

TENDER NO. BHEL/ NR/SCT/ ANPARA D/ELECTRICAL/845

FOR

**ERECTION, TESTING, COMMISSIONING TRIAL OPERATION AND
HANDING OVER OF ALL ELECTRICAL EQUIPMENTS OF UNIT NO. 6 & 7
OF 2X500 MW ANPARA D TPS, DISTT. SONEBHADRA, U.P**

PART- II – PRICE BID



Bharat Heavy Electricals Limited
(A Govt. Of India Undertaking)
Power Sector – Northren Region,
Plot No. 25 , Sector - 16A ,
Distt.GautamBudh Nagar, NOIDA – 201 301 (INDIA)



ISO 9001, ISO 14001 and
OHSAS 18001 certified
company
SubContract and Purchase
Deptt.

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Power Sector – Northern Region,
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IMPORTANT NOTE

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THIS TENDER SPECIFICATION ISSUED TO:

M/S-----



RATE SCHEDULE

JOB: "ERECTION, TESTING, COMMISSIONING TRIAL OPERATION AND HANDING OVER OF ALL ELECTRICAL EQUIPMENTS OF UNIT NO. 6 & 7 OF 2X500 MW ANPARA D TPS, DISTT. SONBHADRA, U.P"

SL. NO.	ITEM DESCRIPTION	UNIT	QTY	UNIT RATE	TOTAL AMOUNT (Rs IN FIGURES AND WORS)
	POWER TRANSFORMERS				
1	Transportation up to foundation, Assembly, testing & commissioning of Three Phase , 400kV/11.5/11.5kV,80/40/40MV A,ONAF, STATION TRANSFORMER Core & winding 62 MT Shipping Weight(N ₂ filled) 85 MT Total Weight(with oil) 168MT Overall dimensions 16400X6500X9600 mm Oil Qty. 50800 ltr.	NO.	2		
2	Transportation up to foundation, Assembly, testing & commissioning of Three Phase ,21/11.5kV, 25/20MVA,ONAF, UNIT TRANSFORMER Core & winding 26 MT Tank & fittings 11 MT Shipping Weight(N ₂ filled) 40 MT	NO.	4		

	Total Weight (with oil) 64 MT Overall dimensions 9100x5100x6600 Oil Qty. 23159 ltr.				
	Transportation up to foundation, Assembly, testing & commissioning of SERVICE TRANSFORMERS				
3	33/3.5kV,4000 KVA,ONAN Overall dimensions 4050X3600X3150 mm Oil qty.2150 ltr. 10MT	NO.	02		
4	11/3.5kV,16 MVA,ONAN, Overall dimensions 7100X5300X5200 mm Oil qty. 7900 ltr. 45 MT	NO.	04		
5	11/3.5kV,6.3 MVA,ONAN Overall dimensions 4550X3300X3500 mm Oil qty. 2820 ltr. Total wt. 13300 KG	NO.	02		
6	11kV/433V,2000kVA,Dry type Overall dimensions 3950X2550X2250 mm Total wt 7000 KG	NO.	08		
7	11kV/433V,2000kVA,ONAN	NO.	06		

	Overall dimensions 3250X2550X2550 mm Oil qty. 1300 ltr. Total wt. 6100 KG				
8	11kV/433V, 1600kVA,ONAN Overall dimensions 3370X3300X2500 mm Oil qty. 990 ltr. Total wt. 5000 KG	NO.	24		
9	11kV/0.433kV, 500kVA,ONAN 2700X2700X2800 mm 4700KG	NO.	02		
10	11kV/0.433kV, 750kVA,ONAN 2700X2700X2800 mm 4700KG	NO.	02		
11	3.3/0.433kV, 315kVA,ONAN	NO.	02		
	ISOLATED PHASE BUS DUCT				
12	Transportation from stores / storage yard to erection site, assembly, erection, welding, testing & commissioning of Isolated Phase Bus Duct for interconnection of Generator & Generator Transformers, tap-off to unit transformers, SP&VT,LA &VT cubicles, NG cubicles ,air pressurization equipments, flexible hoses ,CT/PT transformers, supporting structures along with all accessories & auxiliaries	SET.	02		
	Delta Run 21kV, 11000A Enclosure Size: Round,OD1000				

