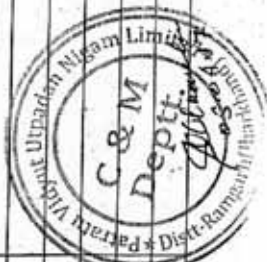
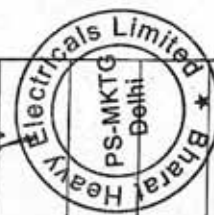


NTPC		PROJECT: PATRATU 3X800 MW PACKAGE: TG CONTRACTOR: BHEL HARIDWAR CONTRACT NO.: 9595 001-110		LIST OF ITEMS REQUIRING QUALITY PLAN AND SUBCONTRACTOR APPROVAL SUB SYSTEM: TG & AUX			REF NO. : REV NO. : DATE 05.04.17	
SI No.	Item	QP Insp.Cat.	NTPC QP No. QVE-Q-	Vendor/ Manufacturer Name	Place	SC APP L_STAT US	Remarks	
41	HIGH PRESSURE HOSES FOR BEARING PEDESTAL	•		ORIENTAL ENGINEERING WORKS	YAMUNANAGAR	DR		
42	HIGH PRESSURE HOSES FOR BEARING PEDESTAL	II		PARKER HANNIFINE	GERMANY	A	THROUGH PARKER HANNIFINE INDIA. NO SEP QP	
42	HIGH PRESSURE HOSES FOR BEARING PEDESTAL	•		HYDRAULIC TECHNIK	GERMANY	DR	THROUGH SMT , HARIDWAR	
43	END SHIELD FABRICATION & MACHINING	I		BHEL-HEEP	HARDWAR	A		
44	SHAFT SEAL ASSEMBLY	I		BHEL-HEEP	HARDWAR	A		
45	BEARING ASSEMBLY	I		BHEL-HEEP	HARDWAR	A		
46	COMPRESSOR HUB M/C & ASSEMBLY	I		BHEL-HEEP	HARDWAR	A		
47	HYDROGEN COOLER	I		BHEL-HEEP	HARIDWAR	A		
47	HYDROGEN COOLER	•		LORD VISHWAKARMA HEAT EXCHANGER	KANKHAL (HARIDWAR)	DR		
47	HYDROGEN COOLER	•		LAXMI ENGINEERING INDUSTRIES	BHOPAL	DR		
47	HYDROGEN COOLER	•		FITWELL CORPORATION	BHOPAL	DR		
48	DC LEAD ASSLY	I		BHEL-HEEP	HARDWAR	A		
49	TUBES FOR COOLERS (BRASS / COPPER TUBES)	II		MULTIMETALS	KOTA	A	NO SEP QP	
49	TUBES FOR COOLERS (BRASS/ COPPER TUBES)	II		METAL ALLOYS	JAMNAGAR	A	NO SEP QP	
49	TUBES FOR COOLERS (BRASS/ COPPER TUBES)	•		MEHTA TUBES	VAPI	DR		
49	TUBES FOR COOLERS (BRASS/ COPPER TUBES)	•		ITM	MUMBAI	DR		



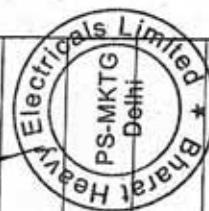
NTPC	PROJECT: PATRATU 3X800 MW PACKAGE: TG CONTRACTOR: BHEL HARIDWAR CONTRACT NO.: 9595 001-110			LIST OF ITEMS REQUIRING QUALITY PLAN AND SUBCONTRACTOR APPROVAL SUB SYSTEM: TG & AUX			REF NO. : REV NO. : DATE 05.04.17	
	SI No.	Item	QP Insp.Cat.	NTPC QP No. QVE-Q-	Vendor/ Manufacturer Name	Place	SC_APP L_STAT US	Remarks
	50	FINNING OF COOLER TUBES	I		LAXMI ENGINEERING INDUSTRIES	BHOPAL	A	
	50	FINNING OF COOLER TUBES	I		LORD VISHWAKARMA HEAT EXCHANGE	HARDWAR	A	
	50	FINNING OF COOLER TUBES	I		FITWELL CORPORATION	BHOPAL	A	
	51	TERMINAL BOX FABRICATION AND MACHING	I		BHEL-HEEP	HARDWAR	A	
	52	CONFORMABLE ROPE	II		BIW	GERMANY	A	NO SEP QP
	52	CONFORMABLE ROPE	II		TEXPLAS	HARDWAR	A	NO SEP QP
	52	CONFORMABLE ROPE	II		SUMICA	HARDWAR	A	NO SEP QP
	53	INSULATING BOLTS (RAW MATERIAL)	II		BHEL APPROVED SOURCES		A	NO SEP QP
	54	PW FITER, FINE FILTER, OIL FILTER	II		HYDAC (INDIA) PVT. LTD.	INDIA	DR	
	54	PW FITER, FINE FILTER, OIL FILTER	II		BOIL & KIRCH FILTERBAU GMBH	GERMANY	A	NO SEP QP
	54	PW FITER, FINE FILTER, OIL FILTER	II		L&Z VERFAHRENSTECHNIK GMBH	GERMANY	DR	NO SEP QP
	54	PW FITER, FINE FILTER, OIL FILTER	•		SIEMENS LIMITED	INDIA	DR	
	55	P W TANK INCLUDING P W PIPING	I		BHEL-HEEP	HARDWAR	A	
	56	VAPOUR EXHAUSTER	II		CB DOCTOR	AHEMDABAD	A	
	56	VAPOUR EXHAUSTER	II		S.K SYSTEM	DELHI	A	
	56	VAPOUR EXHAUSTER	II		AIR LINK	MATHURA	A	
	56	VAPOUR EXHAUSTER	II		DUSTECH	FARIDABAD	A	
	57	ION EXCHANGER	I		THERMAX LTD.	PUNE	A	
	57	ION EXCHANGER	•		SIEMENS LIMITED	INDIA	DR	



R. Sharma

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NTPC	PROJECT: PATRATU 3X800 MW		LIST OF ITEMS REQUIRING QUALITY PLAN AND SUBCONTRACTOR APPROVAL			REF NO.:	
	PACKAGE: TG		SUBCONTRACTOR APPROVAL			REV NO.:	
CONTRACTOR: BHEL HARIDWAR		CONTRACT NO.: 9595 001-110		SUB SYSTEM: TG & AUX		DATE 05.04.17	
SI No.	Item	QP Insp.Cat.	NTPC QP No. QVE-Q.	Vendor/ Manufacturer Name	Place	SC APP L_STAT US	Remarks
57	ION EXCHANGER	*		CHEM PROCESS	AHMEDABAD	DR	
57	ION EXCHANGER	*		H K ENTERPRISES	AHMEDABAD	DR	
58	PW PUMP & FILTER UNIT PIPING	I		BHEL-HEEP	HARDWAR	A	
59	PW COOLER FOR STATOR	I		BHEL-HEEP	HARDWAR	A	
59	PW COOLER FOR STATOR	I		ALFA LAVAL (INDIA) LIMITED	PUNE	A	
59	PW COOLER FOR STATOR	I		I.D.M.C. LTD	GUJRAT	DR	
59	PW COOLER FOR STATOR	I		TRANSTER INDIA PVT. LIMITED	PUNE	A	
59	PW COOLER FOR STATOR	I		KELVION INDIA (GEA)	PUNE	A	
59	PW COOLER FOR STATOR	*		HRS PROCESS SYSTEMS LIMITED	PUNE	DR	
60	TERMINAL BUSHING	*		SIEMENS LIMITED	INDIA	DR	
60	TERMINAL BUSHING	II		TRENCH FRANCE SAS	FRANCE	A	NO SEP QP
60	TERMINAL BUSHING	II		HSP	GERMANY	A	NO SEP QP
60	TERMINAL BUSHING	*		HOCHSPANNUNGSGERAETE GMBH	CHINA	DR	
62	HYDROGEN DRIER (REFRIGERANT TYPE)	I		SUZHOU JIU & ZHENG ELECTRIC CO	ROORKEE	A	
62	HYDROGEN DRIER (REFRIGERANT TYPE)	I		JINDAL ELECTRONICS	NEW DELHI	A	
62	HYDROGEN DRIER (REFRIGERANT TYPE)	I		MELLCON ENGS PVT	ROORKEE	A	
62	HYDROGEN DRIER (REFRIGERANT TYPE)	I		SPAN	PUNE	A	
63	SEAL OIL COOLER	I		ALFA LAVAL (INDIA) LIMITED	HARDWAR	A	
63	SEAL OIL COOLER	I		BHEL-HEEP	PUNE	A	
63	SEAL OIL COOLER	I		TRANSTER INDIA PVT. LIMITED	PUNE	A	
63	SEAL OIL COOLER	I		KELVION INDIA (GEA)	PUNE	A	
63	SEAL OIL COOLER	*		I.D.M.C. LTD	GUJRAT	DR	



K. S. Srinivasan

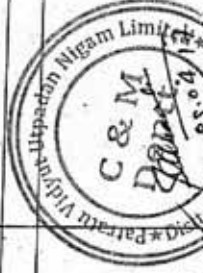
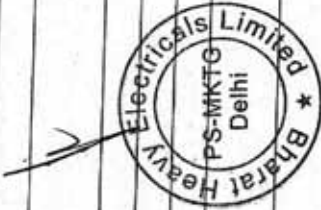
NTPC	PROJECT: PATRATU 3X800 MW PACKAGE: TG CONTRACTOR: BHEL HARIDWAR CONTRACT NO.: 9595 001-110			LIST OF ITEMS REQUIRING QUALITY PLAN AND SUBCONTRACTOR APPROVAL SUB SYSTEM: TG & AUX			REF NO. : REV NO. : DATE 05.04.17	
	Si No.	Item	QP Insp.Cat.	NTPC QP No. QVE-Q.	Vendor/ Manufacturer Name	Place	SC_APP L_STAT US	Remarks
	63	SEAL OIL COOLER	*		HRS PROCESS SYSTEMS LIMITED	PUNE	DR	
	64	SEAL OIL PUMP	I		TUSHACO PUMPS	DAMAN	A	
	64	SEAL OIL PUMP	I		UT PUMPS	FARIDABAD	DR	
	64	SEAL OIL PUMP	*		ALEKTON	CHENNAI	DR	
	64	SEAL OIL PUMP	*		HUANGSHAN	CHINA	DR	
	64	PRIMARY WATER PUMP	I		KSB INDIA	PUNE	A	
	64	PRIMARY WATER PUMP	I		SULZER INDIA	NAVI MUMBAI	A	
	64	PRIMARY WATER PUMP	*		WPIL LTD.	GHAZIABAD	DR	
	65	H2/CO2/N2/ CYLINDER	II		BPCL	ALLAHABAD	A	
	65	H2/CO2/N2/ CYLINDER	II		EVEREST KANTO	BOMBAY	A	
	65	H2/CO2/N2/ CYLINDER	II		SARJU IMPEX LTD	GUJRAT	A	
	65	H2/CO2/N2/ CYLINDER	*		RAMA CYLINDER	GUJRAT	DR	
	66	SEAL OIL UNIT & PIPING	I		BHEL-HEEP	HARDWAR	A	
	66	SEAL OIL STORAGE TANK	I		BHEL-HEEP	HARDWAR	A	
	67	GAS UNIT & PIPING	I		BHEL-HEEP	HARDWAR	A	
	68	CO2 VAPOURISER	I		BHEL-HEEP	HARDWAR	A	
	69	GENERATOR ASSEMBLY AT WORKS INCLUDING TERMINAL BUSHING	I		BHEL-HEEP	HARDWAR	A	
	70	SILVER BEARING COPPER HOLLOW STRIPS (ROTOR COIL)	II		BUNT METAL	AUSTRIA	A	NO SEP QP
	70	SILVER BEARING COPPER HOLLOW STRIPS (ROTOR COIL)	II		BOASHIDA SWISS METAL	SWITZERLAND	A	NO SEP QP
	71	MULTI CONTACT BAND	III		MULTI CONTACT BAND	GERMANY	A	NO SEPARATE QP
	72	WEDGES FOR ROTOR (DAMPER +SLOT)	II		KM EUROPA	GERMANY	A	NO SEP QP
	72	WEDGES FOR ROTOR (DAMPER +SLOT)	II		BOASHIDA SWISS METAL	SWITZERLAND	A	NO SEP QP



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18.04.17

NTPC		PROJECT: PATRATU 3X800 MW PACKAGE: TG CONTRACTOR: BHEL HARIDWAR CONTRACT NO.: 9595 001-110		LIST OF ITEMS REQUIRING QUALITY PLAN AND SUBCONTRACTOR APPROVAL SUB SYSTEM: TG & AUX				REF NO.: REV NO.: DATE 05.04.17	
SI No.	Item	QP Insp.Cat.	NTPC QP No. QVE-Q.	Vendor/ Manufacturer Name	Place	SC_APP L_STAT US	Remarks		
72	WEDGES FOR ROTOR (DAMPER +SLOT)	*		ORIENTAL COPPER	THAILAND	DR	For Damper Wedge Only		
72	WEDGES FOR ROTOR (DAMPER +SLOT)	II		LUVATA (OUTO KUMPU PORI)	FINLAND	A	NO SEP QP		
72	WEDGES FOR ROTOR (DAMPER +SLOT)	II		BUNT METAL	AUSTRIA	A	NO SEP QP		
73	LT MOTORS	II		REFER TO BHEL PEM LIST		A			
74	GENERATOR WORKS RUN TEST	I		BHEL HECP	HARDWAR	A			
75	RUBBER ITEM	III		BHEL APPROVED SOURCES		A			
76	EXCITER SHAFT MACHINING	I		BHEL-HEEP	HARDWAR	A			
77	EXCITER STATOR MAIN	I		BHEL-HEEP	HARDWAR	A			
78	EXCITER STATOR PILOT	I		BHEL-HEEP	HARDWAR	A			
79	EXCITER ROTOR BALANCING	I		BHEL-HEEP	HARDWAR	A			
80	RECTIFIER WHEEL MACHING & ASSLY	I		BHEL-HEEP	HARDWAR	A			
81	DC LEAD ASSLY FOR EXCITER	I		BHEL-HEEP	HARDWAR	A			
82	EXCITER ASSLY (MAIN & PILOT)	I		BHEL-HEEP	HARDWAR	A			
83	EXCITER AIR COOLER	I		BHEL-HEEP	HARDWAR	A			
83	EXCITER AIR COOLER	I		LORD VISHWAKARMA HEAT EXCHANGER	KANKHAL (HARIDWAR)	DR			
83	EXCITER AIR COOLER	I		LAXMI ENGINEERING INDUSTRIES	BHOPAL	DR			
83	EXCITER AIR COOLER	I		FITWELL CORPORATION	BHOPAL	DR			
84	EXCITER TEST RUN	I		BHEL-HEEP	HARDWAR	A			
85	FORGING FOR MAGNETIC HUB, CENTERING RING, INTERMEDIATE RING, CARRIER HUB, COMPRESSOR HUB, DIODE WHEEL	II		BHEL-CFFP	HARDWAR	A			





NTPC		PROJECT: PATRATU 3X800 MW PACKAGE: TG CONTRACTOR: BHEL HARIDWAR CONTRACT NO.: 9595 001-110		LIST OF ITEMS REQUIRING QUALITY PLAN AND SUBCONTRACTOR APPROVAL SUB SYSTEM: TG & AUX			REF NO. : REV NO. : DATE 05.04.17	
SI No.	Item	QP Insp.Cat.	NTPC QP No. QVE-Q-	Vendor/ Manufacturer Name	Place	SC_APP L_STAT US	Remarks	
86	Machining of MAGNETIC HUB, CENTERING RING, INTERMEDIATE RING, CARRIER HUB, DIODE WHEEL	II		BHEL-HEEP	HARDWAR	A		
87	MAGNET (MATERIAL ONLY)	II		THYSEEN KRUPP MAGNETTECHNIC	GERMANY	A		NO SEP QP
87	MAGNET (MATERIAL ONLY)	II		HANGZHOU PERMANENT MAGNET GROU	CHINA	A		NO SEP QP
87	MAGNET (MATERIAL ONLY)	*		SIEMENS LIMITED	INDIA	DR		
87	PERMANENT MAGNET & SHOE ASSLY FOR EXCITER	I		BHEL-HEEP	HARDWAR	A		
88	MAIN EXCITER ARMATURE WINDING	I		BHEL-HEEP	HARDWAR	A		
89	BALANCING RING	II		SCHMOIZ+BICKENBECH	GERMANY	A		NO SEP QP
89	BALANCING RING	II		RV ENGG	BALLABHGARH	A		NO SEP QP
90	BED PLATE FABRICATION	II		BHEL APPROVED SOURCE		A		
91	EXCITER CORE PRESS RING	*		SOUTHERN ALLOY FOUNDERIES PVT LTD	CHENNAI	DR		
91	EXCITER CORE PRESS RING	*		RATAN ENGINEERING	NEW DELHI	DR		
91	EXCITER CORE PRESS RING	II		SCHMOIZ+ BICKENBECH	GERMANY	A		NO SEP QP
91	EXCITER CORE PRESS RING	II		RV ENGG	BALLABHGARH	A		NO SEP QP
92	EXCITER FRAME (MAIN & PILOT)	I		BHEL-HEEP	HARDWAR	A		
93	RC BLOCK	I		ZENTRONICS SYSTEMS	HYDERABAD			
93	RC BLOCK	I		SIEMENS LIMITED	INDIA	DR		
94	EXCITER SHAFT FORGING	II		ALL SUPPLIERS OF GENERATOR SHAFT FORGING		A		NO SEP QP
94	EXCITER SHAFT FORGING	I		BHEL CFFP	HARIWAR	A		
94	EXCITER SHAFT FORGING	I		BHARAT FORGE	PUNE			

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PS-MKTG

Delhi

Bharat Forge

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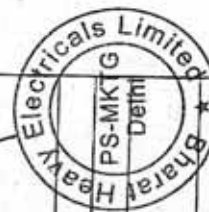
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NTPC		PROJECT: PATRATU 3X800 MW PACKAGE: TG		LIST OF ITEMS REQUIRING QUALITY PLAN AND SUBCONTRACTOR APPROVAL				REF NO.:	
		CONTRACTOR: BHEL HARIDWAR		SUB SYSTEM: TG & AUX				REV NO.:	
		CONTRACT NO.: 9595 001-110						DATE 05.04.17	
Sl No.	Item	QP Insp.Cat.	NTPC QP No. QVE-Q.	Vendor/ Manufacturer Name	Place	SC APP L_STAT US	Remarks		
94	EXCITER SHAFT FORGING	*		MACKEL ISPAT	KOLKATA	DR			
94	EXCITER SHAFT FORGING	*		OFAR S.P.A	ITALY	DR			

NOTE 1: IN ADDITION TO ABOVE SOURCES BHEL MAY PROCURE ITEMS FROM SIEMENS, SIEMENS APPROVED SOURCES, BHEL TO SUBMIT DOCUMENTS IN SUPPORT OF SIEMENS APPROVED SOURCE.

