensating cable 1P/2P x 0.5 sq mm type Tx/Sx/Kx unarmoured/armoured	Met er	14000			
<b>I2.0.24</b>	Compensating cable 1P/2P x 1.3 sqmm type Tx/Sx/Kx unarmoured/armoured	Met er	15200			
<b>I2.0.25</b>	Compensating cable 4P x 1.3 sqmm type Tx/Sx/Kx unarmoured/armoured	Met er	28000			

<b>I2.0.26</b>	Compensating cable 6P x 1.3 sqmm type Tx/Sx/Kx unarmoured/armoured	Met er	20000			
<b>I2.0.27</b>	Laying, etc of Optical fibre cables on cable trays, conduits etc (termination supervision by other agency) with minor civil works	Met er	4800			
<b>I2.0.28</b>	Network UTP Cables (special termination using UTP connectors involved)	Met er	6132			
<b>I2.0.29</b>	GI earthing wire	Met er	3000			
<b>I2.0.30</b>	Cable duct 60 x 60 x 1000	Met er	400			
<b>I2.0.31</b>	Cable duct 180 x 100 x 1000	Met er	200			
<b>I2.0.32</b>	Cable duct 250 x 100 x 1000	Met er	200			
<b>I2.0.33</b>	Hoses-1/4", 1/2" , 1", SS/Teflon, Braided/unbraided, upto 5M length	Met er	212			
<b>I2.0.34</b>	Flexible pipe 1"	Met er	100			
<b>I2.0.35</b>	Flexible pipe 2"	Met er	20			
<b>I4.0</b>	<b>Junction box/Push Button station</b>					
<b>I4.0.1</b>	Junction boxes upto 48 way	No	584			
<b>I4.0.2</b>	Junction boxes above 48 way	No	158			
<b>I4.0.3</b>	CJCB Junction boxes upto 48 way	No	20			
<b>I4.0.4</b>	CJCB Junction boxes above 48 way	No	10			
<b>I4.0.5</b>	2PB or 3PB Pushbutton box	No	10			
<b>I4.0.6</b>	Fire protection switch in IP65 box	No	8			

<b>14.0.7</b>	FSSS Local Oil Gun Maintenance Switch Box	No	40			
<b>15.0</b>	<b>Conduits/Impulse pipe/tubes</b>					
<b>15.0.1</b>	Impulse pipe CS ½" SCH 80 (D21.3 x 3.73 mm)	Met er	800			
<b>15.0.2</b>	Impulse pipe CS 1" SCH 80 (D33.4 x 4.55 mm)	Met er	1500			
<b>15.0.3</b>	Impulse pipe CS GR C 1/2" NB SCH 80	Met er	7300			
<b>15.0.4</b>	Impulse pipe CS GR C 1/2" NB SCH 160	Met er	2200			
<b>15.0.5</b>	Impulse pipe CS GR C 3/4" NB SCH 80	Met er	7200			
<b>15.0.6</b>	Impulse pipe CS GR B 26.7 x 3.91 mm	Met er	600			
<b>15.0.7</b>	Impulse pipe ASTM CS GR C 1" NB SCH 80	Met er	100			
<b>15.0.8</b>	CS pipe 2" SCH 40	Met er	50			
<b>15.0.9</b>	CS pipe 60.3 x 3.91 mm	Met er	120			
<b>15.0.10</b>	Impulse pipe AS ½" SCH 40 (D21.3 x 2.76 mm)	Met er	1600			
<b>15.0.11</b>	Impulse pipe AS ½" SCH 80 (D21.3 x 3.73 mm)	Met er	400			
<b>15.0.12</b>	Impulse pipe AS ½" SCH 160 (D21.3 x 4.78 mm)	Met er	1300			
<b>15.0.13</b>	Impulse pipe AS P22 1/2" NB SCH XXS	Met er	1500			
<b>15.0.14</b>	Impulse pipe AS P22 26.7 x 3.91 mm	Met er	460			
<b>15.0.15</b>	Impulse pipe SS ½" SCH 40 (D21.3 x 2.6 mm)	Met er	2050			
<b>15.0.16</b>	Impulse pipe SS 16 mm OD (for primary water system)	Met er	1400			