<p>mm Thk 8 mm</p> <p>Conductor size: Round, OD 450 mm, Thk. 15 mm</p> <p>Phase to phase distance:1150 mm</p> <p>Approx. length per unit 95 Mtr.</p> <p>Main run 21kV, 19000 A</p> <p>Enclosure Size: Round,OD1500 mm Thk 8 mm</p> <p>Conductor size: Round, OD 800 mm, Thk. 16 mm</p> <p>Phase to phase distance:1750 mm</p> <p>Approx. length per unit 160Mtr.</p> <p>Tap-off 21kV, 1600A</p> <p>Enclosure Size: Round 780x4.78 mm</p> <p>Conductor size: Box formation 2 channel, OD 2x203.2 mm, Thk. 11.8 mm</p> <p>Phase to phase distance :1000 mm</p> <p>Approx. length per unit 75 Mtr.</p> <p>SP and VT Cubicle for both the unitsconsists of :</p> <p>Epoxy cast dry type VT –6 Nos.,</p> <p>Lighting arrester –03 Nos,</p> <p>Surge Capacitor –03 Nos, etc</p> <p>Weight of Cubicle approx. 3.5 MT,</p> <p>Dimension 2000 x 1800 x 3500 mm</p>				
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	<p>Neutral Grounding Cubicle (NGR-NGT) consist of</p> <p>a) Dry type epoxy cast NG transformer</p> <p>b) NG Resistor</p> <p>c) Dimensions 2500x 2500 x2000 mm</p> <p>Supporting structural steel approx. 80 MT</p>				
	SEGREGATED PHASE BUS DUCT				
	<p>Transportation from stores / storage yard to erection site, assembly, erection, welding, testing & commissioning of Segregated Phase Bus Duct for interconnection of Unit/ Station Transformers to 11kV Switch Boards</p>				
13	<p>1600A</p> <p>SPBD from Unit Transformers to 11 kV Unit Switch Board</p> <p>SPBD for interconnection of 11kV Unit Switch board to 11 kV Station Switch Board</p> <p>Enclosure Size: 450x1250 mm, Thk. 3.15 mm</p> <p>Conductor size: Rectangular, 2x101.6 mm,Thk. 6.68 mm</p> <p>Phase to phase distance:450mm</p> <p>(Approx. total length 385 Mtr)</p>	SET	08		
14	<p>2500A</p> <p>SPBD from Station Transformer</p>	SET	05		

	to 11 kV Station Switch Board SPBD for interconnection of 11kV Unit Switch board to 11KV Station Switch Board Enclosure Size: 450x1250 mm, Thk. 3.15 mm Conductor size: Rectangular, 2x127 mm, Thk. 8.05 mm Phase to phase distance: 450mm Approx. Total length 750 Mtr				
15	3000A SPBD from Unit Transformer to 3.3 kV Switch Board Enclosure Size: 450x1250 mm, Thk. 3.15 mm Conductor size: Rectangular, 2x127 mm, Thk. 8.05 mm Phase to phase distance: 450mm Approx. Total length 195 Mtr	SET	04		
	LT BUS DUCT				
16	For Oil filled transformer, 3000A	No	06		
17	For Oil filled transformer, 2500A	No.	24		
18	For Dry type transformer, 3000A	No.	08		
	HT SWITCHGEAR-11 kV SWITCHBOARD				
19	11kV, 1600A, Board# 6BA consists of approx. 17 panels, Approx. dimensions 13940X1809X2300 mm	Set	01		
20	11kV, 1600A, Board# 6BB consists of approx. 16 panels, Approx. dimensions	Set	01		