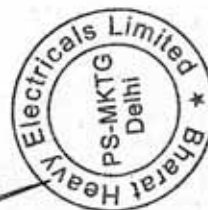
NOTE 2: LT MOTORS UPTO 30 KW SHALL BE ACCEPTED BASED ON COC OF MANUFACTURER TC AND CONTRACTOR CONFIRMING AS FOLLOWS: IT IS HEREBY CONFIRMED THAT ABOVE MENTIONED MOTOR/ MOTORS WAS/ WERE MANUFACTURED TAKING CARE OF NTPC SPECIFIC REQUIREMENTS REGARDING AMBIENT TEMP, VOLTAGE FREQUENCY VARIATION, HOT STARTS, PULL OUT TORQUES, STARTING KVA/ KW, TEMP RISE, DISTANCE BETWEEN CENTRE OF STUD GLAND PLATE, SPACE HEATER AND TESTED IN ACCORDANCE WITH APPROVED DRAWING/ DATA SHEETS AND LT MOTORS ABOVE 30 KW ACCEPTANCE SHALL BE BASED ON NTPC REVIEW OF ROUTINE TEST INSPECTION REPORT AS PER IS 325 BY MAIN MOTOR/ MOTORS WAS/WERE MANUFACTURED TAKING CARE OF NTPC SPECIFIC REQUIREMENTS REGARDING AMBIENT TEMP, OLTA GE FREQUENCY AND TESTED IN ACCORDANCE WITH APPROVED DRAWINGS/ DATA SHEETS AND LT MOTORS. FOR > 50KW, SEPARATE QP TO BE SUBMITTED

NOTE 3: QP/ INSPECTION CAT-I QP APPROVAL AND INSPECTION BY NTPC: QP/ INSPECTION CAT-II QP APPROVAL BY NTPC, NO PHYSICAL INSPECTION BY NTPC. ACCEPTANCE BASED ON REVIEW OF CONTRACTOR INSPECTION REPORT/ TC: QP/INSPECTION CAT-III NO QP APL AND INSPECTION BY NTPC, ACCEPTANCE BASED ON REVIEW OF COC BY BHEL.

NOTE 4: A* MEANS SUPPLY EXPERIENCE OF COMPARABLE UNIT TO BE FURNISHED TO NTPC

NOTE 5: * - Inspection category will be decided during vendor evaluation.

** LOCATION TO BE INFORMED LATER



Bharat Heavy Electricals Ltd
National Thermal Power Corp. Ltd.
Patratu Stage I, 3x800 MW, SSTs-6000 USC, India

Section 15.2
Sub Supplier Generator

PROJECT:		Patratu Stage I		LIST OF ITEMS REQUIRING QUALITY PLAN AND SUBCONTRACTOR APPROVAL		Ref No: IN1141		000			
Package:		STEAM TURBINE GENERATOR		AND SUBCONTRACTOR APPROVAL		Revision No: (0)					
CONTRACTOR:		SIEMENS AG		SUB SYST GENERATOR AND AUX		Date: 12-10-2016		04-04-17			
CONT_NO:											
SR NO	ITEM	QP /INS- NO. -PN CAT	QP NO. 3530-110	QP SUB-MISSION SCHEDULE	QP APPL SCHED ULE	PROPOSED SUB SUPPLIER	PLACE	SS APPL STATUS / CAT	SS DETAIL SUB-SCHED ULE	SS APPL SCHED ULE	APPROVAL STATUS
1	STATOR FRAME FABRICATION	II				ANDRITZ KFT	UNGARN				^
		II				TURBOCARE	POLAND				^
		II				ENERGY EN	SOUTH KOREA				^*
2	STATOR FRAME MACHINING	I				ANDRITZ KFT	UNGARN				^
		I				TURBO CARE	POLAND				^
3	SPRINGS SPRING BASKET ASSLY	II				GELTZENAUER	DUISBURG/ GERMANY				^
		II				TURBO CARE	POLAND				^
4	CORE BEAM DOVETAIL FOR STATOR	II				GELTZENAUER	DUISBURG/ GERMANY				^
5	STATOR LAMINATION	I				SIEMENS AG	ERFURT				^
6	FLUX CAP	II				SIEMENS AG	TBD				^
7	TENSION BOLT FOR STATOR CORE(INSULATED)	II				SIEMENS AG	ERFURT				^
8	STATOR CORE	I				SIEMENS AG	MUELHEIM				^
9	STATOR BARS	I				SIEMENS AG	ERFURT GERMANY				^
10	HEADER TUBES (ASSY)	II				DR SCHNABEL	PFORZHEI M/GERMAN Y				^
11	HEADER FOR STATOR	II				TBD	TBD				^



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Bharat Heavy Electricals Ltd
National Thermal Power Corp. Ltd.
Patratu Stage I, 3x800 MW, SST5-6000 USC, India

Section 15.2
Sub Supplier Generator

INT141

PROJECT: Package: CONTRACTOR: CONT_NO:		Patratu Stage I STEAM TURBINE GENERATOR SIEMENS AG		LIST OF ITEMS REQUIRING QUALITY PLAN AND SUBCONTRACTOR APPROVAL				Ref No: INT141 Revision No: (H)		Date: 12-10-2016		000	
SR NO	ITEM	QP /INS- PN	QP NO. 3530-110	QP SUB- MISSION SCHEDU -LE	QP APPL SCHED ULE	PROPOSED SUB SUPPLIER	PLACE	SS APPL STATUS / CAT	SS DETAIL SUB- SCHED ULE	SS APPL SCHED ULE	APPROVAL STATUS		
12	OVER HANG SUPPORT RING	II				ROCHLING	HAREN				A		
13	RIPPLE SPRING	II				KREMPPEL	WEHINGE NAGERMAN				A		
14	STATOR WINDING ASSEMBLY INCL. RIPPLE SPRING & OH SUPPORTS	I				SIEMENS AG	MUELHEIM				A		
15	GENERATOR SHAFT FORGING	II				SDF TURNI	ITALIA				A		
		II				SAARSCHMIED	VOLKINGE N				A		
16	GENERATOR SHAFT MACHINING	I				SIEMENS AG	ERFURT				A		
17	INSERT RING	II				SIEMENS AG	ERFURT				A		
18	RETAINING RING	I				SIEMENS AG	ERFURT				A		
19	MICA FLEECE&SPLITTING INSULATION TAPE	II				VON ROLL	OSTERREIC H				A		
20	SILVER BEARING COPPER HOLLOW STRIPS (ROTOR COIL)	II				ISOVOLTA	SCHWEIZ				A		
21	FIELD LEAD CORE BAR FOR ROTOR AND EXCITOR	II				BUNTMETALL	OSTERREIC H				A		
22	TENSION BOLT FOR ROTOR	II				SIEMENS AG	ERFURT				A		
		II				LAUMEN	MULHEIM				A		
		II				HELLER	ARNSTADT				A		
		II				STAHLBERG	LANGENFE LD				A		



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Section 15.2
Sub Supplier Generator

Bharat Heavy Electricals Ltd
National Thermal Power Corp. Ltd.
Patratu Stage I, 3x800 MW, SST5-6000 USC, India

IN1141

PROJECT: Package: CONTRACTOR: CONT_NO:		Patratu Stage I STEAM TURBINE GENERATOR SIEMENS AG		LIST OF ITEMS REQUIRING QUALITY PLAN AND SUBCONTRACTOR APPROVAL				Ref No: IN1141 Revision No: 00	
ITEM		QP /INS. NO. -PN 3530-110 CAT	QP SUB- MISSION SCHEDU -LE	QP APPL SCHED ULE	PROPOSED SUB SUPPLIER	PLACE	SS APPL STATUS / CAT	SS DETAIL SUB- SCHED ULE	SS APPROVAL STATUS
SR NO									
23	CURRENT CARRYING BOLTS FOR ROTOR	II			GEILTZENAUER	DUISBURG/ GERMANY			A
24	ROTOR COIL FORMING	II			SIEMENS AG	MUELHEIM			A
25	WEDGES FOR ROTOR	II			BUNTMETALL KME	OSTERREICH/ GERMANY			A
26	ROTOR SLOT ANGLE	II			VON ROLL	GERMANY			A
27	ROTOR WINDING ASSLY (GEN) INCL ROTOR SLOT ANGLE	II			MICAFIL	SCHWEIZ			A
28	GENERATOR ROTOR-FINAL	I			SIEMENS AG	MUELHEIM			A
29	FAN BLADE FOR COMPRESSOR	II			STORK TURBO	HOLLAND			A
		II			MF-ENERGY	TCHIECHIEN			A
		II			SET	UNGARN			A
30	COMPRESSOR HUB ASSEMBLY	II			SIEMENS AG	ERFURT			A
31	TERMINAL BUSHING (CONDENSER TYPE)	II			HSP	KOELN			A
32	TERMINAL BOX	II			ENERGY EN	SOUTH KOREA			A*
		II			TURBOCARE	POLAND			A
		II			ANDITZ	UNGARN			A
33	END SHIELD FABRICATION MACHINING	II			TURBOCARE	POLLAND			A





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Section 15.2
Sub Supplier Generator

Bharat Heavy Electricals Ltd
National Thermal Power Corp. Ltd.
Patratu Stage I, 3x800 MW, SST5-6000 USC, India

PROJECT:		Patratu Stage I		LIST OF ITEMS REQUIRING QUALITY PLAN AND SUBCONTRACTOR APPROVAL		Ref No: INT141		000		
Package:		STEAM TURBINE GENERATOR		AND SUBCONTRACTOR APPROVAL		Revision No: 00				
CONTRACTOR:		SIEMENS AG		SUB SYST GENERATOR AND AUX		Date: 12-10-2016				
CONT. NO:										
SR NO	ITEM	QP /INS- PN CAT	QP NO. 3530-110	QP SUB- MISSION SCHEDULE	QP APPL SCHED ULE	PROPOSED SUB SUPPLIER	PLACE	SS APPL STATUS / CAT	SS DETAIL SUB- SCHED ULE	SS APPROVAL STATUS
33	END SHIELD FABRICATION MACHINING	II				ENERGY EN	SOUTH KOREA			A*
34	BEARING SHIELD	II				ANDITZ	UNGARN			A
35	SHAFT SEALING AND BEARING SHIELD	II				GLEITLAGER TECHNIK	ESSEN			A
		II				GLEITLAGER TECHNIK	ESSEN			A
36	WATER BOX FOR STATOR BAR	II				DIETMANN	VIERSEN			A
37	HIGH PRESSURE HOSES FOR BEARING PEDESTAL	II				SIEMENS AG	ERFURT			A
38	INSULATING HOSE LINE FOR PRIMARY WATER	II				ITO	OBERHAUS EN			A
		II				CRANE RESISTOFLEX	PFORZHEI M			A
		II				DR SCHNABEL	PFORZHEI M/ GERMANY			A
39	P W TANK INCLUDING PW PIPING	II				EICKHOFF	MULHEIM			A
40	CARBON & CARBON BRUSH HOLDER	II				CARLS	ESSEN			A
		II				SCHUNK	WETTERNB ERG			A
41	HYDROGEN COOLER	II				SIEMENS AG	HERNE			A
42	GENERATOR ASSEMBLY	I				SIEMENS AG	MUELHEIM			A

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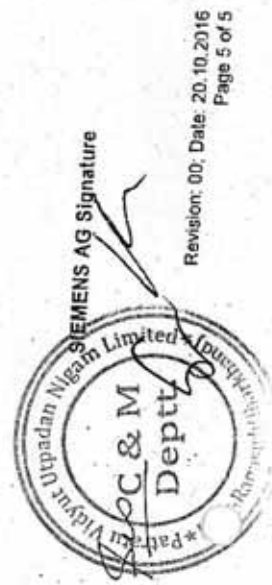
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Bharat Heavy Electricals Ltd
National Thermal Power Corp. Ltd.
Patratu Stage I, 3x600 MW, SSTs-6000 USC, India

Section 15.2
Sub Supplier Generator

PROJECT: Package: Patratu Stage I CONTRACTOR: STEAM TURBINE GENERATOR CONTRACT NO: SIEMENS AG		LIST OF ITEMS REQUIRING QUALITY PLAN AND SUBCONTRACTOR APPROVAL				Ref No: IN1141 Revision No: (0)	000
SUB SYST GENERATOR AND AUX		SUB SYST GENERATOR AND AUX				Date: 12-10-2016	
SR NO	ITEM	QIP NO.	QIP NO.	QIP NO.	QIP NO.	QIP NO.	QIP NO.
QIP NO.	QIP NO.	QIP NO.	QIP NO.	QIP NO.	QIP NO.	QIP NO.	QIP NO.
43	GENERATOR TEST FIELD RUN (FINAL)	1					
44	ROTOR FLUX DENSITY MONITORING						
45	FLAT SPRING(FRAME)	II					
		II					
		II					

A* DETAIL EXPERIENCE REQUIRED. *- SIEMENS WILL FURNISH THE NAME OF THREE REGULAR SUPPLIER AND LOCATION PRIOR TO AWARD TO SUB VENDOR. A MEANS APPROVED.



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PROJECT: PATRATU STPP (3X800 MW)				LIST OF ITEMS REQUIRING QUALITY PLAN AND SUBCONTRACTOR APPROVAL				REF. NO.: CS-9585-001-02			
PACKAGE: STEAM GENERATOR ISLAND (ES)				PACKAGE				REV. NO.: 00			
CONTRACTOR: BHEL				SUB-SYSTEM: BHEL RANIPET, ISG				DATE: 04.04.2017			
CONTRACT NO.: CS-9585-001-02											
SL. NO.	ITEM	QP/ INSP. CAT.	QP. NO.	QP. SUBMISSION SCHEDULE	QP APPL. SCHEDULE	PROPOSED SUB SUPPLIER	PLACE	SS APPL/ STATUS/ CAT	SS DETAIL SUB SCHEDULE	SC APPL. SCHEDULE	REMARKS
1	HVR TRANSFORMER AND EC PANEL	I				BHEL	JHANSI/ BHOPAL	A			SUB-QR ITEM
2	BUSHING INSULATOR	II				BHEL EPD	BANGALORE	A			
3	SHAFT INSULATOR	II				BHEL EPD	BANGALORE	A			
4	SUPPORT INSULATOR	II				BHEL EPD	BANGALORE	A			
5	ASH LEVEL INDICATOR	II				FLOWSTAR	FARIDABAD	A			
		II				NIVO CONTROLS	INDORE	A			
		II				EIP ENVIROLEVEL	NOIDA	A			
		@				BHEL	RANIPET	DR			
6	ESP CONTROLLER (ARECA, INTELLUR AP, STATCON)	III				ADVANCED ELECTRONICS (ALS)	BANGALORE	A			
		III				SYSTEM AIDS	BANGALORE	A			
		III				VASANTHA ADVANCED SYSTEM	COIMBATORE	A			
		-III				EM ELECTRONICS	BANGALORE	A			
7	INTELLURAP STATCON & IOS PANEL	I				CHEMIN CONTROLS	PONDICHERRY	A			
		I				BHEL EPD	BANGALORE	A			
		I				CONTROL AND SCHEMATICS	HYDERABAD	A			
		I				PRAMEEN INDUSTRIES	PUDUKOTT	A			
		I				CONTROL AND SWITCHGEAR	HYDERABAD	A			
		I				INDUSTRIAL CONTROL AND APPLIANCES	MUMBAI	A			
		@				SAJAS ELECTRICAL	TRICHY	DR			
		@				SHIBSHA INSTRUMENTS	CHENNAI	DR			
		@				COMPUTER CONTROL OPERATIONS	PONDICHERRY	DR			
		@				KEAS CONTROL SYSTEMS INDIA PVT. LTD.	COIMBATORE	DR			
8	OPACITY MONITOR	III				SICK	GERMANY	A			Minor items like canopy etc will be manufactured in India and supplied by Indian Representatives
		III				DURAG	GERMANY	A			Minor items like canopy etc will be



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PROJECT: PATRATU STPP (3X800 MW)				LIST OF ITEMS REQUIRING QUALITY PLAN AND SUBCONTRACTOR APPROVAL PACKAGE				REF. NO.: CS-9585-001-02	
PACKAGE: STEAM GENERATOR ISLAND				SUB-SYSTEM: BHEL RANIPET, ISG				REV. NO.: 00	
CONTRACTOR: BHEL								DATE: 04.04.2017	
CONTRACT NO.: CS-9585-001-02									
SL. NO.	ITEM	QP/ INSP. CAT.	QP. NO.	QP. SUBMISSION SCHEDULE	QP APPL. SCHEDULE	PROPOSED SUB SUPPLIER	PLACE	SS APPL. STATUS/ CAT	REMARKS
		III				CODEL	UK	A	manufactured in India and supplied by Indian Representatives THROUGH FORBES MARSHALL -PUNE Minor items like canopy etc will be manufactured in India and supplied by Indian Representatives
		III				LAND COMBUSTION	UK	A	Minor items like canopy etc will be manufactured in India and supplied by Indian Representatives
						DURAG INDIA INSTRUMENTATION PVT. LTD.	BENGALURU	DR	
9	HEATER (PANEL TYPE HOPPER HEATERS)	I				HTD HEAT TRACE INDIA	HYDERABAD	A	
		II				HOT FOIL EHS INC	USA	A	
		II				HTD HEAT TRACE	USA	A	For panel type hopper heaters, the mounting accessories will be manufactured in India and will be supplied by the Indian representatives
		II				THERMON	USA	A	
		I				THERMOPADS	HYDERABAD	A*	*APPROVED SUBJECT TO SUCCESSFUL EXECUTION OF TRIAL ORDER
10	ELEVATOR	I				THERMON	PUNE	A	
		I				ECE	GHAZIABAD	A	
		I				TECHNO	AHMEDABAD	A	
		I				OTIS	MUMBAI	A	
		I				KONE	CHENNAI	A	
		I				OMEGA	AHMEDABAD	A	
		I				SAMIL ELTEC	KOREGAON Nigam Limited	A	