<b>15.0.17</b>	Pipe SS 6 x 1.5 mm	Met er	60			
<b>15.0.18</b>	Impulse pipe for pre instruments CS (D16 x 2.6mm)	Met er	3800			
<b>15.0.19</b>	GI Pipe (1/2", 1") Heavy grade	Met er	4320			
<b>15.0.20</b>	GI Pipe (1.5 ", 2") Heavy grade	Met er	20			
<b>15.0.21</b>	Seamless CS tube 13.5 x 2.6 mm	Met er	1106			
<b>15.0.22</b>	Seamless CS tube 21.3 x 2.3 mm	Met er	940			
<b>15.0.23</b>	CS tube 33.7 x 3.38 mm	Met er	4			
<b>15.0.24</b>	CS tube DN 80	Met er	80			
<b>15.0.25</b>	Seamless AS tube 13.5 x 2.6 mm	Met er	24			
<b>15.0.26</b>	Seamless AS tube 21.3 x 2.3 mm	Met er	850			
<b>15.0.27</b>	SS tube 12.7 x 2.1 mm	Met er	1250			
<b>15.0.28</b>	Seamless SS tube 13.5 x 2.6 mm	Met er	60			
<b>15.0.29</b>	Seamless SS tube 21.3 x 2.3 / 2.6 mm	Met er	644			
<b>15.0.30</b>	SS tube D6 x 1.0/1.5mm	Met er	120			
<b>15.0.31</b>	Copper tube 6mm/8mm / 1/4" (Sheathed / bare)	Met er	5200			
<b>15.0.32</b>	Copper tube 3/8" (Sheathed / bare)	Met er	100			
<b>15.0.33</b>	Copper tube 1/2" to 1" (Sheathed / bare)	Met er	50			

<b>16.0</b>	<b>Miscellaneous Structural steel including frames for Panels/Racks/Instruments, supports for cable tray/pipes/tubes, Canopies etc</b>					
<b>16.0.1</b>	Structural steel for fabrication	Tons	50			
<b>16.0.2</b>	Aluminium strip (300 x 25 x 2 mm)	No	1800			
<b>16.0.3</b>	Assembly of JB mounting frames (approx. dim.1100 x 500 x 765 mm)	No	4			
<b>16.0.4</b>	Assembly of JB mounting frames (approx. dim. 1600 x 718/858 x 1700 mm)	No	8			
<b>16.0.5</b>	Assembly of JB mounting frames (approx. 1700 x 500 x 1600 mm)	No	4			
<b>16.0.6</b>	Assembly of JB mounting frames (approx. 2600 x 620 x 1700 mm)	No	10			
<b>16.0.7</b>	Assembly of JB mounting frames (approx. dim.1100 x 500 x 1700 mm)	No	10			
<b>16.0.8</b>	Assembly of JB mounting frames (approx. 1100 x 425 x 700 mm)	No	6			
<b>17.0</b>	<b>Panels/Cubicles/Racks/Enclosures/Monitors/Computer/Computer peripheral/PLCs/UPS/Batteries</b>					
<b>17.0.1</b>	Assembly of local gauge board (1400 x 450 x 1900 mm)	No	18			
<b>17.0.2</b>	Control Panel (approx. weight 400kg, 1000(L) X 1000(B) X 2500(H) mm) - one panel	No	22			
<b>17.0.3</b>	Control Panel (approx. weight 800kg, 1500(L) X 1000(B) X 2500(H) mm) - suit of two panels	No	54			
<b>17.0.4</b>	Control Panel (approx. weight 1200kg, 2250(L) X 1000(B) X 2500(H) mm) - suit of three panels	No	30			
<b>17.0.5</b>	Control Panel (approx. weight 1600kg, 3000(L) X 1000(B) X 2500(H) mm) - suit of four panels	No	4			
<b>17.0.6</b>	Gravimetric Coal feeder control panel (Approx Dim. 1200 x 600 x 2315)	No	16			

<b>17.0.7</b>	Control panels for Centrifuges	No	4			
<b>17.0.8</b>	Electrical control board (approx. 1900(L) x 1000(B) x 2355(H) mm)	Set	2			
<b>17.0.9</b>	Unit Control Panel	Set	2			
<b>17.0.10</b>	Transducer and AVT panel	No	2			
<b>17.0.11</b>	HP dosing system	No	2			
<b>17.0.12</b>	LP Dosing sysetm	Set	2			
<b>17.0.13</b>	NETWORK PANELS (approx. 800 x 800 x 2100 mm)	No	7			
<b>17.0.14</b>	Vibration monitoring system for Fans and Pulverisers	Set	2			
<b>17.0.15</b>	Vibration monitoring system for main turbine / generator	Set	2			
<b>17.0.16</b>	Vibration monitoring system for TDBFP	Set	2			
<b>17.0.17</b>	Vibration monitoring system for Generator End Winding	Set	2			
<b>17.0.18</b>	DC motor starter box for scanner fan	No	2			
<b>17.0.19</b>	Burner Tilt Shear Pin Failure Indication Box	No	8			
<b>17.0.20</b>	Air Heater Rotor Stoppage Alarm Box	Set	8			
<b>17.0.21</b>	Steam leak detection (STLD) system panel (approx. 800(L) x 2315(B) x 800(H) mm)	Set	2			
<b>17.0.22</b>	Electronic Water Level Indicator (EWLI)	Set	4			
<b>17.0.23</b>	Condenser vacuum pump system	Set	2			