	13120X1809X2300 mm				
21	11kV,1600A, Board# 7BA consists of approx. 17 panels , Approx. dimensions 13940X1809X2300 mm	Set	01		
22	11kV,1600A, Board# 7BB consists of approx. 16 panels , Approx. dimensions 13940X1809X2300 mm	Set	01		
23	11kV,2500A, Board# 0BA consists of approx. 13 panels , Approx. dimensions 10660X1809X2300 mm	Set	01		
24	11kV,2500A, Board# 0BB consists of approx. 19 panels , Approx. dimensions 15580X1809X2300 mm	Set	01		
25	11kV,2500A, Board# 0BC consists of approx. 13 panels , Approx. dimensions 10660X1809X2300 mm	Set	01		
26	11kV,2500A, Board# 0BD consists of approx. 19 panels , Approx. dimensions 15580X1809X2300 mm	Set	01		
	3.3 kV SWITCHBOARD				
27	3.3kV,3000A,Unit Sw.Board# 6CA Sec-I consists of approx. 10 panels , Approx. dimensions 8200X1809X2300 mm	Set	01		
28	3.3kV,3000A,Board# 6CA Sec-II consists of approx. 8 panels , Approx. dimensions 6560X1809X2300 mm	Set	01		
29	3.3kV,3000A,Board# 6CA Sec-III consists of approx. 12 panels , Approx. dimensions 9840X1809X2300 mm	Set	01		

30	3.3kV,3000A, Board# 6CA Sec-IV consists of approx. 8 panels , Approx. dimensions 6559X1809X2300 mm	Set	01		
31	3.3kV,3000A, Board# 7CA Sec-I consists of approx. 8 panels , Approx. dimensions 6559X1809X2300 mm	Set	01		
32	3.3kV,3000A, Board# 7CA Sec-II consists of approx. 11 panels , Approx. dimensions 9020X1809X2300 mm	Set	01		
33	3.3kV,3000A, Board# 7CA Sec-III consists of approx. 10 panels , Approx. dimensions 8200X1809X2300 mm	Set	01		
34	3.3kV,3000A, Board# 7CA Sec-IV consists of approx. 09 panels , Approx. dimensions 7380X1809X2300 mm	Set	01		
35	3.3kV,1250A, Board# 0CA consists of approx. 37 panels , Approx. dimensions 30340X1809X2300 mm	Set	01		
36	3.3kV Board# 0CB consists of approx. 15 panels , Approx. dimensions 12300X1809X2300 mm	Set	01		
	LOW VOLTAGE SWITCHGEAR				
37	415V, 3000A, UNIT. SERV. SWITCHBOARD-6DA/7DA Approximate Dimension: 12250 x 1000 x 2475 mm	No.	2		
38	415V,2500A, UNIT EMER. SWITCHBOARD-6DG/7DG Approximate Dimension: 12150 x 1200 x 2475 mm	No.	2		

39	220V MAIN DCDB-6FA/7FA Approximate Dimension: 5600 x 1000 x 2475 mm	No.	2		
40	415V ,1000A,BOILER MCC-6HA/7HA Approximate Dimension: 16000 x 1000 x 2475 mm	No.	2		
41	415V,250A, BOILER V&D MCC-6HB/7HB Approximate Dimension: 14000 x 1000 x 2475 mm	No.	2		
42	415V,630A, BOILER ACDB-6HC/7HC Approximate Dimension: 3750 x 1000 x 2475 mm	No.	2		
43	415V,250A, ESP & ID FAN AREA MCC -6HD/7HD Approximate Dimension: 3000 x 1000 x 2475 mm	No.	2		
44	415V ,1000A,TURBINE MCC-6KA/7KA Approximate Dimension: 12900 x 1000 x 2475 mm	No.	2		
45	415V,250A, TURBINE VALVE MCC -6KB/7KB Approximate Dimension: 12750 x 1000 x 2475 mm	No.	2		
46	415V ,630A,UNIT SERV. ACDB-6QA/7QA Approximate Dimension: 6750 x 1000 x 2475 mm	No.	2		
47	415V,630A, VENTILATION MCC-6TA/7TA Approximate Dimension: 8250 x 1000 x 2475 mm	No.	2		