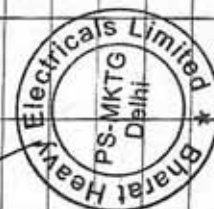
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PROJECT: PATRATU STPP (3X800 MW)				LIST OF ITEMS REQUIRING QUALITY PLAN AND SUBCONTRACTOR APPROVAL PACKAGE				REF. NO.: CS-9585-001-02			
PACKAGE: STEAM GENERATOR ISLAND				SUB-SYSTEM: BHEL RANIPET, ISG				REV. NO.: 00			
CONTRACTOR: BHEL				DATE: 04.04.2017							
CONTRACT NO.: CS-9585-001-02											
SL. NO.	ITEM	QP/ INSP. CAT.	QP. NO.	QP. SUBMISSION SCHEDULE	QP APPL. SCHEDULE	PROPOSED SUB SUPPLIER	PLACE	SS APPL/ STATUS/ CAT	SS DETAIL SUB SCHEDULE	SC APPL. SCHEDULE	REMARKS
11	LT MOTORS (REFER NOTE 1)	I				KEC	BANGALORE/HUBLI	A			HUBLI UPTO 90 KW, RQP
		I				SIEMENS	MUMBAI	A			RQP
		I				CGL	AHMEDNAGAR	A			RQP
		I				MARATHON	KOLKATA	A			RQP
		I				BBL	MUMBAI	A			RQP
		I				ABB	FARIDABAD/ BANGALORE	A			FARIDABAD UPTO 55 KW, BANGALORE ABOVE 55 KW, RQP
		I				JYOTI	VADODARA	A			
		I				LHP	SOLAPUR	A			
						NGEF	HUBLI	A			UPTO 15 KW
11	XLPE/ PVC INSULATED LT POWER CABLES					REFER SEPARATE LIST					
12	PVC INSULATED LT CONTROL CABLES					REFER SEPARATE LIST					
13	SCREENED (INSTRUMENT) CABLES	I				POLYCAB	DAMAN	A			
		I				ELKAY TELELINKS	FARIDABAD	A			
		I				ADVANCE CABLES	BANGALORE	DR			
		I				PARAMOUNT	KHUSHERA	A			
		I				UNIVERSAL	SATNA	A			
		I				NICCO	KOLKATA	A			
		I				DELTON	FARIDABAD	A			
		I				INCAB		A			



R. A. 14/17

PROJECT: PATRATU STPP (3X800 MW)				LIST OF ITEMS REQUIRING QUALITY PLAN AND SUBCONTRACTOR APPROVAL				REF. NO.: CS-9585-001-02		
PACKAGE: STEAM GENERATOR ISLAND				PACKAGE				REV. NO.: 00		
CONTRACTOR: BHEL				SUB-SYSTEM: BHEL RANIPET, ISG				DATE: 04.04.2017		
CONTRACT NO.: CS-9585-001-02										
SL. NO.	ITEM	QP/ INSP. CAT.	QP. NO.	QP. SUBMISSION SCHEDULE	QP APPL. SCHEDULE	PROPOSED SUB SUPPLIER	PLACE	SS APPL/ STATUS/ CAT	SS DETAIL SUB SCHEDULE	REMARKS
		I				THERMO CABLES	HYDERABAD	A		
		I				KEI	BHIWADI	A		
		I				CORDS	BHIWADI	A		
		I				GUPTA POWER INFRASTRUCTURE LTD.	KHURDA	A		
		@				CMI	BHIWADI	DR		
		@				SPECIAL CABLES	RUDRAPUR	DR		
		@				KEC	MYSORE	DR		
14	RTD AND THERMOCOUPLE ALONG WITH THERMOWELL	II				THERMAL INSTRUMENT INDIA PVT. LTD	MUMBAI/ SAVANTWADI	A		
		II				TEMPSENS INSTRUMENT (I) PVT. LTD.	UDAIPUR	A		
		II				DETRIV INST & ELEC LTD	MUMBAI	A		
		II				PYRO ELECTRIC INSTRUMENT (GOA) PVT. LTD.	GOA	A		
		II				TECHNO INSTRUMENT	AHMEDABAD	A		
		@				GOA INSTRUMENT PVT. LTD.	GOA	DR		
		@				TOSHNIWAL INDUSTRIAL PVT. LTD.	AJMER	DR		
		@				BAUMER TECHNOLOGIES INDIA PVT. LTD.	VAPI	DR		
15	AUXILIARY CONTROL PANEL/ LTMSB					REFER SEPARATE LIST				
16	ELECTRICAL ACTUATOR (WITH GEAR BOX	II				DREHMO				

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NTPC

PS-MKTG

Delhi

Electricals Limited

PS-MKTG

Delhi

Electricals Limited



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PROJECT: PATRATU STPP (3x800 MW)				LIST OF ITEMS REQUIRING QUALITY PLAN AND SUBCONTRACTOR APPROVAL				REF. NO.: CS-9585-001-02			
PACKAGE: STEAM GENERATOR ISLAND				PACKAGE				REV. NO.: 00			
CONTRACTOR: BHEL				SUB-SYSTEM: BHEL RANIPET, ISG				DATE: 04.04.2017			
CONTRACT NO.: CS-9585-001-02											
SL. NO.	ITEM	QP/ INSP. CAT.	QP. NO.	QP. SUBMISSION SCHEDULE	QP APPL. SCHEDULE	PROPOSED SUB SUPPLIER	PLACE	SS APPL/ STATUS/ CAT	SS DETAIL SUB SCHEDULE	SC APPL. SCHEDULE	REMARKS
	ALSO)										
		II				ALUMA	GERMANY	A			
		II				ROTORK	CHENNAI/ BANGALORE	A			
		II				ROTORK	UK	A			
		II				LIMITORQUE	FARIDABAD	A			
		II				ALUMA INDIA	BANGALORE	A			
17	CABLE TRAYS AND ACCESSORIES					REFER SEPARATE LIST					
18	FLEXIBLE CABLE TRAY SUPPORT					REFER SEPARATE LIST					
19	CABLE GLANDS					REFER SEPARATE LIST					
20	CABLE LUGS					REFER SEPARATE LIST					
21	GEARED MOTOR	III				SHANTI GEARS LTD	COIMBATORE	A			
		III				NEW ALLENBERY WORKS	KOLKATA	A			
		III				LAXMI HYDRAULIC PVT. LTD.	SHOLAPUR	A			
		III				POWERBUILD	VV NAGAR	A			
22	DISCONNECTING SWITCH FOR ESP	III				BHEL APPROVED VENDORS					INSULATOR MAKE SHALL BE BHEL/ WSI/ JS/ UCE/ ADITYA BURLA
23	HEATING ELEMENT (TUBULAR) FOR ESP	III				BHEL APPROVED VENDORS					
24	JUNCTION BOXES (GALVANISED) FOR ESP	III				REFER SEPARATE LIST					
25	INTERLOCKS FOR ESP	III				BHEL APPROVED VENDORS					
26	EARTHING MATERIALS (GI FLATS) FOR ESP					REFER SEPARATE LIST					
27	PERSONNEL COMPUTER FOR ESP	III				BHEL APPROVED VENDORS					



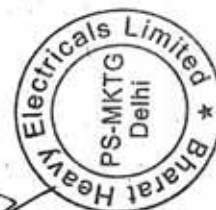
एनटीपीसी NTPC				PROJECT: PATRATU STPP (3X800 MW)				LIST OF ITEMS REQUIRING QUALITY PLAN AND SUBCONTRACTOR APPROVAL				REF. NO.: CS-9585-001-02	
				PACKAGE: STEAM GENERATOR ISLAND				PACKAGE				REV. NO.: 00	
				CONTRACTOR: BHEL				SUB-SYSTEM: BHEL RANIPET, ISG					
				CONTRACT NO.: CS-9585-001-02								DATE: 04.04.2017	
SL. NO.	ITEM	QP/ INSP. CAT.	QP. NO.	QP. SUBMISSION SCHEDULE	QP APPL. SCHEDULE	PROPOSED SUB SUPPLIER	PLACE	SS APPL/ STATUS/ CAT	SS DETAIL SUB SCHEDULE	SC APPL. SCHEDULE	REMARKS		
28	PRINTER FOR ESP	III				BHEL APPROVED VENDORS							
29	THERMOSTAT FOR ESP	III				BHEL APPROVED VENDORS							
30	LOCAL START/ STOP PUSH BUTTON STATION FOR ESP					REFER SEPARATE LIST							
31	LIMIT SWITCH WITH LEVER FOR GATES & DAMPERS	III				BHEL APPROVED VENDORS							
32	JUNCTION BOXES FOR GATES & AMPERS	III				BHEL APPROVED VENDORS							
33	OTHER ITEMS LIKE PC TERMINATION BOX, PC ADD ON CARD SIMULATOR FOR ARECA, COMCON INTERFACE MODULE, PC	III				BHEL APPROVED VENDORS							
34	FQP FOR ELECTRICAL ITEMS	I				BHEL	RANIPET						

Note 1 : a) Acceptance of Motor less than 30 KW is based on COC of the manufacturer and the contractor confirming as follows: It is hereby confirmed that the above mentioned motor /motors was/ were manufactured taking care of NTPC specific requirements regarding ambient temp., voltage and frequency variation, hot starts, pull out torque, starting KVA/KW, temp. rise, distance between centre of stud and gland plate and tested in accordance with approved drawing /data sheets b) 30 KW and above Acceptance of Motor rating between 30 KW 50 KW is based on NTPC review of Routine Test Inspection report as per IS 325 witnessed by main contractor along with COC of the manufacturer and the contractor confirming as follows: It is hereby confirmed that the above mentioned motor /motors was/ were manufactured taking care of NTPC specific requirements regarding ambient temp., voltage and frequency variation, hot starts, pull out torque, starting KVA/KW, temp. rise, distance between centre of stud and gland plate, space heater and tested in accordance with approved drawing /data sheets. Above 50 KW up to 200 KW NTPC inspection as per approved QP.

Note 3: Misc items like name plate, cable laying accessories, cable tags, cable dressing, material, wire, marker, clamps and pads for thermocouple adaptor, union, cross, socket and plug, pneumatic fittings tubes shall be as per BHEL system.

Note 4: NTPC Approval conditions for all approved vendors shall be compiled.

Note 5: @ - Inspection category will be decided during vendor evaluation.



4/4/19



ENGINEERING DIV/ QA&I

157

Project	: 3x800 MW PATRATU STPP (Phase-I)
Package	: EPC Pkg.- Oil Filled Transformers (GT, Reactor, ST, SBT, UT, Auxiliary Transformer, Maintenance Equip), GCB, Dry Type Transformer, IPBD, SPBD, ..)
Supplier	: BHEL
Contract No.:	CS-9585-001-2

[illegible]

Amman (Amman Pardey)
NIP



Amrit Yadav
mgr / ps-mktg.
BHEL

Engr. Div./OAI

Afghanistan

Handwritten: 11/10/18

FORMAT NO: QS-01-QAL-P-1/F3-R0

14

Engr. Div./OAI

159

Project : 3x200 MW PATRATU STPP (Phase-I) Package : EPC Pkg- Oil Filled Transformers (GT, Reactor, ST, SBT, UT, Auxiliary Transformer, Maintenance Equip), GCB, Dry Type Transformer, IPBD, SPBD..) Supplier : BHEL Contract No.: CS-9585-001-2										LIST OF ITEMS REQUIRING QUALITY PLAN AND SUB-SUPPLIER APPROVAL										Doc.No:9585-001-00E-R-00 REV.NO. : 0	
S.N.	Item Description	Q/P Insp. Cat	QP # 9585-001-QVE-	QP Sub. Schedule	QP Approval Schedule	Proposed sub-supplier	Place	Sub-supplier approval status / cat	Sub-supplier Details submission schedu/a	Remark											
13	FRA TEST KIT	III	.			Doble Haefely Omtron HP (Allent) Tetlex Megger	USA Switzerland Hongkong USA USA Sweden	A DR DR A A A													
14	CAPCITANCE & TAN DELTA MEASUREMENT KIT	III	.			Megger Andreen Hagerling Doble Haefely Tetlex Tinsley	USA USA USA France/Switzerland USA UK	A A A A A A													
15	TRANSFORMER TURNS RATIO (TTR) MEASUREMENT KIT	III	.			Tetlex Sivananda Electronics Megger DV Power Eitel	Switzerland Nashik USA / UK Sweden Bangalore	A DR DR A A													
16	WINDING RESISTANCE MEASUREMENT KIT	III	.			Megger Shivananda IBEKO DV Power Scoop T&M GE Kalmen Ltd	USA Nashik Sweden Sweden Pune UK	A DR A A A A													
17	OFF LINE LABORATORY MODEL OIL DGA KIT	III	.			Perkin Elmer GE SYPROTECH Hydram CIC Agilent Brucker	Germany Canada Canada Vadodara USA USA	DR DR DR A A A													
18	HYDRAULIC JACKING SYSTEM	III	.			Enerpack Hydraulic Bemco Jackas & Allied Products Ketco Hydro Pack Oriental Engg Works Venkos & Co	Vassi, Mumbai Belgaon Japan Belgaon Yamunanagar Paina	A A A A A A													
19	ON LINE MOITURE REMOVAL SYSTEM	III	.			Transec Dry Keep Velcon Ravin Infra CEE DEE VACUUM EQUIPMENTS PVT LTD PTSS Dry Keep	UK USA USA Pune PUNE Combalore South Africa	A DR DR A A A A	Conditions Apply Conditions Apply												

Main Contractor to obtain prior approval from NTPC for the Model of equipment they intent to supply, before placing order

Main Contractor to obtain prior approval from NTPC for the Model of equipment they intent to supply, before placing order



Asadun.

Conditions
C & M
Deptt.
Patratu *Dist-Rangpur

~~fill in the blank~~

Fama Div MAI

END

FORMAT NO. QS-01-QAI-P-1/F3-R0

Project :	3x600 MW PATRATRU STPP (Phase-I)
Package :	EPC Pkg.- Oil Filled Transformers (GT, Reactor, ST, Substation)
Task :	GBT, UT, Auxiliary Transformer, Maintenance Equip), GCB, Dry Type Transformer, IPBD, SPBD,)
Supplier :	BHEL
Contract No. :	CS-0355-001-2

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Adams



119

FORMAT NO:QS-01-QAI-P-1/F3-R0

Engr. Div. 10A1

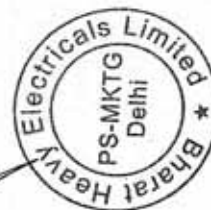
Project : 3x800 MW PATRATU STPP (Phase-I)		Doc No: 9585-001-QOE-R-00						
Package : EPC Pkg- Oil Filled Transformers (GT, Reactor, ST, SBT, UT, Auxiliary Transformer, Maintenance Equip), GCB, Dry Type Transformer, IPBD, SPBD,)		REV NO. : 0						
Supplier : BHEL		DATE : 27.04.2017						
Contract No. : CS-9585-001-2		PAGE : 5 OF 5						
LIST OF ITEMS REQUIRING QUALITY PLAN AND SUB-SUPPLIER APPROVAL								
S.N.	Item Description	QIP Insp. Cat	QIP # 9585-001-QVE-	QIP Sub. Schedule	Proposed sub-supplier	Sub-supplier approval status / cat	Sub-supplier Details submission schedule	Remark
28	FOP FOR OIL FILLED TRFs	-	G-001		BHEL	A		
29	FOP FOR GCB	-	G-002			A		
30	FOP FOR SHUNT REACTOR	-	G-003			A		
31	FOP FOR NGT	-	G-004			A		
32	FOP FOR DRY TYPE TRF	-	G-005			A		
33	FOP FOR MV BUSDOCT	-	G-006			A		
34	WFS FOR TRF TANK	-	W-001			A		
35	WFS FOR BUSDOCT	-	W-002			A		

NOTE:

1. SYSTEM SUPPLIERS/SUB-SUPPLIERS APPROVAL STATUS CATEGORY(SHALL BE FILLED BY NTPC)
 - A-For this items proposed vendor is acceptable to NTPC.To be indicated with letter "A" in the list along with condition of approval if any
 - DR-For these items "Detailed required for NTPC review.To be identified with letter "DR" in the list.
 - NOTED- For these items vendors are approved by Main Supplier & accepted by NTPC without specific vendor approval from NTPC.To be identified with "NOTED".
2. QIP / INSPN CATEGORY
 - CAT-I :For these items the Quality Plans approved by NTPC & final acceptance will be on physical inspection witness by NTPC documents as per approved QP
 - CAT-II :For these items the Quality Plans approved by NTPC.However no physical inspection shall be done by NTPC.The final acceptance by NTPC shall be on basis of
 - CAT-III :For these items Main supplier approves the Quality Plans.The final acceptance by NTPC shall be on basis of certificate of conformance by the main supplier.
3. UNITSWORKS : Place of manufacturing/ Place of Main Supplier of multi units/works.
4. Comprehensive L-2 list of sub-vendors shall be finalized with the finally selected L-1 vendor, but prior to order finalization on L-1 vendor by the Bidder.
5. Item Subjected to Sub-QR clearance

Amrta
29/04/19

Adar



**एनटीपीसी
NTPC**



Page 1 of 3

(NTPC)

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		PROJECT: Patratu Super Thermal Power Station - Expansion Phase-I (3x800MW) PACKAGE : EPC Sub Package : Solar roof top dedicated items CONTRACTOR : M/S BHEL CONT. NO.; CS-9585-001-02				LIST OF ITEMS REQUIRING QP APPROVAL & ACCEPTABLE VENDOR AS PROPOSED BY M/S BHEL				REF NO : 9585-001-QOE-R-01 REVISION NO. 00 DATE 26.04.2017	
Sl. No.	ITEM	QP / INS CAT.	QP No:- 9585-001-QOE-	QP SUB. SCH.	QP APPL SCHE DULE	SUB-SUPPLIERS PROPOSED BY M/S L&T	PLACE	SUB-SUPPLIER APPL STATUS AS PER NTPC	SC APPL SCHED ULE	SC DETAIL SUB SCH	REMARKS

	SPV Modules, SPV Module to AJB) As per TUV specification 2 Pfg 1169/08.2007: subject to acceptance by Engg										
						Lapp	Korea	A			
						Leoni	Switzerland	A			
						Apar	Khatalwada	A			Conditions apply
4.	FQP for SPV Modules	G-01									

Abbreviations

A – For these items proposed vendor is acceptable to NTPC. To be indicated with letter "A" in the list along with the condition of approval, if any.
 DR – For these items "Detailed required" for NTPC review. To be identified with letter "DR" in the list.

QP/INSPECTION CATEGORY:

CAT-I : For these items the Quality Plans are approved by NTPC and the final acceptance will be on physical inspection witness by NTPC.
 CAT-II : For these items the Quality Plans approved by NTPC. However no physical inspection shall be done by NTPC. The final acceptance by NTPC shall be on the basis review of documents as per approved QP.

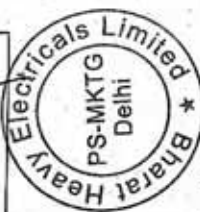
CAT-III : For these items Main Supplier approves the Quality Plans. The final acceptance by NTPC shall be on the basis certificate of conformance by the main supplier.