<b>17.0.24</b>	Generator Instrumentation cabinet including annunciator (approx. weight 450 Kg, 2200 x 1000 x 800 mm)	No	2			
<b>17.0.25</b>	Positioner cabinets (approx. 380 x 380 x 210 mm) for LPBP CV1, LPBP CV2, Spray water CV	No	4			
<b>17.0.26</b>	Local Instrument racks (LIR)	No	165			
<b>17.0.27</b>	Local Instrument enclosures (LIE)	No	74			
<b>17.0.28</b>	max Engineering / operator / storian / LAN / WAN / Shift in charge / stn in charge / gateway / interface PC / HART etc., PC/Server Station with ASCII Keyboard, Mouse & 21" Colour Monitor, individual UPS	Set	40			
<b>17.0.29</b>	Printers (80/132 col Dot Matrix, A3 Inkjet, A3 Laserjet, etc)	Set	14			
<b>17.0.30</b>	LVS (Large Video Screen) made up of 5X1 matrix. Each LVS of DLP/LCD type, Rear projection type, 67 or 70 inches diagonal size, with 1400x1050 resolution non interlaced	Set	8			
<b>17.0.31</b>	Computer furniture for all Servers, PCs, Printers	Set	2			
<b>17.0.32</b>	Plant Control Desk / CRT desk	Set	2			
<b>17.0.33</b>	Laboratory set up	Set	1			
<b>17.0.34</b>	230/240 V UPS System and battery with ACDB	Set	2			
<b>17.0.35</b>	Condenser online tube cleaning system	Set	2			
<b>18.0</b>	<b>Instruments/Devices including sensors/Cells/Probes etc</b>					
<b>18.0.1</b>	Latching relay 24V, 5A	No	8			
<b>18.0.2</b>	Moisture Sensor probe and dew point monitor	Set	2			

<b>18.0.3</b>	Conductivity Sensor and Transmitter	No	2			
<b>18.0.4</b>	Conductivity cells and switch	No	6			
<b>18.0.5</b>	Furnace Temperature probe including local panel/box and all accessories	No	4			
<b>18.0.6</b>	Air filter regulators / Lubricators (1/4", 1/2", 1", 0-6KG, 0-10 KG)	No	100			
<b>18.0.7</b>	Speed Regulators / Air lock valves in oil gun corner rack	No	8			
<b>18.0.8</b>	Solenoid valves (3 way, AC/DC, 1/4", 1/2", 1", NPT/BSP, single/dual coil)	No	188			
<b>18.0.9</b>	Pneumatic Pressure controller with accessories	No	4			
<b>18.0.10</b>	Heavy Duty Limit Switch	No	170			
<b>18.0.11</b>	Speed switch / Speed detector	No	8			
<b>18.0.12</b>	Pressure Switch / DP Switch / DP indicating switch	No	270			
<b>18.0.13</b>	Temperature Switch / Thermostat	No	14			
<b>18.0.14</b>	Float type Level Switch	No	74			
<b>18.0.15</b>	Electronic Level Switch (with amplifier, etc), Capacitance or conductivity type	No	58			
<b>18.0.16</b>	Vacuum switch	No	6			
<b>18.0.17</b>	Flow switch (Mechanical / Electronic)	No	12			
<b>18.0.18</b>	Pressure / DP / Flow (DP type) / Level -Transmitter	No	1144			
<b>18.0.19</b>	Level Transmitter (displacer type)	No	20			