48	415V,400A, ESP A/C & VENT MCC-6TB/7TB Approximate Dimension: 7500 x 1000 x 2475 mm	No.	2		
49	415V,3000A,STN. SERV. SWITCHBOARD -0DA/0DB Approximate Dimension: 12000 x 1000 x 2475 mm	No.	2		
50	415 V SLURRY P/H & COMPRESSOR HOUSE-0DF Approximate Dimension: 10850 x 1200 x 2475 mm	No.	1		
51	415 V,1600A, SILO AREA SWBD.-0DI Approximate Dimension: 6750 x 1000x 2475 mm	No.	1		
52	415 V ASH WATER RECOVERY SYSTEM SWBD.- 0DJ Approximate Dimension: 9900 x 1000x 2475 mm	No.	1		
53	415V ,1000A,STN. SERV. MCC- 0QA Approximate Dimension: 12000 x 1000 x 2475 mm	No.	1		
54	415V MISC. SERVICE MCC- 0QB	No.	1		
55	415V,3000A, FUEL OIL P/H PMCC-0DD Approximate Dimension: 7500 x 1200 x 2475 mm	No.	1		
56	415V,3000A, FIRE WATER P/H SWBD.-0DE Approximate Dimension: 10850 x 1200 x 2475 mm	No.	1		

57	415V ,2500A,CW SERVICE SWBD.-0DC Approximate Dimension: 6000 x 1000 x 2475 mm	No.	1		
58	415V,3000A, COOLING TOWER SWITCHBOARD-6DF/7DF	No.	2		
59	415V,1000A, BOTTOM ASH MCC-0DH	No.	1		
60	415V,1000A, AIR WASHER MCC-6SA/7SA		1		
61	415V ,3000A,ADM. BUILDING SWBD-0DG	No.	1		
62	415V,400A, H2 PLANT MCC-0SB	No.	1		
63	415V,400A, WORKSHOP MCC-0SC	No.	1		
64	415V,1000A, SERVICE BUILDING MCC-0SD	No.	1		
65	415V ,1000A,CCR AC MCC-0TA	No.	1		
66	415V AC FUSE DB	No.	20		
67	220V DC FUSE DB	No.	8		
68	Local motor starters (up to 3.7 KW)	No.	150		
69	PUSH BUTTON STATIONS	No.	1180		
	JUNCTION BOXES				
70	48 way to 96 way	No.	40		
	BATTERY SYSTEM				
71	220 V, 400A Float-cum-boost Chargers 1000x1350x(2200+100)mm 1300KG	Set	4		

72	220 V DC Battery System (Ni-Cd), 990Ah,170 cells 1.14V,Single tier Double Row type 8550x3060x875 mm 12750KG	Set	4		
	HT POWER CABLES LAYING, DRESSING,CLAMPING				
73	11/11kV,Unarmoured, Aluminium Conductor XLPE insulated FRLS outer-sheathed cable				
74	1C x 630 SQ. MM	Mtr.	17500		
75	3C x 185 SQ. MM	Mtr.	30500		
	3.3/3.3kV,Unarmoured, Aluminium Conductor XLPE insulated FRLS outer-sheathed cable				
76	3C x 185 SQ. MM	Mtr.	12500		
77	1C x 300 SQ. MM	Mtr.	500		
78	1C x 150 SQ. MM	Mtr.	1500		
	3.3/3.3kV,armoured, Aluminium Conductor XLPE insulated FRLS outer-sheathed cable				
79	3C x 185 SQ. MM	Mtr.	1500		
	HT CABLE TERMINATION KITS/JOINT KITS				
	11kV Indoor heat shrinkable type XLPE end termination kits				
80	1 C X630 SQ MM	No.	126		
81	3C X 185 SQ MM	No.	208		
	11 KV, Outdoor, heat shrinkable type Straight through joint kits				
82	1 C X630 SQ MM	No.	18		