General Notes:

- 1-Vendor list & category of the mandatory spares shall be as mentioned above.
- 2- For items not covered above, main contractor shall seek NTPC-QA's clearance before placing the order.

(NTPC) 

(Bidder)

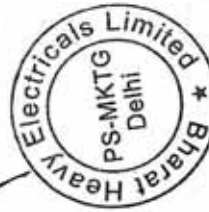


		PROJECT: Patratu Super Thermal Power Station Expansion Phase-I (3x800MW) PACAKGE : EPC Sub Package : Solar roof top dedicated items CONTRACTOR : M/S BHEL CONT. NO.: CS-9585-001-02				LIST OF ITEMS REQUIRING QP APPROVAL & ACCEPTABLE VENDOR AS PROPOSED BY M/S BHEL				REF NO : 9585-001-QOE-R-01 REVISION NO. 00 DATE 26.04.2017	
		Sl. No.	ITEM	QP / INS CAT.	QP No:- 9585-001-QVE-	QP SUB. SCH.	QP APPL SCHE DULE	SUB-SUPPLIERS PROPOSED BY M/S L&T	PLACE	SUB-SUPPLIER APPL STATUS AS PER NTPC	SC APPL SCHED ULE

3- NTPC Approval conditions to above identified vendors shall be adhered to. Vendor's approval conditions will be informed on specific request of Main Contractor

(Signature)

Afroz
Amit Yadav
Mgt. Mktg.
BHEL



(NTPC)

(Bidder)

Page 3 of 3

PROJECT: Patratu Super Thermal Power Station Expansion Phase-I (3x800MW) PACAKGE : EPC Sub Package : HT Switchgear dedicated Items CONTRACTOR : M/S BHEL CONT. NO.; CS-9585-001-02				LIST OF ITEMS REQUIRING QP APPROVAL & ACCEPTABLE VENDOR AS PROPOSED BY M/S BHEL				REF NO : 9585-001-QOE-R-01 REVISION NO. 00 DATE: 26.04.2017			
Sl. No.	ITEM	QP / INS CAT.	QP No:- 9585- 001- QVE-	QP SUB. SCH.	QP APPL SCHE DULE	SUB-SUPPLIERS PROPOSED BY M/S L&T	PLACE	SUB-SUPPLIER APPL STATUS AS PER NTPC	SC APPL SCHED ULE	SC DETAIL SUB SCH	REMARKS
1.	HT Switchgear Panel up to 33KV with Vacuum type circuit breaker (BOIs preferably with VDE/CE/UL/CSA marked or BIS approved with valid CML no.)	I	Q-01			Siemens Megawin BHEL Jyoti ABB L&T	Mumbai Salem Bhopal Vadodara Nasik Ahmednagar	A@ A@ A@ A@ A@ A@			@- Subject to Sub- QR clearance from NTPC Engg.
2.	Numerical Relay Network system Integration	I	Q-02			Main Contractor approved sources	Kolkata	A@			Upto 11KV -Salt lake works -Vg series Interrupter made at Salt Lake Works.
3.	IEC 61850 Complaint Numerical Relays	(part of Swgr MQP				SEL	Pullman, USA	A@			@- Subject to Sub- QR clearance from NTPC Engg
						ALSTOM T&D	Stafford, UK	A@			P14X, P34X, P44X, P64X, P74X models only.



(Bidder)

		PROJECT: Patratu Super Thermal Power Station Expansion Phase-I (3x800MW) PACAKGE : EPC Sub Package : HT Switchgear dedicated Items CONTRACTOR : M/S BHEL CONT. NO.; CS-9585-001-02				LIST OF ITEMS REQUIRING QP APPROVAL & ACCEPTABLE VENDOR AS PROPOSED BY M/S BHEL			REF NO : 9585-001-QQE-R-01 REVISION NO. 00 DATE: 26.04.2017		
		Sl. No.	ITEM	QP / INS CAT.	QP No:- 9585-001-QQE-	QP SUB. SCH.	QP APPL SCHE DULE	SUB-SUPPLIERS PROPOSED BY M/S L&T	PLACE	SUB-SUPPLIER APPL STATUS AS PER NTPC	SC APPL SCHED ULE

							ALSTOM T&D	Chennai	A@			P14X, P24X, P34X, P44X, P64X, P74X models only.
							ABB	Finland	A@			
							ABB	Baroda	A@			For 6XX Series
							GE Multilin	Zamudio, Vizcaya, Spain/ Markham, Ontario, Canada	A@			F-650 only
							Schneider	Stone, UK	A@			PX30, PX40, VAMP 5X and VAMP 2XX models only.
							Siemens	Germany	A@			75X Series only
							Siemens	Goa	A@			75R2X series only
							ABB SACE	Italy	A			
							Jyoti	Vadodara	A			With Toshiba, Japan vacuum contactor bottle
							Megawin	Salem	A			For 6.6KV, 400A



(Bidder)

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		PROJECT: Patratu Super Thermal Power Station Expansion Phase-I (3x800MW) PACKAGE : EPC Sub Package : HT Switchgear dedicated Items CONTRACTOR : M/S BHEL CONT. NO.: CS-9585-001-02				LIST OF ITEMS REQUIRING QP APPROVAL & ACCEPTABLE VENDOR AS PROPOSED BY M/S BHEL		REF NO : 9585-001-QOE-R-01 REVISION NO. 00 DATE: 26.04.2017			
		SI. No.	ITEM	QP / INS CAT.	QP No.: 9585-001-QVE-	QP SUB. SCH.	QP APPL SCHE DULE	SUB-SUPPLIERS PROPOSED BY M/S L&T	PLACE	SUB-SUPPLIER APPL STATUS AS PER NTPC	SC APPL SCHED ULE

													- With Toshiba Vacuum Bottle
								Siemens	Kalwa	DR			
5.	Fast Bus Transfer Panel	I	Q-03					Aartech	Parwanoo	A			FBT device Model-BTS-2000 from Cooper Power, USA
								ABB	Vadodara	A			FBT Device Model-SUE-3000 from ABB, Finland
								SEL	Delhi	A			FBT device Model-SEL-451 from SEL, USA
6.	FQP for HT switchgear	I	G-01										

Abbreviations

A - For these items proposed vendor is acceptable to NTPC. To be indicated with letter "A" in the list along with the condition of approval, if any.
 DR - For these items "Detailed required" for NTPC review. To be identified with letter "DR" in the list.

QP/INSPECTION CATEGORY:

CAT-I : For these items the Quality Plans are approved by NTPC and the final acceptance will be on physical inspection witness by NTPC.
 CAT-II : For these items the Quality Plans approved by NTPC. However no physical inspection shall be done by NTPC. The final acceptance by NTPC shall be on the basis review of documents as per approved QP.

CAT-III : For these items Main Supplier approves the Quality Plans. The final acceptance by NTPC shall be on the basis certificate of conformance by the main supplier.

General Notes:

- 1-Vendor list & category of the mandatory spares shall be as mentioned above.
2. For items not covered above, main contractor shall seek NTPC-QA's clearance before placing the order.
- 3- NTPC Approval conditions to above identified vendors shall be adhered to. Vendor's approval conditions will be informed on specific request of Main Contractor.
4. Comprehensive L-2 list of sub-vendors shall be finalized with the finally selected L-1 vendor but prior to order finalization on L-1 vendor by the Bidder.

Atadon
 Amit Yadav
 Mgr. M&E
 BHEL



(Bidder)

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NTPC

PROJECT : PATRATU STPS (3X800 MW)
PACKAGE : EPC
Sub Package: MOTORS & VVF Drive Panels
CONTRACTOR : M/S BHEL
CONT. NO. CS-9585-001-2

LIST OF ITEMS REQUIRING QP
APPROVAL & ACCEPTABLE
VENDOR ;
CONTRACTOR-M/S BHEL

REF NO : 9585-001-QOE-R-01
REVISION NO. 00
DATE 20th April 2017

Sl. No.	ITEM	QP / INS CAT.	QP No:- 9585- 001- QVE:-	QP SUB. SCH.	QP APPL SCHE DULE	SUB-SUPPLIERS	PLACE	SUB- SUPPL APPL STATUS AS PER NTPC	SC APPL SCHE DULE	REMARKS
1)	L.T (415 V) Motors	Refer Note 1				ABB ABB BHARAT BIJLEE CGL JYOTI KEC KEC LHP MARATHON NGEF SIEMENS	FARIDABAD BANGALORE MUMBAI AHMEDNAGAR BARODA BANGALORE HUBLI SOLAPUR KOLKATA BANGALORE MUMBAI	A A A A A A A A A A A A	UPTO 55KW 55KW - 200KW RQP. FOR FLAME PROOF ALSO FOR FLAME PROOF ALSO FOR FLAMEVPROOF ALSO UPTO 90KW; FOR FLAME PROOF ALSO UPTO 200KW FOR FLAME PROOF ALSO UPTO 15KW	
2)	HT MOTOR					BHEL	BIHOPAL.	A		
3)	DC MOTOR	Refer Note 1				BHEL CGL KEC	HARIDWAR AHMEDNAGAR BANGLORE / HUBLI	A A DR		
4)	VARIABLE FREQUENCY DRIVES PANELS	1				L&T-YASHIKAWA DANFOSS SCHNEIDER ROCKWELL ALLEN BRADLEY ABB SIEMENS GE	INDIA CHENNAI NASHIK DELHI- SHAHIBABAD BANGALORE NASHIK	A A A A A A A DR		DR for HT

विद्युत उत्पादन निगम
Bharat Heavy Electricals Limited



		PROJECT: PATRATU STPS (3X800 MW) PACAKGE: EPC Sub Package: MOTORS & VVF Drive Panels CONTRACTOR: M/S BHEL CONT. NO. CS-9585-001-2				LIST OF ITEMS REQUIRING QP APPROVAL & ACCEPTABLE VENDOR: CONTRACTOR-M/S BHEL		REF NO : 9585-001-QOE-R-01 REVISION NO. 00 DATE 20th April 2017		
Sl. No.	ITEM	QP / INS CAT.	QP No:- 9585-001-QOE-	QP SUB. SCH.	QP APPL SCHE DULE	SUB-SUPPLIERS	PLACE	SUB. SUPPLIER APPL STATUS AS PER NTPC	SC APPL SCHE DULE	REMARKS

						HITACHI-HIREL	GANDHINAGAR/ SANAND	DR		
						INGETEA	SPAIN	DR		
						TECHNOLOGIES	ITALY	DR		
						NIDEC(ANSALDO)	JAPAN	DR		
						FUJI ELECTRIC SYSTEMS	BANGALORE	DR		
						TMEIC	MUMBAI	DR		
						L&T		DR		

NOTE 1: FOR L.T MOTORS

a) Less than 30 KW

Acceptance of Motor less than 30 KW is based on COC of the manufacturer & the contractor confirming as follows:
 It is hereby confirmed that the above mentioned motor /motors was/ were manufactured taking care of NTPC specific requirements regarding ambient temp., voltage & frequency variation, hot starts, pull out torque, starting KVA/KW, temp. rise, distance between centre of stud & gland plate and tested in accordance with approved drawing /data sheets.

b) 30 KW -50KW

Acceptance of Motor rating between 30 KW & 50 KW is based on NTPC review of Routine Test inspection report as per IS 325 witnessed by main contractor along with COC of the manufacturer & the contractor confirming as follows:
 It is hereby confirmed that the above mentioned motor /motors was/ were manufactured taking care of NTPC specific requirements regarding ambient temp., voltage & frequency variation, hot starts, pull out torque, starting KVA/KW, temp. rise, distance between centre of stud & gland plate, space heater and tested in accordance with approved drawing /data sheets.

c) Above 50 KW as per NTPC approved quality plan

Approval Conditions attached to above vendors-as applicable shall prevail.

General Notes:

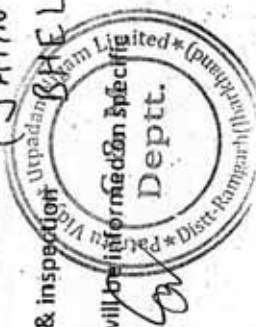
- 1) Vendor list & category of the mandatory spares shall be as mentioned above.
- 2) For item not appearing in the above list, main contractor to approach NTPC for acceptable vendors & inspection categorization of the same.
- 3) NTPC Approval conditions to above identified vendors shall be adhered to. Vendor's approval conditions will be informed on Specific request of Main Contractor.

Signature



Signature

(JATIN GAHLAWAT)



PROJECT :PATRATU STPP (2X660 MW) PACAKGE : EPC Sub Package: HT Power cables, LT power cables, Control cables, CONTRACTOR : M/S BHEL CONT. NO. CS-9578-001-2										LIST OF ITEMS REQUIRING QP APPROVAL & ACCEPTABLE VENDOR AS PROPOSED BY M/S BHEL			REF NO : 9578-001-QOE-R-01 REVISION NO. 00 DATE 10 th April 2017		
Sl. No.	ITEM	QP / INS CAT.	QP No:- 9578- 001-QVE-	QP SUB. SCH.	QP APP L SCH EDU LE	SUB-SUPPLIERS PROPOSED BY M/S BHEL	PLACE	SUB- SUPPLIER APPL STATUS AS PER NTPC	SC APPL SCHE DULE	REMARKS					
1	HT Cable upto 33KV	I	Q-01			Universal Cable Ltd.	Satna	A@		@- Subject to Sub-QR clearance from NTPC Engg					
						Torrent Cable Ltd	Nadiad	A@							
						Polycab Wires Pvt. Ltd	Daman	A@							
						KEI Industries	Bhiwadi	A@							
						Havells India Ltd.	Alwar	A@							
						Finolex	Pune	A@							
						Apar	Valsad	A@							
						NICCO	Shamnagar , Kolkata	A@		Upto 11KV only					
						Incab	Pune	A@		Upto 11KV only					
						Sri ram Cables	Bhiwadi	A@		Upto 11KV only					
						Krishna Electrical Indsutries Ltd	Gwalior	A@		Upto 11KV only					
						KEC International	Vadodara	A@							
						Paramount	Bhiwadi	A@							
						Diamond Power	Vadodara	DR@							
						Crystal Cable	Kolkata	DR@							
						Gemscab	Bhiwadi	A@							
						CCI	Nasik	DR@							
						Tirupati Plastomatics	Jaipur	DR@							
						Dynamic Cables	Jaipur	DR@							
						Sterlite Technologies	Haridwar	DR@							
						Ravin Cables	Mumbai	DR@							
						Gupta Power	Bhubneshwar	DR@							
						GEMS CABLES	MEDAK ,TELANGA	DR@							
2	1.1 KV Power cable	I	Q-02			Universal Cable Ltd.	Satna	A@		@- Subject to Sub-QR clearance					

एनटीपीसी

NTPC

भारत भारती

PS-MKTG

Delhi

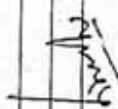
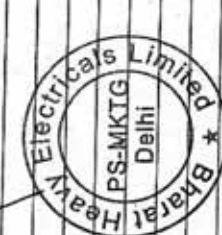
भारत भारती

PS-MKTG

Delhi



NTPC 1 OF 5 ENGINEERING DIV / QAI CONTRACTOR

PROJECT :PATRATU STPP (2X660 MW) PACAKGE : EPC Sub Package: HT Power cables, LT power cables, Control cables, CONTRACTOR : M/S BHEL CONT. NO. CS-9578-001-2										LIST OF ITEMS REQUIRING QP APPROVAL & ACCEPTABLE VENDOR AS PROPOSED BY M/S BHEL			REF NO : 9578-001-QOE-R-01 REVISION NO. 00 DATE 10 th April 2017		
Sl. No.	ITEM	QP / INS CAT.	QP No:- 9578- 001- QVE-	QP SUB. SCH.	QP APP L SCH EDU LE	SUB-SUPPLIERS PROPOSED BY M/S BHEL	PLACE	SUB- SUPPLIER APPL STATUS AS PER NTPC	SC APPL SCHE DULE	REMARKS					
	(PVC & XLPE)					NICCO	Shamnagar , Kolkata	A@		from NTPC Engg					
						Torrent Cable Ltd	Nadind	A@							
						Incab	Pune	A@							
						Hindustan Vidyut Products Ltd	Faridabad	A@							
						KEI Industries	Bhiwadi	A@							
						Delton Cable Ltd	Faridabad	A@		A)Unarmoured cable all sizes. B) Armoured cable up to 3.5 x 240 sq. Mm with GI strip armour and ICX70 sq mm with al strip armour					
						Paramount Cable	Khushkhhera	A@							
						Polycab Wires Pvt. Ltd	Daman	A@							
						Gemsabcs Industries	Bhiwadi	A@							
						Cords Cables	Bhiwadi	A@							
						Havells India Ltd.	Alwar	A@							
						Sri ram Cables	Bhiwadi	A@							
						Ravin Cables	Pune	A@							
						Thermocables	Hyderabad	A@							
						Sbee Cables	Bangalore	A@							
						Suyog Cables	Vadodara	A@							
						Gupta Power Cables	Bhubaneswar	A@							
						Finolex	Pune	A@							
						Scot Innovation wires & cables	Baddi	A@							
						Anhui Hualing	China	A@							
						LS Cable	Korea	A@							
						Radiant Cables	Hyderabad	A@							
NTPC 										CONTRACTOR					
2 OF 5										ENGINEERING DIV / QAI					
															
										12/4/2017					

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**एनटीपीसी
NTPC**

REF NO : 9578-001-QOER-01
REVISION NO. 00
DATE 10th April 2017

Sl. No.	ITEM	QP / INS CAT.	QP No:- 9578-001-QVE-	QP SUB. SCH.	QP APP L SCH EDU LE	SUB-SUPPLIERS PROPOSED BY M/S BHEL	PLACE	SUB-SUPPLIER APPL STATUS AS PER NTPC	SC APPL SCHE DULE	REMARKS
						KEC International	Vadodara	DR@		
						Manisfield cables	G.Noida	DR@		
						Diamond Power	Vadodara	DR@		
						Crystal Cable	Kolkata	DR@		
						Apar Industries	Umbergaon	A@		
						Krishna Electricals	Gwalior	DR@		
						Special Cables	Rudrapur	A@		
						Dynamic Cables	Jaupur	DR@		
						Tirupati Plastomatics	Jaipur	DR@		
						Govind Cables	Kolkata	DR@		
						Goyolene Fibre	Daman	DR@		
						Chandresh Cables	Gandhinagar	DR@		
3	1.1 KV Control cable	1	Q-03			NICCO	Shamnagar , Kolkata	A@		@- Subject to Sub-QR clearance from NTPC Engg
						Torrent Cable Ltd	Nadiad	A@		
						Incab	Pune	A@		
						Polycab Wires Pvt. Ltd	Daman	A@		
						Hindustan Vidyut Products Ltd	Faridabad	A@		
						KEL Industries	Bhiwadi	A@		
						Delton Cable Ltd	Faridabad	A@		
						Paramount Cable	Khushkherna	A@		
						Gemscahs Industries	Bhiwadi	A@		
						Cords Cables	Bhiwadi	A@		
						SPM Cables	Hyderabad	A@		
						Elkay Telelink	Faridabad	A@		
						Havells India Ltd.	Alwar	A@		