<b>18.0.20</b>	Flow Transmitter (Pulse / mass flow / target type) including flanges	No	2			
<b>18.0.21</b>	Speed transmitter	No	12			
<b>18.0.22</b>	Position Transmitters	No	58			
<b>18.0.23</b>	Electronic Level Transmitter (with amplifier, etc), Capacitance or conductivity type / Guided Wave Radar(GWR) transmitter	No	48			
<b>18.0.24</b>	Pressure Gauge / DP gauge/DP Indicator	No	1113			
<b>18.0.25</b>	Temperature Gauge ( <b>all types</b> )	No	934			
<b>18.0.26</b>	Level Indicator / Level Gauge	No	36			
<b>18.0.27</b>	Direct Water Level Gauge (DWLG)	Set	4			
<b>18.0.28</b>	Flow indicator / Flow Gauge / Flow meter/Acoustic flow meter (coal)	No	42			
<b>18.0.29</b>	Thermocouple / RTDs with thermowell (all types) along with converters wherever applicable	No	1594			
<b>18.0.30</b>	MTM Thermocouple upto 17 M length	No	32			
<b>18.0.31</b>	MTM Thermocouple over 17 M upto 22 M length	No	154			
<b>18.0.32</b>	MTM Thermocouple over 22 M upto 28 M length	No	194			
<b>18.0.33</b>	MTM Thermocouple over 28 M upto 35 M length	No	68			
<b>18.0.34</b>	SADC Cylinders	No	144			
<b>18.0.35</b>	HEA Exciter system	Set	32			
<b>18.0.36</b>	Flame Scanner Head Assembly	No	64			

<b>18.0.37</b>	Vertical indicators (moving coil / bar graph)	No	10			
<b>18.0.38</b>	Flow integrators	No	4			
<b>18.0.39</b>	Digital / bargraph indicators	No	40			
<b>18.0.40</b>	Recorder 24 / 30 Channel	No	14			
<b>18.0.41</b>	Recorder 3 channel	No	8			
<b>18.0.42</b>	Rotor Earth fault Detector	No	2			
<b>18.0.43</b>	Hydrogen Purity analyser	No	2			
<b>18.0.44</b>	CO Analyzer (Cross Duct Insitu type)	No	4			
<b>18.0.45</b>	O2 (OXYGEN ) Analyzer	No	8			
<b>18.0.46</b>	SOx/NOx/CO Analyzer (Insitu type)	No	2			
<b>18.0.47</b>	Dust emission monitor (Installation at around 88 M in chimney)	Set	2			
<b>18.0.48</b>	SWAS Sample handling system with racks & Sample conditioning panel with chiller	Set	2			
<b>18.0.49</b>	SWAS Analyzer Panel including various analyzers	No	2			
<b>18.0.50</b>	I/P converters	No	126			
<b>18.0.51</b>	Rotameters	No	2			
<b>18.0.52</b>	Reverse Rotation indication switch	No	6			
<b>18.0.53</b>	Purge meter	No	32			

<b>19.0</b>	<b>Commissioning and Testing activities for Equipments erected by other agencies, like control valves, on/off valves, electrical/pneumatic valves, actuators, solenoid valves, valves, limit switches, ERV controllers, power cylinders, Pressure &amp; Temperature Guages/Transmitters,etc</b>					
<b>19.0.1</b>	Coal Feeder local panel/ instruments commissioning	No	16			
<b>19.0.2</b>	Electrical regulating drives: (Valve, damper, scoop)	No	16			
<b>19.0.3</b>	Pneumatic regulating drives: (Valve, damper) incl Burner tilt	No	316			
<b>19.0.4</b>	Commissioning of Hydraulic actuators	No	62			
<b>19.0.5</b>	Corner valve/ Trip valves commissioning	No	96			
<b>19.0.6</b>	Open/Close type pneumatic gates / dampers / valves	No	170			
<b>19.0.7</b>	ERV Controller (approx. weight 10kg, 400 x 350 x 190 mm)	No	4			
<b>19.0.8</b>	Pulveriser Lube oil skid	Set	16			
<b>19.0.9</b>	Fan Lube oil skid	Set	12			
<b>19.0.10</b>	Primary water skid	Set	2			
<b>19.0.11</b>	Only healthiness checking of embedded RTD / T/C	No	1000			
<b>19.0.12</b>	Limit Switches (checking and adjusting only).	No	200			
<b>110.0</b>	<b>Power Cylinders</b>					
<b>110.0.1</b>	Mill Discharge Valve power cylinders (set of four)	Set	16			

<b>I11.0</b>	<b>Miscellaneous items (items not covered under above heads)</b>					
<b>I11.0.1</b>	Master and Slave Clock system	Set	1			
<b>TOTAL AMOUNTIN FIGURES(in Rs)</b>						
<b>TOTAL AMOUNTIN words in Rs)</b>						