83	3C X 185 SQ MM	No.	31		
	3.3KV, Indoor heat shrinkable/ push on type XLPE End termination kits for				
84	3C x 185 SQ. MM	No.	268		
85	1C x 300 SQ. MM	No.	384		
86	1C x 150 SQ. MM	No.	36		
87	LT POWER CABLE LAYING, DRESSING,CLAMPING& TERMINATION				
	1.1 kV, Armoured/Unarmoured, Stranded Al/Cu conductor, XLPE/PVC insulation, Inner sheath PVC &PVC outer sheath, FRLS				
88	1 C X630 SQ MM	Mtr	57000		
89	1 C X400 SQ MM	Mtr	65000		
90	1 C X120 SQ MM	Mtr	27000		
91	1 C X35 SQ MM	Mtr	4000		
92	2 C X10 SQ MM	Mtr	10000		
94	2 C X25 SQ MM	Mtr	16000		
95	2 C X70 SQ MM	Mtr	4000		
96	2 C X120 SQ MM	Mtr	16000		
97	3 C X10 SQ MM	Mtr	38000		
98	3 C X25 SQ MM	Mtr	30000		
99	3 C X50 SQ MM	Mtr	8000		
100	3 C X95 SQ MM	Mtr	5000		
101	3C X 150 SQ MM	Mtr	6000		
102	3C X 240 SQ MM	Mtr	6000		
103	3.5CX240 SQ.MM,	Mtr.	3000		
104	3.5CX 150 SQ MM	Mtr	3000		

105	3.5 C X25 SQ MM	Mtr	39000		
106	3.5 C X50 SQ MM	Mtr	32000		
107	3.5 C X95 SQ MM	Mtr	2000		
108	4 C X10 SQ MM	Mtr	3000		
109	2 C X2.5 SQ MM Cu.	Mtr	126000		
110	2 C X6 SQ MM Cu.	Mtr	42000		
111	3 C X2.5 SQ MM Cu.	Mtr	165000		
	SCREENED CONTROL CABLE ,TYPE F , MULTI PAIR(TWISTED) INDIVIDUAL & OVERALL SHIELDED, UNARMoured				
112	2P,0.5 SQ MM	Mtr	69000		
113	4P,0.5 SQ MM	Mtr	85000		
114	8P,0.5 SQ MM	Mtr	54000		
115	12P,0.5 SQ MM	Mtr	18000		
116	20P,0.5 SQ MM	Mtr	9000		
	SCREENED CONTROL CABLE ,TYPE G , MULTIPAIR(TWISTED)OVERALL SHIELDED,UNARMoured				
117	4P,0.5 SQ MM	Mtr	261000		
118	8P,0.5 SQ MM	Mtr	61000		
119	12P,0.5 SQ MM	Mtr	32000		
120	16P,0.5 SQ MM	Mtr	4000		
	LT CONTROL CABLE -1.1 kV, Unarmoured, Stranded Cu conductor, PVC insulation, Inner sheath PVC & PVC outer sheath, FRLS				
121	3 C X1.5 SQ MM	Mtr	70000		

122	5 C X1.5 SQ MM	Mtr	35000		
123	5 C X2.5 SQ MM	Mtr	30000		
124	7 C X1.5 SQ MM	Mtr	20000		
125	12 C X1.5 SQ MM	Mtr	5000		
126	12 C X2.5 SQ MM	Mtr	17000		
127	19 C X1.5 SQ MM	Mtr	50000		
	CABLE TRAYS COMPLETE WITH COUPLER PLATES, FASTENERS, CLAMPS AND FIXING HARDWARES ETC ERECTION INCLUDING SUPPORT & COVERS FABRICATION				
128	Galvanised Ladder/Perforated type cable tray, W=600mm	Mtr	52500		
129	Galvanised Ladder/ Perforated type cable tray, W=450mm	Mtr	4300		
130	Galvanised Ladder/ Perforated type cable tray, W=300mm	Mtr	17700		
131	Galvanised Ladder/ Perforated type cable tray, W=150mm	Mtr	7000		
132	Galvanised Ladder/ Perforated type cable tray, W=100mm	Mtr	2550		
	CABLE TRAY ACCESSORIES				
	Ladder/ Perforated type Horizontal 90 deg bend-600 mm radius, Vertical 90 deg bend-600 mm radius, Tees - 600 mm radius, Cross -600 mm radius				
133	600 mm wide	No.	1413		
134	450 mm wide	No.	275		
135	300 mm wide	No.	215		