ENGINEERING DIV / QAI

3 OF 5

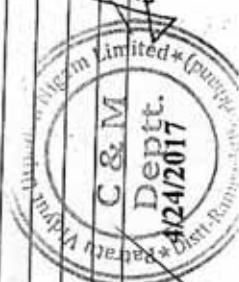
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Deptt. of
4/24/2017
Dist. Ramen

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				PROJECT : PATRATU STPP (2X660 MW) PACAKGE : EPC Sub Package: HT Power cables, LT power cables, Control cables, CONTRACTOR : M/S BHEL CONT. NO. CS-9578-001-2				LIST OF ITEMS REQUIRING QP APPROVAL & ACCEPTABLE VENDOR AS PROPOSED BY M/S BHEL				REF NO : 9578-001-QOE-R-01 REVISION NO. 00 DATE 10th April 2017	
Sl. No.	ITEM	QP / INS CAT.	QP No:- 9578-001-QVE-	QP SUB. SCH.	QP APP L SCH EDU LE	SUB-SUPPLIERS PROPOSED BY M/S BHEL	PLACE	SUB-SUPPLIER APPL STATUS AS PER NTPC	SC APPL SCHE DULE	REMARKS			
						R.R. Kabel	Silvasa	A@					
						Ravin Cables	Pune	A@					
						Gupta Power cable	Bhubaneswar	A@					
						Thermocables	Hyderabad	A@					
						Finolex	Pune	A@					
						Sbec Cables	Bangalore	A@					
						Suyog Cables	Vadodara	A@					
						Universal Cables	Satna	A@					
						Scot Innovation wires & cables	Baddi	A@					
						Anhui Hualing	China	A@					
						LS Cable	Korea	A@					
						Radiant Cables	Hyderabad	A@					
						KEC International	Vadodara	DR@					
						Manisfield cables	G.Noida	DR@					
						Diamond Power	Vadodara	DR@					
						Crystal Cable	Kolkata	DR@					
						Apar Industries	Vadodara	DR@					
						Krishna Electricals	Gwalior	DR@					
						Special Cables	Rudrapur	A@					
						Govind Cables	Kolkata	DR@					
						Incom	Delhi	DR@					
						Sam Cables	Rudrapur	DR@					
						Advance Cables	Bangalore	DR@					
						Tirupati Plastomatics	Jaipur	DR@					
						CMI	Faridabad	A@					
						Sarval India	Nimrana	DR@					
						Advance Cable	Bangalore	DR@					
						Goyolene Fibre	Daman	DR@					
						Sarvam Cables	Alwar	DR@					
						Dynamic Cables	Jaipur	DR@					
						ENGINEERING DIV / QAI							

Out of the identified "DR" vendors, BHEL shall propose maximum 5 no. of vendors for NTPC review



CONTRACTOR

4 OF 5

NTPC

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		PROJECT : PATRATU STPP (2X660 MW) PACAKGE : EPC Sub Package: HT Power cables, LT power cables, Control cables, CONTRACTOR : M/S BHEL CONT. NO. CS-9578-001-2				LIST OF ITEMS REQUIRING QP APPROVAL & ACCEPTABLE VENDOR AS PROPOSED BY M/S BHEL				REF NO : 9578-001-QOE-R-01 REVISION NO. 00 DATE 10th April 2017	
Sl. No.	ITEM	QP / INS CAT.	QP No:- 9578-001-QVE-	QP SUB. SCH.	QP APP L SCH EDU LE	SUB-SUPPLIERS PROPOSED BY M/S BHEL	PLACE	SUB-SUPPLIER APPL STATUS AS PER NTPC	SC APPL SCHE DULE	REMARKS	
4	FQP of Cables & Accessories	I	G-01							SFQP no. -000-999-QOE-I-004 will be applicable	

Note 1 : Approval conditions attached to sub- vendors shall be adhered to.
 Note 2 : Abbreviations

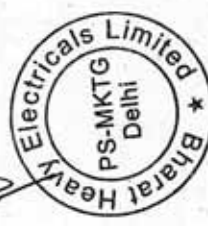
A - For these items proposed vendor is acceptable to NTPC. To be indicated with letter "A" in the list alongwith the condition of approval, if any.
 DR - For these items "Detailed required" for NTPC review. To be identified with letter "DR" in the list.
 NOTED - For these items vendors are approved by Main Supplier and accepted by NTPC without specific vendor approval from NTPC. To be identified with "NOTED."

1. QP/INSPN CATEGORY:

CAT-I : For these items the Quality Plans are approved by NTPC and the final acceptance will be on physical inspection witness by NTPC.
 CAT-II : For these items the Quality Plans approved by NTPC. However no physical inspection shall be done by NTPC. The final acceptance by NTPC shall be on the basis review of documents as per approved QP.
 CAT-III : For these items Main Supplier approves the Quality Plans. The final acceptance by NTPC shall be on the basis certificate of conformance by the main supplier.

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 24/04/17

Handwritten signature
 (Jatin Gahlawat)
 BHEL



NTPC 5 OF 5 ENGINEERING DIV / QAI CONTRACTOR

L.T SWITCHGEAR panels' sub-vendors are subject to sub-QR clearance from NTPC-Engg



PROJECT : PATRATU STPP,

PACAKGE :

Sub Package: LT Switchgear & LT Busduct

CONTRACTOR : M/S BHEL

CONT. NO. CS. --- -001C-2

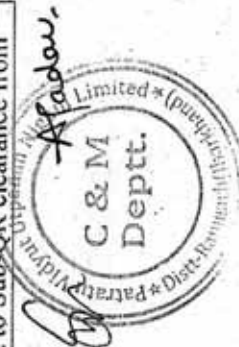
LIST OF ITEMS REQUIRING QP
APPROVAL & ACCEPTABLE
VENDOR AS PROPOSED BY
M/S BHEL

REF NO : ----001-QOE-R-01

REVISION NO. 00

DATE -

Sl. No.	ITEM	QP / INS CAT.	QP No:- 9591-001-QVE-	QP SUB. SCH.	QP APPL SCHE DULE	SUB-SUPPLIERS PROPOSED BY M/S BHEL	PLACE	SUB-SUPPLIER APPL STATUS AS PER NTPC	SC APPL SCHE DULE	REMARKS
1	Floor mounted Draw out type indoor LT Switchgear Panel (MCC panels etc.)	I	I			L&T	Mumbai / Coimbatore/ Ahmednagar	A@		@- Subject to Sub-QR clearance from NTPC Engg. BOIs preferably with VDE/CE/UL/CSA marked or BIS approved with valid CML no.
						GE	Bangalore	A@		@- Subject to Sub-QR clearance from NTPC Engg. BOIs preferably with VDE/CE/UL/CSA marked or BIS approved with valid CML no.
						Siemens	Mumbai	A@		@- Subject to Sub-QR clearance from NTPC Engg. BOIs preferably with VDE/CE/UL/CSA marked or BIS approved with valid CML no.
						C&S Electric	Noida /	A@		@- Subject to Sub-QR clearance from



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LT SWITCHGEAR panels' sub-vendors are subject to sub-QR clearance from NTPC-Engg



PROJECT : PATRATU STPP,
PACAKAGE :
Sub Package: LT Switchgear & LT Busduct
CONTRACTOR : M/S BHEL
CONT. NO. CS- ----001C-2

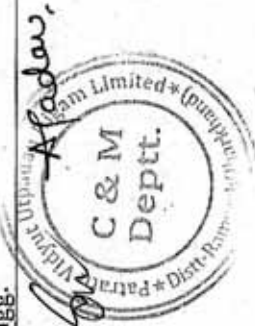
LIST OF ITEMS REQUIRING QP
APPROVAL & ACCEPTABLE
VENDOR AS PROPOSED BY
M/S BHEL

REF NO : ----001-QOE-R-01
REVISION NO. 00
DATE -

Sl. No.	ITEM	QP / INS CAT.	QP No:- 9591-001-QVE-	QP SUB. SCH.	QP APPL SCHE DULE	SUB-SUPPLIERS PROPOSED BY M/S BHEL	PLACE	SUB-SUPPLIER APPL STATUS AS PER NTPC	SC APPL SCHE DULE	REMARKS
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pg. 2

							Hardwar			NTPC Engg. BOIs preferably with VDE/CE/UL/CSA marked or BIS approved with valid CML no.
						Schneider	Nasik	A@		ACB from Schneider, France. @- Subject to Sub-QR clearance from NTPC Engg.
						Unilec	Gurgaon	A@		BOIs preferably with VDE/CE/UL/CSA marked or BIS approved with valid CML no. @- Subject to Sub-QR clearance from NTPC Engg.
						ABB	Bangalore	DR@		BOIs preferably with VDE/CE/UL/CSA marked or BIS approved with valid CML no. @- Subject to Sub-QR clearance from NTPC Engg.



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LT SWITCHGEAR panels' sub-vendors are subject to sub-QR clearance from NTPC-Engg

PROJECT : PATRATU STPP,

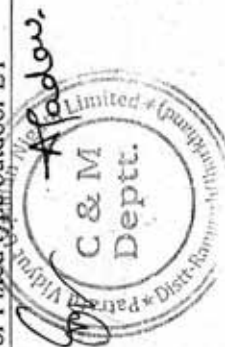
PACAKGE :

Sub Package: LT Switchgear & LT Busduct

CONTRACTOR : M/S BHEL,

CONT. NO. CS- --- -001C-2

PROJECT : PATRATU STPP, PACAKGE : Sub Package: LT Switchgear & LT Busduct CONTRACTOR : M/S BHEL CONT. NO. CS- --- -001C-2										LIST OF ITEMS REQUIRING QP APPROVAL & ACCEPTABLE VENDOR AS PROPOSED BY M/S BHEL			REF NO : ---001-QOE-R-01 REVISION NO. 00 DATE -	
SL. No.	ITEM	QP / INS CAT.	QP No:- 9591- 001- QVE-	QP SUB. SCH.	QP APPL SCHE DULE	SUB-SUPPLIERS PROPOSED BY M/S BHEL	PLACE	SUB- SUPPLI ER APPL STATUS AS PER NTPC	SC APPL SCHE DULE	REMARKS				
2.	Floor mounted Fixed type indoor LT Switchgear Panel (ACDB / DCDB / Lighting DB / Solenoid valve distribution boards) (subject to sub- QR)	1	2			L&T	Mumbai / Coimbatore/ Ahmednagar	A*		*- DR for Fixed type outdoor LT Switchgear Panel BOIs preferably with VDE/CE/UL/CSA marked or BIS approved with valid CML no.				
						GE	Bangalore	A*		*- DR for Fixed type outdoor LT Switchgear Panel BOIs preferably with VDE/CE/UL/CSA marked or BIS approved with valid CML no.				
						Siemens	Mumbai	A*		*- DR for Fixed type outdoor LT				



LT SWITCHGEAR panels' sub-vendors are subject to sub-QR clearance from NTPC-Engg



PROJECT : PATRATU STPP,
PACAKGE :
Sub Package: LT Switchgear & LT Busduct
CONTRACTOR : M/S BHEL
CONT. NO. CS- --- -001C-2

Sl. No.	ITEM	QP / INS CAT.	QP No:- 9591-001-QVE-	QP SUB. SCH.	QP APPL SCHE DULE	SUB-SUPPLIERS PROPOSED BY M/S BHEL	PLACE	SUB-SUPPLIER APPL STATUS AS PER NTPC	SC APPL SCHE DULE	REMARKS

pg. 4

										Switchgear Panel
										BOIs preferably with VDE/CE/UL/CSA marked or BIS approved with valid CML no.
						C&S Electric	Noida / Hardwar	A*		*- DR for Fixed type outdoor LT Switchgear Panel
						Schneider	Nasik	A*		BOIs preferably with VDE/CE/UL/CSA marked or BIS approved with valid CML no.
										*- DR for Fixed type outdoor LT Switchgear Panel
										BOIs preferably with VDE/CE/UL/CSA marked or BIS approved with valid CML no.
						Unilec	Gurgaon	A*		*- DR for Fixed type outdoor LT Switchgear Panel
										BOIs preferably with VDE/CE/UL/CSA marked or BIS approved with valid CML no.
						Switching Circuits	Kolkata	A*		*- DR for Fixed type outdoor LT



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LT SWITCHGEAR panels' sub-vendors are subject to sub-QR clearance from NTPC-Engg

PROJECT : PATRATU STPP,

PACKAGE :

Sub Package: LT Switchgear & LT Busduct

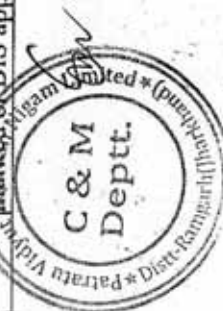
CONTRACTOR : M/S BHEL

CONT. NO. CS- --- -001C-2



Sl. No.	ITEM	QP / INS CAT.	QP No:- 9591-001-QVE-	QP SUB. SCH.	QP APPL SCHE DULE	SUB-SUPPLIERS PROPOSED BY M/S BHEL	PLACE	SUB-SUPPLIER APPL STATUS AS PER NTPC	SC APPL SCHE DULE	REMARKS	pg. 5

										Switchgear Panel	
						Tricolite	Sahibabad / Manesar	A*		BOIs preferably with VDE/CE/UL/CSA marked or BIS approved with valid CML no.	
						Hindustan Control & equipment Ltd	Kolkata	A*		*- DR for Fixed type outdoor LT Switchgear Panel	
										BOIs preferably with VDE/CE/UL/CSA marked or BIS approved with valid CML no.	
										With fabrication & painting at unit II & MP Electrical Narendrapur	
										*- DR for Fixed type outdoor LT Switchgear Panel	
										BOIs preferably with VDE/CE/UL/CSA marked or BIS approved with valid CML no.	
						Maktel	Vadodara	A*		*- DR for Fixed type outdoor LT Switchgear Panel	
										BOIs preferably with VDE/CE/UL/CSA marked or BIS approved with valid CML no.	



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LT SWITCHGEAR panels' sub-vendors are subject to sub-QR clearance from NTPC-Engg

PROJECT : PATRATU STPP,

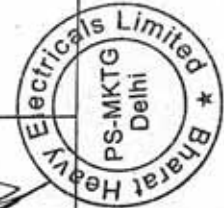


PACAKGE :
Sub Package: LT Switchgear & LT Busduct
CONTRACTOR : M/S BHEL
CONT. NO. CS- --- -001C-2

Sl. No.	ITEM	QP / INS CAT.	QP No:- 9591-001-QVE-	QP SUB. SCH.	QP APPL SCHE DULE	SUB-SUPPLIERS PROPOSED BY M/S BHEL	PLACE	SUB-SUPPLIER APPL STATUS AS PER NTPC	SC APPL SCHE DULE	REMARKS	REF NO : ----001-QOE-R-01 REVISION NO. 00 DATE -

pg. 6

						Jakson	Greater Noida	A*		CML no. *- DR for Fixed type outdoor LT Switchgear Panel BOIs preferably with VDE/CE/UL/CSA marked or BIS approved with valid CML no.	
						Vidyut Control	Gaziabad	A*		CML no. *- DR for Fixed type outdoor LT Switchgear Panel BOIs preferably with VDE/CE/UL/CSA marked or BIS approved with valid CML no.	
						Adlec Power	Rohad (Jhajjar)	A*		CML no. *- DR for Fixed type outdoor LT Switchgear Panel BOIs preferably with VDE/CE/UL/CSA marked or BIS approved with valid CML no.	
						Pyrotech	Udaipur	A*		CML no. *- DR for Fixed type outdoor LT Switchgear Panel BOIs preferably with VDE/CE/UL/CSA marked or BIS approved with valid CML no.	



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LT SWITCHGEAR panels' sub-vendors are subject to sub-QR clearance from NTPC-Engg



PROJECT : PATRATU STPP,
PACAKGE :
Sub Package: LT Switchgear & LT Busduct
CONTRACTOR : M/S BHEL
CONT. NO. CS. --- 001C-2

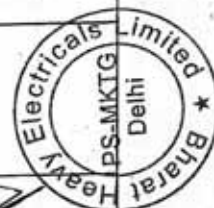
LIST OF ITEMS REQUIRING QP
APPROVAL & ACCEPTABLE
VENDOR AS PROPOSED BY
M/S BHEL

REF NO : ----001-QOE-R-01
REVISION NO. 00

DATE -

Sl. No.	ITEM	QP / INS CAT.	QP No:- 9591-001-QVE.	QP SUB. SCH.	QP APPL SCHE DULE	SUB-SUPPLIERS PROPOSED BY M/S BHEL	PLACE	SUB-SUPPLIER APPL STATUS AS PER NTPC	SC APPL SCHE DULE	REMARKS
						Anand Power Ltd.	Noida	A*		*- DR for Fixed type outdoor LT Switchgear Panel BOIs preferably with VDE/CE/UL/CSA marked or BIS approved with valid CML no.
						Control & Schematics	Hyderabad	A*		*- DR for Fixed type outdoor LT Switchgear Panel BOIs preferably with VDE/CE/UL/CSA marked or BIS approved with valid CML no.
						Positronics	Vadodara	A*		*- DR for Fixed type outdoor LT Switchgear Panel BOIs preferably with VDE/CE/UL/CSA marked or BIS approved with valid CML no.
						ABB	Bangalore	DR		*- DR for Fixed type outdoor LT Switchgear Panel BOIs preferably with VDE/CE/UL/CSA marked or BIS approved with valid CML no.
						Nitya Electrocontrols	Noida	A*		*- DR for Fixed type outdoor LT Switchgear Panel BOIs preferably with VDE/CE/UL/CSA marked or BIS approved with valid CML no.

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This is a Part of Technical Specification No. PE-TS-475-155-A001

LT SWITCHGEAR panels' sub-vendors are subject to sub-QR clearance from NTPC-Engg

PROJECT : PATRATU STPP,

PACAKGE :

Sub Package: LT Switchgear & LT Busduct

CONTRACTOR : M/S BHEL

CONT. NO. CS. --- -001C-2



Sl. No.	ITEM	QP/INS CAT.	QP No:- 9591-001-QVE	QP SUB. SCH.	QP APPL SCHE DULE	SUB-SUPPLIERS PROPOSED BY M/S BHEL	PLACE	SUB-SUPPLIER APPL STATUS AS PER NTPC	SC APPL SCHE DULE	REMARKS
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pg. 8

3	Wall mounted fixed type indoor / outdoor LT Switchgear non compartment alized Panel (Lighting panels / AC / DC Fuse boards / MCB boxes)	I	3			L&T	Mumbai / Coimbatore/ Ahmednagar	A		CML no. BOIs preferably with CE/VDE/UL/CSA marked or BIS approved with valid CML no.
						GE	Bangalore	A		BOIs preferably with CE/VDE/UL/CSA marked or BIS approved with valid CML no.
						Siemens	Mumbai	A		BOIs preferably with CE/VDE/UL/CSA marked or BIS approved with valid CML no.
						C&S Electric	Noida / Hardwar	A		BOIs preferably with CE/VDE/UL/CSA marked or BIS approved with valid CML no.
						Schneider	Nasik	A		BOIs preferably with CE/VDE/UL/CSA marked or BIS approved with valid CML no.

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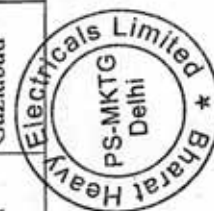


LT SWITCHGEAR panels' sub-vendors are subject to sub-QR clearance from NTPC-Engg

PROJECT : PATRATU STPP,
PACAKGE :
Sub Package: LT Switchgear & LT Busduct
CONTRACTOR : M/S BHEL
CONT. NO. CS- --- -001C-2



Sl. No.	ITEM	QP / INS CAT.	QP No:- 9591-001-QVE-	QP SUB. SCH.	QP APPL SCHE DULE	SUB-SUPPLIERS PROPOSED BY M/S BHEL	PLACE	SUB-SUPPLIER APPL STATUS AS PER NTPC	SC APPL SCHE DULE	REMARKS	REF NO : ---001-QOE-R-01 REVISION NO. 00 DATE -
											pg. 9
						Unilec	Gurgaon	A		marked or BIS approved with valid CML no.	
						Switching Circuits	Kolkata	A		BOIs preferably with CE/VDE/UL/CSA marked or BIS approved with valid CML no.	
						Tricolite	Sahibabad / Manesar	A		BOIs preferably with CE/VDE/UL/CSA marked or BIS approved with valid CML no.	
						Hindustan Control & equipment Ltd	Kolkata	A		With fabrication & painting at unit II & MP Electrical Narendrapur BOIs preferably with CE/VDE/UL/CSA marked or BIS approved with valid CML no.	
						Maktel	Vadodara	A		BOIs preferably with CE/VDE/UL/CSA marked or BIS approved with valid CML no.	
						Jakson	Greater Noida	A		BOIs preferably with CE/VDE/UL/CSA marked or BIS approved with valid CML no.	
						Vidyut Control	Gaziabad	A		BOIs preferably with CE/VDE/UL/CSA marked or BIS approved with valid CML no.	



As per

hmk

LT SWITCHGEAR panels' sub-vendors are subject to sub-QR clearance from NTPC-Engg

 PROJECT : PATRATU STPP, PACAKGE : Sub Package: LT Switchgear & LT Busduct CONTRACTOR : M/S BHEL CONT. NO. CS- --- -001C-2										LIST OF ITEMS REQUIRING QP APPROVAL & ACCEPTABLE VENDOR AS PROPOSED BY M/S BHEL			REF NO : ----001-QOE-R-01 REVISION NO. 00 DATE -		REMARKS	pg. 10
Sl. No.	ITEM	QP / INS CAT.	QP No:- 9591-001-QVE.	QP SUB. SCH.	QP APPL SCHE DULE	SUB-SUPPLIERS PROPOSED BY M/S BHEL	PLACE	SUB-SUPPLIER APPL STATUS AS PER NTPC	SC APPL SCHE DULE							
						Adlec Power	Rohad (Jhajjar)	A					CML no.		BOIs preferably with CE/VE/UL/CSA marked or BIS approved with valid CML no.	
						Pyrotech	Udaipur	A					CML no.		BOIs preferably with CE/VE/UL/CSA marked or BIS approved with valid CML no.	
						Anand Power Ltd.	Noida	A					CML no.		BOIs preferably with CE/VE/UL/CSA marked or BIS approved with valid CML no.	
						Control & Schematics	Hyderabad	A					CML no.		BOIs preferably with CE/VE/UL/CSA marked or BIS approved with valid CML no.	
						Positronics	Vadodara	A					CML no.		BOIs preferably with CE/VE/UL/CSA marked or BIS approved with valid CML no.	
						Control Devices	Kolkata	A					CML no.		BOIs preferably with CE/VE/UL/CSA marked or BIS approved with valid CML no.	
						Jasper	Noida	A					CML no.		BOIs preferably with CE/VE/UL/CSA marked or BIS approved with valid CML no.	
						Havells	Faridabad	A					CML no.		BOIs preferably with CE/VE/UL/CSA marked or BIS approved with valid CML no.	



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LT SWITCHGEAR panels' sub-vendors are subject to sub-QR clearance from NTPC-Engg

PROJECT : PATRATU STPP,

PACAKGE :

Sub Package: LT Switchgear & LT Busduct

CONTRACTOR : M/S BHEL

CONT. NO. CS. --- -001C-2



Sl. No.	ITEM	QP / INS CAT.	QP No:- 9591-001-QVE.	QP SUB. SCH.	QP APPL SCHE DULE	SUB-SUPPLIERS PROPOSED BY M/S BHEL	PLACE	SUB-SUPPLIER STATUS AS PER NTPC	SC APPL SCHE DULE	REMARKS
										REF NO : ----001-QOE-R-01 REVISION NO. 00 DATE - pg. 11

						Novateur Electrical & distribution systems	Murthal	A		CML no. BOIs preferably with CE/VDE/UL/CSA marked or BIS approved with valid CML no.
						Avoid Technovator	Manesar	A		BOIs preferably with CE/VDE/UL/CSA marked or BIS approved with valid CML no.
4	ACB	(part of LT Swgr MQP)	4			C&S Electric	Noida	A		
						L&T	Mumbai	A		
						GE	Bangalore	A		
						Siemens	Germany	A		
						Schneider	France	A		
5	LT Busduct (air insulated non phase segregated type)	I	5			C&S Electric	G.Noida	A		
						C&S Electric	Hardwar	A		
						Unilec	Gurgaon	A		
						KGS Engg Ltd	Chennai	A		
						Spaceage Swgr Ltd	Bawal	A		
						REEP	Chennai	A		
						Enpro	Chennai	A		
						Jasper Engg Ltd	Noida	A		



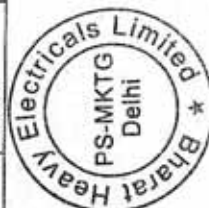
LT SWITCHGEAR panels' sub-vendors are subject to sub-QR clearance from NTPC-Engg

PROJECT : PATRATU STPP,
PACAKGE :
Sub Package: LT Switchgear & LT Busduct
CONTRACTOR : M/S BHEL
CONT. NO. CS.-001C-2



Sl. No.	ITEM	QP / INS CAT.	QP No:- 9591-001-QVE-	QP SUB. SCH.	QP APPL SCHE DULE	SUB-SUPPLIERS PROPOSED BY M/S BHEL	PLACE	SUB-SUPPLI ER APPL STATUS AS PER NTPC	SC APPL SCHE DULE	REMARKS
LIST OF ITEMS REQUIRING QP APPROVAL & ACCEPTABLE VENDOR AS PROPOSED BY M/S BHEL										pg. 12

6	LT Buct (insulated sandswitched type)	1	6			C&S Electric	Hardwar	A		
						Jasper Engg Ltd	Noida	DR		
						Schneider	Baroda	DR		
						Henikwon	Malaysia	A		
7	IEC 61850 Compliant Numerical Relays	(part of Swgr MQP)				SEL	Pullman, USA	A@		A@- Subject to Sub-QR clearance form NTPC Engg
						ALSTOM T&D	Stafford, UK	A@		P14X, P34X, P44X, P64X, P74X models only. A@- Subject to Sub-QR clearance form NTPC Engg
						ALSTOM T&D	Chennai	A@		P14X, P34X, P44X, P64X, P74X models only. A@- Subject to Sub-QR clearance form NTPC Engg
						GE Multilin	Zamudio, Vizcaya, Spain/ Markham, Ontario, Canada	A@		F 650 only A@- Subject to Sub-QR clearance form NTPC Engg



Atadaw

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LT SWITCHGEAR panels' sub-vendors are subject to sub-QR clearance from NTPC-Engg

PROJECT : PATRATU STPP,



PACAKGE :

Sub Package: LT Switchgear & LT Busduct

CONTRACTOR : M/S BHEL

CONT. NO. CS. ---001C-2

Sl. No.	ITEM	QP / INS CAT.	QP No:- 9591-001-QVE-	QP SUB. SCH.	QP APPL SCHE DULE	SUB-SUPPLIERS PROPOSED BY M/S BHEL	PLACE	SUB-SUPPLIER APPL STATUS AS PER NTPC	SC APPL SCHE DULE	REMARKS
LIST OF ITEMS REQUIRING QP APPROVAL & ACCEPTABLE VENDOR AS PROPOSED BY M/S BHEL										
REF NO : ----001-QOE-R-01 REVISION NO. 00 DATE -										pg. 13

						Schneider	Stone, UK	A@		PX30 & PX40 models only. A@- Subject to Sub-QR clearance form NTPC Engg
						ABB	Finland	A@		A@- Subject to Sub-QR clearance form NTPC Engg
						ABB	Baroda	A@		For 6XX Series A@- Subject to Sub-QR clearance form NTPC Engg
						Siemens	Goa	A@		7SR2X series only A@- Subject to Sub-QR clearance form NTPC Engg
						Siemens	Germany	A@		7SX Series only A@- Subject to Sub-QR clearance form NTPC Engg
8	Local Push Button Station	III				Main contractor approved sources for the box (with push button with CE/VDE/UL/CSA marked or BIS approved with valid CML no.)				
9	FQP for LT	I	G-01							



A. Adar

Anshu

LT SWITCHGEAR panels' sub-vendors are subject to sub-QR clearance from NTPC-Engg

		PROJECT : PATRATU STPP, PACAKGE : Sub Package: LT Switchgear & LT Busduct CONTRACTOR : M/S BHEL CONT. NO. CS- --- -001C-2				LIST OF ITEMS REQUIRING QP APPROVAL & ACCEPTABLE VENDOR AS PROPOSED BY M/S BHEL				REF NO : ---001-QOE-R-01 REVISION NO. 00 DATE -	
		Sl. No.	ITEM	QP / INS CAT.	QP No:- 9591-001-QVE-	QP SUB. SCH.	QP APPL SCHE DULE	SUB-SUPPLIERS PROPOSED BY M/S BHEL	PLACE	SUB-SUPPLIER APPL STATUS AS PER NTPC	SC APPL SCHE DULE

	Switchgear										
	10 FQP for LT Busduct	I	G-02								

NB:

Under Sub Supplier approval status as per NTPC column:

A: mean that vendor for this item is acceptable to NTPC.

Under QP / INSPN CATEGORY column:

CAT-I : For these items the Quality Plans approved by NTPC & final acceptance will be on physical inspection & witness by NTPC

CAT-II : For these items the Quality Plans approved by NTPC. However no physical inspection shall be done by NTPC. The final acceptance by NTPC shall be on basis of verification of documents as per approved QP

CAT-III : For these items Main supplier approves the Quality Plans. The final acceptance by NTPC shall be on basis of certificate of conformance by the main supplier.

General Notes:

Vendor list & category of the mandatory spares shall be as mentioned above.

For item not appearing in the above list, main contractor to approach NTPC for acceptable vendors & inspection categorization of the same.

NTPC Approval conditions to above identified vendors shall be adhered to. Vendor's approval conditions will be informed on specific request of Main Contractor.

Note-1- VDE / CE / UL / CSA MARKING CERTIFICATION PREFERABLY FROM THIRD PARTY AGENCY OR BIS APPROVAL LETTER SHALL BE SUBMITTED FOR NTPC's VERIFICATION /INFORMATION



LT SWITCHGEAR panels' sub-vendors are subject to sub-QR clearance from NTPC-Engg



PROJECT : PATRATU STPP,

PACAKGE :

Sub Package: LT Switchgear & LT Busduct

CONTRACTOR : M/S BHEL

CONT. NO. CS- --- -001C-2

LIST OF ITEMS REQUIRING QP

APPROVAL & ACCEPTABLE

VENDOR AS PROPOSED BY

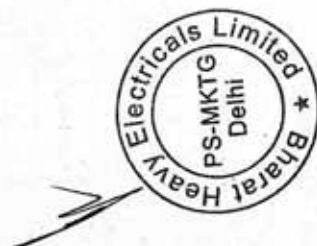
M/S BHEL

REF NO : ----001-QOE-R-01

REVISION NO. 00

DATE -

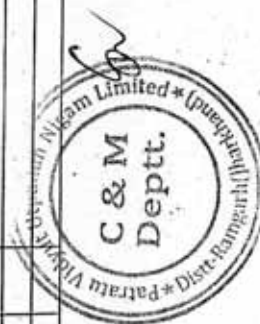
Sl. No.	ITEM	QP / INS CAT.	QP No:- 9591-001-QVE-	QP SUB. SCH.	QP APPL SCHE DULE	SUB-SUPPLIERS PROPOSED BY M/S BHEL	PLACE	SUB-SUPPLIER APPL STATUS AS PER NTPC	SC APPL SCHE DULE	REMARKS
										pg. 15



PROJECT : Patratu STPP (2X660 MW) PACAKGE : EPC Sub Package: Electrical Equipment Supply & Erection CONTRACTOR : M/S BHEL CONT. NO. CS-9585-001-2				LIST OF ITEMS REQUIRING QP APPROVAL & ACCEPTABLE VENDOR Contractor-M/S BHEL				REF NO : 9585-001-QOE-R-01 REVISION NO. 00 DATE 24 th April 2017			
Sl. No.	ITEM	QP / INS CAT	QP No:- 9578-001-QVE	QP SUB. SCH.	QP APP L SCH EDU LE	SUB-SUPPLIERS	PLACE	SUB-SUPPLI ER APPL STATUS ASPER NTPC	SC AP PL SC HE DU LE	REMARKS	
1.	Alternator	I	I			M/s Kirloskar Electric M/s Cummins Generator Technology (Stamford)	Bangalore U.K	A		415 V alternators 415 V & 11kV alternators	
2.	Diesel engine	I	2			M/s Leroy Somer M/s Marathan M/s Cummins Generator Technology (Stamford)	France USA Ahmednagar	A A A		Up to 11kV alternator 3500 kW Alternators for up to 415 V, 1500 KVA DG SET 415 V Alternators up to 1600 KVA	
3.	D G set (assembly testing) @ subject to sub-QR clearance	I	3			Toshiba M/s Cummins M/s Cater Pillar M/s Mitsubishi M/s MTU M/s Perkins M/s TIL M/s Kohler M/s CLLS M/s Powerica M/s Jaksan M/s Sterling Generators Pvt Ltd M/s Supernova	Chennai Pune USA Japan Germany UK Chhazabad Singapore Singapore Silvassa Kathua Silvassa Rajpur	DR A A A A A A@ A@ A@ A@ A@ A@ A@		Diesel engine for up to 1500 KVA DG SET Diesel engine for up to 1500 KVA DG SET Diesel Engine for upto 2000KVA DG SET up to 1500 KVA Up to 1500 kVA, 11kV Up to 1250 kVA, 415 V, Up to 2000 KVA, 415 V & 1500 KVA, 11 KV Up to 415 V, 2000 KVA For up to 415 V 1500 KVA	
4.	DG Set acoustic enclosure	II				DG Set supplier approved sources		Noted			



PROJECT : Patratu STPP (2X660 MW) PACAKAGE :EPC Sub Package: Electrical Equipment Supply & Erection CONTRACTOR : M/S BHEL CONT. NO. CS-9585-001-2										LIST OF ITEMS REQUIRING QP APPROVAL & ACCEPTABLE VENDOR Contractor-M/S BHEL				REF NO : 9585-001-QOE-R-01 REVISION NO. 00 DATE 24 th April 2017							
NTPC										Sl. No.	ITEM	QP / INS CAT	QP No:- 9578- 001- QVE	QP SUB. SCH.	QP APP L SCH EDU LE	SUB-SUPPLIERS	PLACE	SUB-SUPPLIER ER APPL STATUS AS PER NTPC	SC AP PL SC HE DU LE	REMARKS	
Battery charger (110V/220V) @ subject to sub-QR clearance										5.	1	4				M/s Amararaja	Tirupati	A@			
																M/s HBL- Power System	Hyderabad	A@			
																M/s Chhabhi electrical	Jalgaon	A@			
																M/s. Chloride Power	Kolkatta	A@			
																M/s Statcon	Hapur	A@			
															M/s Dubas	Bangalore	A@			Approved Up to 220, V 850 A subject to Sub-QR clearance, higher rating in DR	
															M/s Saft Nife Power Systems	Singapore	A@			Approved upto 220 V, 850 A subject to Sub-QR clearance, higher rating in DR	
															Massteck	Jalgaon	A@				
															Emerson Network	Thane	DR@				
															Jena Energy	Spain	DR@				
Battery (Ni-Cd)										6.	1	5				M/S HBL-Power System	Hyderabad	A @			Up to 990 Ah with conditions(Pocket plate type)
																M/S Amcosoft	Bangalore	A @			8Ah to 990Ah- KPH type 10Ah to 1365 Ah- KPM type 11Ah to 1550Ah – KPL type (Pocket plate type)
Battery Plantie										7.	1	6				Hoppecke	Germany	A@			
																Exide	Kolkata	DR@			
																M/s Exide	Kolkata	A@			
																Hoppecke	Germany	DR@			



PROJECT : Patratu STPP (2X660 MW)
PACAKGE : EPC
Sub Package: Electrical Equipment Supply & Erection
CONTRACTOR : M/S BHEL
CONT. NO. CS-9585-001-2

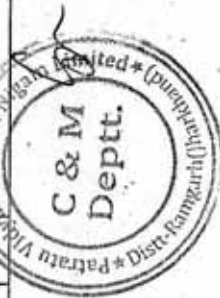
LIST OF ITEMS REQUIRING QP
APPROVAL & ACCEPTABLE
VENDOR
Contractor-M/S BHEL