136	150 mm wide	No.	70		
	Ladder/Perforated type reducers(50% LHS/50%RHS)				
137	600-450 mm wide	No.	110		
138	450-300 mm wide	No.	40		
	EQUIPMENT EARTHING				
139	GS/GI FLAT 65 X 8 mm	Mtr	5000		
140	GS/GI FLAT 50 X 6 mm	Mtr	1700		
141	GS/GI FLAT 30x5/25 X 6 mm	Mtr	15000		
142	GS/GI FLAT 25 X3 mm	Mtr	11000		
143	12 SWG/8WG GI WIRE	Mtr	20000		
144	40 MM DIA. 1000 MM LONG GS ROD	Mtr	215		
145	Treated Earth pit, including Installation of 3 Mtr long, 40 NB/ 65 mm dia GS/ GI pipe	No.	280		
	RIGID/FLEXIBLE CONDUITS				
146	GI pipe(1/2",1")	Mtr	500		
147	GI pipe(2" ,3")	Mtr	200		
	FABRICATION/ ERECTION OF STRUCTURAL STEEL				
148	Structural Steel	MT	100		
	Erection ,commissioning of PANELS				
149	Generator and UAT, ST transformers control, metering & protection panels along with PCs, Printers & other accessories 1000X1000X2295 mm	Set	02		
150	Data Concentrator Panel along	Set	02		

	with PCs, Printers & other accessories 1800x800x800 mm				
151	Digital Automatic Voltage Regulator	Set	02		
	VARIABLE FREQUENCY DRIVE SYSTEM FOR ID FANS				
152	VFD Transformer 3000 KVA, 11/2.3 KV 3 Phase, ONAN Outdoor type transformer with HV, LV cable boxes, radiators, conservator tank, marshalling box etc. Total Weight: 9145 kg Overall Dimensions: 5000 x 3000 x 3200 mm Shipping Dimensions: 3650 x 2100 x 3000 mm Oil Qty : 1845 litres (approx.)	No.	8		
153	SF6/Vacuum Circuit Breaker Overall dimensions 2360 x1835 x1650 mm, Weight 1400 KG	No.	8		
154	DC Air core Reactor Floor/channel mounting type 3.6 KV grade, 10 mH, 800 A rated air cored DC reactor housed in 3mm thick Aluminium cubicle with suitable input/output terminals Dimension: 1700 x 2000 x 2600 mm , Weight: 1800 kg	No.	8		
155	LCI Drive Panel comprising Control and Excitation Panel,	No.	8		

	Fan and Filter Panel with air duct for exhausting air and Bridge Panel Size: 3700 x 1450 x 2400 mm; Weight: 3000 kg				
156	Control Panel for VFD Drives, including PC System for MMI Size: 800 x 1450 x 2400 mm; weight: 400 kg	Set.	04		
157	Adaptor Panel for VFD Drives Size: 600 x 1450 x 2400 mm; weight: 200 kg	No.	08		
158	O&M Panel	No.	02		
159	CLC panel	No.	08		
	Erection & Commissioning of Diesel Generating set				
160	1500 KVA, 3 phase, 415 V skid-mounted diesel generator set Overall dimension: 6000 x 2100 x 2600 mm Static Weight of DG Set: 13,500 kg Weight of Acoustic Enclosure : 10,000 kg	Set	03		
	ELECTRICAL COMMISSIONING				
161	Electrical actuators for valves & dampers	No.	500		
162	Position transmitter	No.	30		
163	Erection & commissioning of Electrical Lab specifications as as per C I 2.4.N	Set	01		
TOTAL PRICE					

NOTES:

1. The quantities indicated above are tentative and are liable to vary depending upon the site requirement. The contractor has to handle / erect / commission all the items indicated by BHEL for achieving the milestones and completion of work.
2. Evaluation of bids shall be done on total price against this Rate Schedule / BOQ.
3. In case of any mismatch in Rate and amount on Price discrepancy, the same will be dealt as per clause No. 1.4 of GCC.

(Signature, date & seal of authorized representative of the bidder)

(Seal and Signature of Tenderer)