REF NO : 9585-001-QOE-R-01
REVISION NO. 00
DATE 24th April 2017

SL No.	ITEM	QP / INS CAT	QP No:- 9578-001-QVE-	QP SUB. SCH.	QP APP L SCH EDU LE	SUB-SUPPLIERS	PLACE	SUB-SUPPLI ER APPL STATUS AS PER NTPC	SC AP PL SC HE DU LE	REMARKS
8.	Battery Health Monitoring System	I	7			Elteck	Gurgaon	DR		
						Emerson	Mumbai	DR		
						Hilachi Hirel	Gandhinagar	DR		
						HBL Power System	Hyderabad	A		
						Statcon	Hapur	DR		
						Hoppecke	Germany	DR		
9.	Fire Sealing System	III				M/s 3M India	Bangalore	A		
	i) Type - A material supplier					M/s GE Silicon	USA	A		
						M/s Dow Corning	USA	A		
	ii) Type - B Material supplier	III				M/s Lloyds	Delhi	A		
						M/s Signum	Nagpur	A		
						M/s Vijay System Engineers Pvt. Ltd.	Mumbai	A		
						M/s Multikil Fire	Vadodara	DR		
						Murugapa Morgan	Ranipet	DR		
						Unifrax India	AHMEDABA	DR		
	iii) Execution Agency for above					Same as 9 (ii) & 3 M India	Same as 9 (ii) & 3 M India	A		
10.	GI cable trays, fitting	I				Inar Profiles Ltd	Enkapalli	A		



PROJECT : Patratu STPP (2X660 MW) PACKAGE : EPC Sub Package: Electrical Equipment Supply & Erection CONTRACTOR : M/S BHEL CONT. NO. CS-9585-001-2				LIST OF ITEMS REQUIRING QP APPROVAL & ACCEPTABLE VENDOR Contractor-M/S BHEL				REF NO : 9585-001-QOE-R-01 REVISION NO. 00 DATE 24 th April 2017			
Sl. No.	ITEM	QP/INS CAT	QP No:- 9578-001-QVE-	QP SUB. SCH.	QP APP L SCH EDU LE	SUB-SUPPLIERS	PLACE	SUB-SUPPLIER AP PL SC HE DU LE	REMARKS		
	& accessories including bends					Vatco	Mumbai	A	Galvanization at Sigma Mumbai		
						Indiana cable trays	Mumbai	A	Galvanization at Karuntara galvaniser		
						Industrial Perforation	Kolkata	A			
						Ratan Engineering	Kolkata	A	Galvanization at B.P. Projects		
						India Electric Syndicate	Kolkata	A	Galvanization at BMW Industries/B.P Projects		
						Steelite engg.	Mumbai	A			
						Premier Power Products	Kolkata	A	Galvanising at Neha Galvaniser		
						Indiana Gratings	Pune	A	Galvanization at Poona Galvanizer/ Anand Yeknow Aids Engg		
						M.J. Engineering	Okhla/ Bhiwadi	A			
						Jamna Metal	Delhi/ Kundli	A			
						T.R.G	Chennai	A	Galvanization at TM Radhakrishna Chetty & Co		
						Amtech	Pune	A	Galvanization at B.G. Shirke - Pune		
						Kannade Anand Udyog	Mumbai	A	Fabrication at their units: Plot No. 42, District Thane & Plot No.: D-35 Anand Nagar MIDC, Addl. Ambemath, Dist. Thane		
									Galvanization and offer the galvanized cable trays for inspection at D-34 Anand Nagar MIDC, Addl. Ambemath, Dist. Thane.		
						Rukmani Passive Infra	Raipur	A	Ladder type cable trays only		
						Unitech Fabricators &	Hasangarh (Rohak)	A			
							Howrah/	A			



		PROJECT : Patratu STPP (2X660 MW) PACAKAGE : EPC Sub Package: Electrical Equipment Supply & Erection CONTRACTOR : M/S BHEL CONT. NO. CS-9585-001-2				LIST OF ITEMS REQUIRING QP APPROVAL & ACCEPTABLE VENDOR Contractor-M/S BHEL		REF NO : 9585-001-QOE-R-01 REVISION NO. 00 DATE 24th April 2017		
Sl. No.	ITEM	QP/INS CAT	QP No:- 9578-001-QVE-	QP SUB. SCH.	QP APP L SCH EDU LE	SUB-SUPPLIERS	PLACE	SUB-SUPPLIER APPL STATUS AS PER NTPC	SC AP PL SC HE DU LE	REMARKS

						Engineers	Hoogly (Kolkata)			
						Patny System	Hyderabad	A		Galvanisation at Gurpreet galvaniser - Hyderabad
						Rabi Engg	Kolkata	A		Galvanizing from NTPC approved sources
						Advance Power Products	Howrah	A		
						Maheswari Electricals	Noida	DR		
						Saral Industries	Raibareli	DR		
						Parmar Metal	Rajkot	DR		
						Pentax	Mumbai	DR		
						Eros metal	Nagpur	DR		
						Vinfab	Thane	DR		
						Namdhari	Ludhiana	DR		
						Indmark Formtech	PUNE	DR		
						Valco	Mumbai	A		Galvanising at Sigma Mumbai
						Inar profiles	Enkapalli	A		
						Industrial perforations	Kolkata	A		
						Premier power products	Kolkata	A		Galvanising at Neha Galvaniser
						Steelite engg.	Mumbai	A		
						Indiana gratings	Pune	A		Galvanising at Poona Galvaniser
						Amtech	Pune	A		Galvanising at B.G. Shirke
						Ratan Projects	Kolkata	A		
						Indmark Formtech	PUNE	DR		Galvanization at NTPC approved sources
						M/s PLICA	Ghaziabad	A		
						M/s Lapp	Germany	DR		
						M/s Bansal Labs	Bhopal	A		

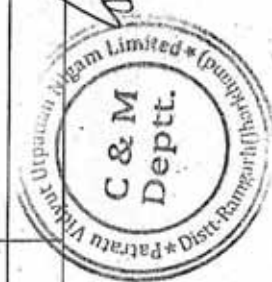
11. Cable tray flexible support system (GI)

12. Lead coated steel flexible conduits



		PROJECT : Patratu STPP (2X660 MW) PACAKGE : EPC Sub Package: Electrical Equipment Supply & Erection CONTRACTOR : M/S BHEL CONT. NO. CS-9585-001-2				LIST OF ITEMS REQUIRING QP APPROVAL & ACCEPTABLE VENDOR Contractor-M/S BHEL				REF NO : 9585-001-QOE-R-01 REVISION NO. 00 DATE 24th April 2017	
		Sl. No.	ITEM	QP / INS CAT	QP No:- 9578-001-QVE-	QP SUB. SCH.	QP APP L SCH EDU LE	SUB-SUPPLIERS	PLACE	SUB-SUPPLIER APPL STATUS AS PER NTPC	SC AP PL SC HE DU LE

13.	Junction boxes / Link Boxes/ Test Link Box/ Adapter box, Switch Boxes, Pull Boxes (Hot Dip Galvanized)	III					Main contractor approved sources with galvanization from NTPC approved sources (Note-2)		Noted		
14.	FRP Junction boxes	II	10				Main Contractor approved sources		Noted		
15.	Cable termination kits & straight through joining kit upto 33KV	I	11				M/s 3M Electro & Communication	Pune	A		up to 33 KV
							Raychem Yamuna Cable Accessories	Mumbai Yamunanagar	A DR		Heat shrinkable type up to 33 KV
							Hari Consolidated Pvt Ltd	Delhi	A		Heat shrinkable type Upto 11 KV with conditions, above rating DR
16.	Cable glands	III					Main contractor approved sources		Noted		
17.	Cable lugs	III					M/s Dowell M/s Billeis Elektro Werke Ltd.	Mumbai Umbergaon	A A		



PROJECT : Patratu STPP (2X660 MW) PACAKGE :EPC Sub Package: Electrical Equipment Supply & Erection CONTRACTOR : M/S BHEL CONT. NO. CS-9585-001-2						LIST OF ITEMS REQUIRING QP APPROVAL & ACCEPTABLE VENDOR Contractor-M/S BHEL				REF NO : 9585-001-QOE-R-01 REVISION NO. 00 DATE 24 th April 2017	
Sl. No.	ITEM	QP / INS CAT	QP No:- 9578- 001- QVE-	QP SUB. SCH.	QP APP L SCH EDU LE	SUB-SUPPLIERS	PLACE	SUB- SUPPLI ER APPL STATUS AS PER NTPC	SC AP PL SC HE DU LE	REMARKS	
						(3 D) M/s Chetna	Nasik	A			
						Additionally Any make's model with VDE or CE or UL or CSA marking or BIS approved with CML no. Refer Note-3					
18.	Lighting fixtures with accessories	I	12			M/s Crompton	Mumbai	A#			#- "A"- for filament type and "DR" for LED Type
						M/s Bajaj Electricals	Mumbai	A			
						M/s Philips	Noida	A#			
						M/s Wipro	Mumbai	A			
						M/s Surya Rosini	Kashipur	A			
						M/s Goldwyn	Noida	A			
19.	Lamps	III				M/s Crompton	Mumbai	A#			#- "A"- for filament type and "DR" for LED Type
						M/s Bajaj Electricals	Mumbai	A			
						M/s Philips	Noida	A#			
						M/s Wipro	Mumbai	A			
						M/s Surya Rosini	Kashipur	A			
						Goldwyn	Noida	A			
20.	Lighting Panels	I				Please refer serial no- 3 as identified in LT Switchgear & LT Busduct sub package list					



Sl. No.	ITEM	QP / INS CAT	QP No:- 9578-001-QVE-	QP SUB. SCH.	QP APP L SCH EDU LE	SUB-SUPPLIERS	PLACE	SUB-SUPPLIER APPL STATUS AS PER NTPC	SC AP PL SC HE DU LE	REMARKS
PROJECT : Patratu STPP (2X660 MW) PACAKGE :EPC Sub Package: Electrical Equipment Supply & Erection CONTRACTOR : M/S BHEL CONT. NO. CS-9585-001-2										
LIST OF ITEMS REQUIRING QP APPROVAL & ACCEPTABLE VENDOR Contractor-M/S BHEL										
REF NO : 9585-001-QOE-R-01 REVISION NO. 00 DATE 24th April 2017										
21.	DG set Control panel / Synchronising panel	1	14			L&T	Mumbai / Coimbatore	A		
						GE	Bangalore	A		
						Siemens	Mumbai	A		
						C&S Electric	Noida / Hardwar	A		
						Schneider	Nasik	A		
						Unilec	Gurgaon	A		
						Switching Circuits	Kolkata	A		
						Tricolite	Sahibabad / Mansar	A		
						Hindustan Control & equipment Ltd	Kolkata	A		With fabrication & painting at unit II & MP Electrical Narendrapur
						Maktel	Vadodara	A		
						Jakson	Greater Noida	A		
						Vidyut Control	Gaziabad	A		
						Adlec Power	Rohad (Jhajjar)	A		
						Pyrotech	Udaipur	A		
						Anand Power Ltd.	Noida	A		
						Positronics	Vadodara	A		
						M/s Sterling Generators Pvt Ltd	Silvassa	A		For DG Set Control Panel only
						Contro & Schematics	Hyderabad	A		
22.	Industrial /welding receptacles & boxes	III				Schneider M/s BCH	Nasik Faridabad	A		

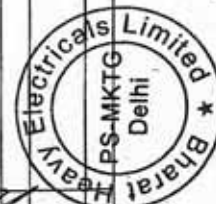
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PROJECT: Patratu STPP (2X660 MW) PACAKGE: EPC Sub Package: Electrical Equipment Supply & Erection CONTRACTOR : M/S BHEL CONT. NO. CS-9585-001-2										LIST OF ITEMS REQUIRING QP APPROVAL & ACCEPTABLE VENDOR Contractor-M/S BHEL				REF NO : 9585-001-QOE-R-01 REVISION NO. 00 DATE 24 th April 2017	
Sl. No.	ITEM	QP / INS CAT	QP No:- 9578-001-QVE	QP SUB. SCH.	QP APP L SCH EDU LE	SUB-SUPPLIERS	PLACE	SUB-SUPPLI ER APPL STATUS AS PER NTPC	SC AP PL SC HE DU LE	REMARKS					
						M/s Ajmera M/s. Sakthi & Crown Additionally Any make's model with VDE or CE or UL or CSA marking or BIS approved with CML no	Mumbai Chennai	A A							
23.	Lighting mast with raise & lower type lantern carriage	I	15			M/s Bajaj M/s Skipper M/s. B.P. Project,	Pune Howrah Hoogly	A A A		Refer Note-3					
24.	Lighting pole / steel tubular pole	I	16			BIS licensee as per IS 2713 with valid CML number		A							
25.	Lighting poles polygonal type	I				M/s Bajaj M/s B.P. Projects	Pune Hoogly	A A							
26.	PVC conduit/hume pipe/lighting wire/GI pipes/HIDPE pipe/Structural Steel	III				BIS licensee / ISI marked with valid CML number		A							
27.	GI steel rigid conduit/ epoxy conduit	III				BIS licensee with valid CML number		A							



PROJECT : Patratu STPP (2X660 MW) PACAKGE : EPC Sub Package: Electrical Equipment Supply & Erection CONTRACTOR : M/S BHEL CONT. NO. CS-9585-001-2				LIST OF ITEMS REQUIRING QP APPROVAL & ACCEPTABLE VENDOR Contractor-M/S BHEL				REF NO : 9585-001-QOE-R-01 REVISION NO. 00 DATE 24 th April 2017			
Sl. No.	ITEM	QP / INS CAT	QP No:- 9578- 001- QVE-	QP SUB. SCH.	QP APP L SCH EDU LE	SUB-SUPPLIERS	PLACE	SUB- SUPPLI ER APPL STATUS AS PER NTPC	SC AP PL SC HE DU LE	REMARKS	
28.	Trefoil clamps/Earthing & Lighting Protection Material/Sheet Steel/ FRP cable trench cover/drum lifting jack/Earth wire/ FRP/Aluminum Ladder/Dimmer & Passive Infrared Sensors	III				Main Contractor Approved Sources		Noted			
29.	FAN with regulators & Exhaust Fan	III				M/s Crompton		Noted			
						M/s Orient					
						M/s Khaitan					
						M/s Polar					
						M/s GEC					
						M/s Havells					
						M/s Bajaj					
30.	FQP of DG Set Installation.	I	G-01								
31.	FQP of Cables & Accessories	I	G-02								



				PROJECT : Patratu STPP (2X660 MW) PACAKGE :EPC Sub Package: Electrical Equipment Supply & Erection CONTRACTOR : M/S BHEL CONT. NO. CS-9585-001-2				LIST OF ITEMS REQUIRING QP APPROVAL & ACCEPTABLE VENDOR Contractor-M/S BHEL				REF NO : 9585-001-QOE-R-01 REVISION NO. 00 DATE 24th April 2017	
Sl. No.	ITEM	QP / INS CAT	QP No:- 9578-001-QVE	QP SUB. SCH. L	QP APP SCH EDU LE	SUB-SUPPLIERS	PLACE	SUB-SUPPLIER APPL STATUS AS PER NTPC	SC AP PL SC HE DU LE	REMARKS			
32.	FQP of Earthing	I	G-03										
33.	FQP of Station Lighting	I	G-04										

NB:

Under Sub Supplier approval status as per NTPC column:

A: mean that vendor for this item is acceptable to NTPC.

Under QP / INSPN CATEGORY column:

CAT-I : For these items the Quality Plans approved by NTPC & final acceptance will be on physical inspection & witness by NTPC

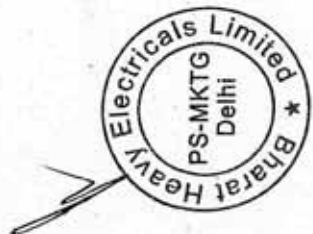
CAT-II : For these items the Quality Plans approved by NTPC. However no physical inspection shall be done by NTPC. The final acceptance by NTPC shall be on basis of verification of documents as per approved QP

CAT-III : For these items Main supplier approves the Quality Plans. The final acceptance by NTPC shall be on basis of certificate of conformance by the main supplier.

@ : Vendors acceptance is subject to sub-QR clearance.

Note-1- Approval conditions attached to above identified vendors, as applicable shall be adhered to.

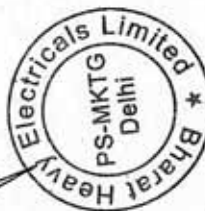
Note-2 - List of NTPC acceptable galvanizers



		PROJECT : Patratu STPP (2X660 MW) PACAKGE : EPC Sub Package: Electrical Equipment Supply & Erection CONTRACTOR : M/S BHEL CONT. NO. CS-9585-001-2				LIST OF ITEMS REQUIRING QP APPROVAL & ACCEPTABLE VENDOR Contractor-M/S BHEL				REF NO : 9585-001-QOE-R-01 REVISION NO. 00 DATE 24th April 2017	
Sl. No.	ITEM	QP / INS CAT	QP No:- 9578-001-QVE-	QP SUB. SCH.	QP APP L SCH EDU LE	SUB-SUPPLIERS	PLACE	SUB-SUPPLIER APPL STATUS AS PER NTPC	SC AP PL SC HE DU LE	REMARKS	

1. M/s M J Engg. Delhi	8. M/s National Galvanizer, Kolkata	16. M/s Radhakrishnan Shetty, Chennai	Additional galvanizers, if any, proposed by manufacturer through main contractor during detailed engineering shall be reviewed & assessed by NTPC as per the merits of the case.
2. M/s Jamna Metal, Delhi	9. M/s Unistar Galvanizer, Kolkata	17. Karamlara Mumbai	
3. M/s A. V. Engg. Kolkata	10. M/s B.P. Project. Kolkata	18. Poona Galvanizers Pune	
4. M/s Inar Profiles, Vishakapatnam	11. M/s Bajaj Pune	19. Ncha Galvanizer- Kolkata	
5. M/s Anand Udyog, Mumbai	12. M/s Electrocure Industries, Mumbai	20. Unitech galvanizers- Hoogly	
6. M/s Techno Engg. Chandigarh	13. M/s B.G. Shirke, Pune	21. Gurpreet galvanizers- Hyderabad	
7. M/S Steelite Engg. Mumbai	14. M/s Gurpreet Galvanizer, Hyderabad	22- DMP Projects- Kolkata	
	15. M/s Sigma, Mumbai		

Note-3 : VDE / CE / UL / CSA MARKING FOR PRODUCT QUALITY: SELF CERTIFICATION/VALID CERTIFICATION FROM THIRD PARTY AGENCY OR BIS APPROVAL LETTER WITH CML NO. FOR PRODUCT QUALITY SHALL BE SUBMITTED FOR NTPC'S INFORMATION

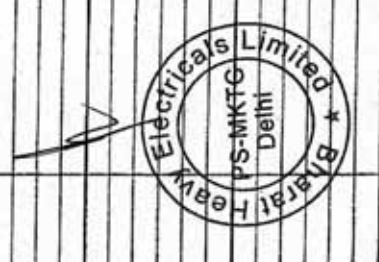


for
(JATIN GAHLAWAT)
BHEL



This is a Part of Technical Specification No. PE-TS-475-155-A001

PROJECT: PATRATU STPS EXPANSION PHASE - I (3x800MW) Package: EPC Sub Package : Switchyard No. : CS-9585-601-2				ANNEXURE - LIST OF ITEMS REQUIRING QUALITY PLAN APPROVAL AND ACCEPTABLE SUB-VENDOR AS PROPOSED BY M/S. BHEL				DOC.NO. : 9585-601-2 REV.NO. : 0 DATE : 03.04.2017		
S.No.	Item Description	QP/Insp Cat	QP#591-001C QVE-Q	QP Sub- schedule	QP Approval Schedule	Proposed Sub-Supplier	Place	Sub-Supplier Approval status/ category	Sub-supplier details submission schedule	Remarks
1	400 kV Gas Insulated Switchyard (Item subject to Sub QR approval)	1	10			GE T&D HYOSUNG XIAN ABB SIEMENS	CHENNAI KOREA CHINA VADODARA AURANGABAD	A A A DR DR		
2	400KV Capacitor Voltage Transformers (Item subject to Sub QR approval)	1	50			GE	Hosur	A		
3	400 kV Surge Arrestors (Item subject to Sub QR approval)	1	60			ABB BHEL CGL OBLUM CGL LAMCO	Vadodara Bhopal Nasik Hyderabad Nasik Hyderabad	A A A A A A		
4	400 kV Wave Trap	1	70			GE BPL BPEG QUALITY POWER	Hosur Palghat CHINA SANGLI	A A A DR		
5	Bus Post Insulator	1	80			ADITYA BIRLA IEC MODERN INSULATORS WSI	Halol Bhopal Abu Road Chennai	A A A A		
6	Disc Insulator	1	90			ADITYA BIRLA BHEL IEC MODERN INSULATOR WSI	RISHRA (WB) Bhopal Bhopal ABU ROAD Chennai	A A A A A		
7	Aluminium Tube	1	100			Alom Extrusions HINDALCO HINDALCO Jindal AL Tube SUDAL	Kolkata ALUPURAM Renukot Bangalore Nasik	A A A A A		
8	ACSR Conductor	1	110			APAR DIAMOND GUPTA POWER INFRA	Silvassa Vadodra Bhubaneswar	A A A		





Engg. Div./QAI

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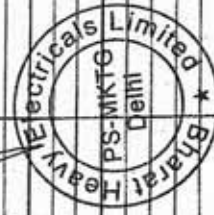
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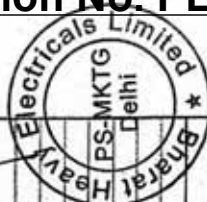
(Munish Kishore)
NTP

S.No.	Item Description	QP/Insp Cat	QP9591-001C QVE-Q	QP Sub- schedule	QP Approval Schedule	Proposed Sub-Supplier	Place	Sub-Supplier Approval status/ category	Sub-supplier details submission schedule	Remarks
						ANVIL CABLES JSK SHARAVATHY DYNAMIC CABLES PVT LTD HUJIL HUJIL SHASHI CABLES	JAMSHEDPUR Silvassa Bangalore JAIPUR GUWAHATI GWALIOR LUCKNOW	A A A A DR A A		
9	1.1kV Grade Power, Control Cables	I	120							Refer Cabling List
10	Substation Automation System BCU, GRP, Energy Meter, Numerical Relays Switchyard Protection (Item subject to Sub QR approval)	I	130			ABB SIEMENS SCHNEIDER GE BHEL	Peenya Kaliwa Noida Chennai Bhopal	A A A A A*		* Approved only for C&R panel
11	Components for Control & Relay Panels, Protection Panels, Islanding Scheme & Bay Control Unit									* : Inspection category of the item shall be same as mentioned in MQP of SAS
a	Energy Meter (Item subject to Sub QR approval)	*				Conterv Elster GEC Meters Landis & GYR SEMS	Bangalore Mumbai UK Switzerland Udaipur	A A A A A		
b	EVENT LOGGER	*				GE T&D HATHWAY	UK / FRANCE UK	A A		
c	TIME SYNCHRONIZING EQUIPMENT	*				ARBITER HOFF HATHWAY SERTEL SIEMENS Maribus	USA GERMANY UK / USA CHENNAI GERMANY Gandhinagar	A A A A A A		
d	RELAY TEST KIT	*				OMICRON DOBBLE MEGGER	USA/AUSTRALIA USA UK	A A A		
e	DISTURBANCE RECORDER	*				GE T&D SIEMENS ABB	USA GERMANY FINLAND	A A A		



S.No.	Item Description	QP/Insp Cat	QPR591-001C QVE-Q	QP Sub- schedule	QP Approval Schedule	Proposed Sub-Supplier	Place	Sub-Supplier Approval status/ category	Sub-supplier details submission schedule	Remarks
						HATHWAY	UK	A		
1	LARGE VIDEO SCREEN (LVS)	*				DELTA BARCO Planner	Gurgaon Noida USA	A A A		
8	RELAYS (Item subject to Sub QR approval) (NUMERICAL AND AUXILIARY)	*				ABB GE T&D SCHNEIDER SIEMENS SCHNEIDER	Sweden / Bangalore UK/CHENNAI UK/France GERMANY Noida/Chennai	A A A A DR		
12	Instrumentation Cable	I	140							Refer C&I List
13	BMK	I	150			BCH CBS Jaxon MAKTEL Pyrotech Schneider Spaceage Switchgear Unilec Switchgear Industrial Switchgear & controls MILESTONES ULTIMA SWITCHGEARS Samscom Industrial Controls RST Electricals Nitya Electrocontrols Pvt Ld ENTERPRISING ENGINEERS VIKAS POWER EQUIPMENTS PVT. LTD.	FARIDABAD Noida Noida VADODARA Udaipur Nashik Gurgaon Gurgaon Thane GURGAON ROORKEE Thane Sahibabad Noida BHOPAL LUCKNOW	A A A A A A A A DR DR DR DR DR A DR DR		
14	Lighting Pole	III	160			EMIT	Kolkata	A		Refer Elect. Eq. List
15	Clamps & Connectors and Welding Sleeves	III				EMIT EXALT KLEMMEN PEE VEE ENGG Raychem Venusun Techo Links Premier Power Products Deccan Engg Works	MUMBAI Chennai Bangalore Vadodara Chennai Chennai Bangalore	A A A A DR DR A		
16	Insulator Hardware	II	170			EMI EMIT	Mumbai Kolkata	A A		

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S.No.	Item Description	QP/Insp Cat	QPE9591-001C QVE-Q	QP Sub- schedule	QP Approval Schedule	Proposed Sub-Supplier	Place	Sub-Supplier Approval status/ category	Sub-supplier details submission schedule	Remarks
17	LIGHTING MAST	III				IAC	Kolkatta	A		
18	AC KIOSK	I	180			ITPL	Mumbai	A		
						RUL	Kolkatta	A		
						TAG CORPORATION	CHENNAI	A		
						Paychem (Tyco)	Bangalore	DR		
										Refer Elect. Eq. List
						I COMM TEL	HYDERABAD	A		
						Isolloyd	Baddi	A		
						JINDAL MECTEC	GURGAON	A		
						U-FOAM	HYDERABAD	A		
						SVARN TELECOM	HARDWAR	A		
19	JB (All Types) / Lighting Panel	II	190			C&S	Noida	A		
						Jakson	Greater Noida	A		
						MAKTEL	BARODA	A		
						Pyrotech	Udaipur	A		
						Schneider	Nashik	A		
						Space Switchgear	Gurgaon	A		
						TRICOLITE	SAHIBABAD	A		
						Unilec Switchgear	Gurgaon	A		
						DANISH	JAIPUR	DR		
						Milva Electrocontrols	Noida	DR		
						MILESTONES	GURGAON	DR		
						ULTIMA SWITCHGEARS	ROORKEE	DR		
						ENTERPRISING ENGINEERS	BHOPAL	DR		
						VIKAS POWER EQUIPMENTS PVT. LTD.	LUCKNOW	DR		
20	OPGW CABLE	I	200			SUZHOU FURUKAWA	NOIDA	A		Accessories under CAT-III from
						STERLITE TECHNOLOGIES	SILVASSA	A		
21	Leakage Current Analyser	III				ISA	ITALY	A		
						APPLIED TECHINO PRODUCTS PVT. LTD.	GURGAON	DR		
						Scope T&M	Pune	A		
						DOBLE ENG	USA	A		
						JOSTS ENGINEERING CO. LTD.	DELHI	DR		
						HI-TECH SYSTEMS & SERVICES LTD.	KOLKATA	DR		
22	SF6 GAS FILLING AND EVACUATING PLANT, GAS RECYCLING & PURIFYING PLANT, GAS LEAKAGE DETECTOR	III				AI QUALITEK	USA	A		
						DILO	GERMANY	A		
						ENERVAC	CANADA	A		
						VACUUM PLANT INDUSTRIES	PUNE	A		



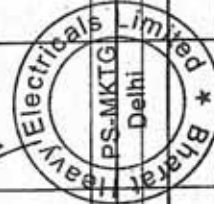
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S.No.	Item Description	QP/Insp Cat	QPA9591-001C QVE-Q	QP Sub- schedule	QP Approval Schedule	Proposed Sub-Supplier	Place	Sub-Supplier Approval status/ category	Sub-supplier details submission schedule	Remarks
23	OPERATIONAL ANALYSER WITH DCRM KIT	III				WIKI Manik Motors	USA Hyderabad	A DR		
24	GS Flat / MS Flat / 40 MM Dia. M.S. Rod / M.S. Earth Rods/U Clamp / GI Earth Pipe / GI Pipe / GI Conduitt (Including Bends) / PVC Pipes	III				OMICRON DOBBLE SCOPE VIC	USA PUNE USA	A A A		
25	Cable Tray, Bends, Coupler Plates	III				Main Contractor Approved Sources				Refer Cabling List
26	Cable glands	III								Refer Cabling List
27	Cable Lugs	III								Refer Cabling List
28	Lighting Fixtures & Luminaries	III								Refer Elect. Eq. List
29	Industrial Receptacles	III								Refer Elect. Eq. List
30	GS Earthwire / Lighting Wire	III				Main Contractor Approved Sources				
31	Transmission Line Tower Accessories (Dangle Plate, Vibration Dampers, Number Plate, Phase Plate, Circuit Plate Hanger Rod, ACD, Bird Guard, J Bolt, U Bolt, D Shackle, Barbed Wire, etc.)	III				Main Contractor Approved Sources				
32	EOT Crane	I								Refer CHP List
33	Air Conditioning and Ventilation System	III								Refer AC Ventilation List
34	Fire Protection System	III								Refer Fire Protection List
35	AC for AC Kiosk	III								Refer AC Ventilation List
Note	1. SYSTEM SUPPLIERS/SUB-SUPPLIERS APPROVAL STATUS CATEGORY(S) SHALL BE FILLED BY NTPC) A-For this items proposed vendor is acceptable to NTPC To be indicated with letter "A" in the list along with condition of approval, if any DR-For those items "Detailed required for NTPC review To be identified with letter "DR" in the list									



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 (ACHINAV GUPTA, BHEL)	 (DIPKUMAR, BHEL)	 (MUNEM KADIYEV) V. T. P.
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PROJECT : Patratu STPS Phase-I (3 X800MW)										LIST OF ITEMS REQUIRING QP			
PACKAGE : EPC PACKAGE										APPROVAL & ACCEPTABLE			
CONTRACTOR :BHEL Ltd										VENDOR AS APPROVED BY			
CONTRACT NO : CS-9555-001-2										REVISION NO : 00			
										DATE : 28.04.2017			
No.	Major Equipment	QP Inspect on Category	QP No. 9555-001-QV	QP Submis on SCH	QP Appro val SCH	Proposed Sub Supplier	Country	SS Approval Status	SS Detail Sub SCH	SS Approval SCH	Sub QR	Remark	
1	DOC MIS / HMI System	I				SIEMENS	Gurgaon / Germany	#				# - Final acceptance subjected to system specific acceptance from NTPC Engg	
2	Operator work stations	III				M/s BHEL (MAX DNA)	Bangalore	#					
3	Flame Monitoring System (SCANNER)	II				Main Contractor approved Sources		A					
		II				Forney	USA	A					
		II				ABB	Bangalore	A					
		II				Durag	Bangalore	A					
		II				BFI	Germany	A					
		II				BHELSCAN	Tridby	A					
4	HEA Ignitor	III				Fossil Power System Inc.	Canada	DR					
		III				Union Industries	USA	A					
		III				Durag	Germany	A					
		III				Ignition system INC	Bangalore	A				Make Durag, Germany	
		III				Tesi	USA	A					
		I				Hindustan Thermometer	Italy	A					
		*				Hemworthy Peabody Combustion Inc.	Ambala	A				Conditional	
5	Furnace Flame viewing system (High Temperature CCTV Components)	*				Inc.	UK	DR					
		II				Forney	USA	DR					
		II				Diamond Power	USA / Sweden	A					
		II				TLT Engg Pvt. Ltd.	Kolkata	A				M/s Diamond Power, USA / Sweden make system	
		II				Miron	UK	A					
		II				Toshniwal Industries	Ajmer	A				M/s Miron, UK make System	
		II				Lenox	USA	A					
		II				Hi Tech System and Service	Kolkata	A				M/s Lenox, USA make System	
		II				Durag	Germany	A					
		II				Durag	Bangalore	A				M/s Durag, Germany make System	
		II				Sabola GmbH	Germany	A					
		II				Piper GmbH	Germany	A					
		*				Tempsons	Udaipur	DR				System integrator for Piper GmbH, Germany.	
8	Coal Flow Monitoring System	II				PROMECON	GERMANY	A					
		II				SWR Engg	GERMANY	A					
		II				EU Tech	GERMANY	A					
		*				Transveiling	India	DR					
		*				Technomark Enggnera & Consultant	India	DR					
		*				Stock Redeller	India	DR				M/s BHEL will forward only two proposals after details review of NTPC Technical Specification	
		*				Greenbank Engery Systems	UK	DR					

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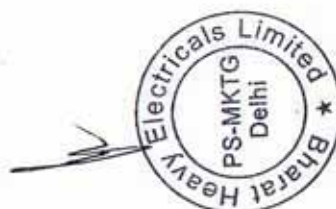


M/s BHEL will forward only two proposals after details review of NTPC Technical Specification

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PROJECT : Patratu STPS Phase-I (3 X600MW)										LIST OF ITEMS REQUIRING QP		
PACKAGE : EPC PACKAGE										APPROVAL & ACCEPTABLE		
CONTRACTOR :BHEL Ltd										VENDOR AS APPROVED BY		
CONTRACT NO : CS-9585-001-2										REVISION NO : 00		
										DATE : 28.04.2017		
No.	Major Equipment	QP Inspecti on Category	QP No. 9585-001-QP/Revision Q	QP Submis SCH	QP Appro val SCH	Proposed Sub Supplier	Country	SS Approval Status	SS Detail Sub SCH	SS Approval SCH	Sub QR	Remark
		I				Berthold	Germany	DR				Requirement not met.
7	Acoustic pyrometers	I				EDIT	Germany	DR				
		II				M/s Scientific Environment Instrument Inc	USA	A				
		II				M/s Bonnenberg + Drescher GmbH,	Germany	A				
		II				Lucent	Delhi	A				M/s Scientific Environmental Instrument Inc., USA make system
		II				Hi Tech	Kolkata	A				M/s Bonnenberg + Drescher GmbH, Germany make system
8	Coal feeder control system	I				Hanaelentech	Korea	DR				
		II				Stock	USA	A				
		II				Merrick	USA	A				
		I				Stock Redeller	Bangalore	A				Main components from Stock, USA
		I				Merrick	Bangalore	A				Main components from Merrick, USA
9	Acoustic Coal Flow Detector	I				BHEL	Trichy	A				
		III				Stock	USA	A				
		III				Merrick	USA	A				
		I				Stock Redeller	Bangalore	DR				
		I				Merrick	Bangalore	DR				
10	On line carbon In Ash Analyser	II				Greenbank Engery Systems	UK	A				
		II				ABB	Bangalore	A				
		II				Promcon	GERMANY	A				
		II				Berthold Technologies	Germany	A				
		I				M and W	Denmark	DR				
		I				EMERSON	India	DR				
		I				Yokogawa	Bangalore	DR				M/s BHEL will forward only one proposal after details review of NTPC Technical specification requirements.
11	Furnace Exit Gas Temperature Probe	III				Forbes Marshall	Pune	DR				
12	Boiler tube leak detection system	II				Main Contractor approved Sources	India /UK/USA					
		II				Procon	UK	A				
		II				Raman Instruments	Delhi	A				M/s Procon, UK make System
		II				Acoustic Monitoring International Inc.	USA	A				
		II				Hi Tech System and Service	Kolkata	A				M/s AMI, USA make System
		II				Insoltech	South Africa	A				
		II				Reclusan	Korea	A				
		II				BHELSONIC	Trichy	A				
13	Coal bunker Level monitor	%				%						% - Type, vendor and inspection category will be decided during

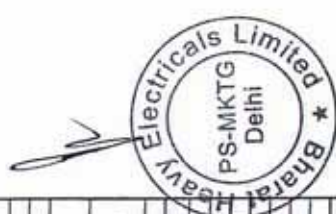


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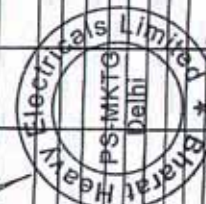
PROJECT : Patratu STPS Phase-I (3 X800MW)										LIST OF ITEMS REQUIRING QP APPROVAL & ACCEPTABLE VENDOR AS APPROVED BY				REVISION NO : 00 DATE : 26.04.2017	
PACKAGE : EPC PACKAGE CONTRACTOR : BHHEL Ltd										SS Approval Status		SS Detail Sub SCH	SS Approval SCH	Sub QR	Remark
CONTRACT NO : CS-9385-001-2										Country					
No.	Major Equipment	Qp Inspecti on Category	Qp No. 9385-001-QV	Qp Submis sion SCH	Qp Appro val SCH	Proposed Sub Supplier									
14	Tube thickness Meter	III				Main Contractor approved sources				USA					
15	POSITIVE DISPLACEMENT FLOW METER/ TRANSMITTER	III				BROOKS									
		III				BOPP & ROUTHIER				GERMANY					
		III				OVAL				JAPAN					
		II				Toshinwal corporation Hyvac				China					
16	Coriolis Type Mass Flow meter	III				Main Contractor approved Sources									
17	Control Valve for Start Up System	II				CCI				USA/Switzerland/Korea					
		II				Tyco Sampel				Germany					
		II				EMERSON (Fisher)				USA/France/Japan					
		II				Dressor Masconell				France					
		II				KOSO				Japan / Nasik					
		II				HORA				Germany					
		II				CCI				Sri Lanka					
		II				CCI				USA/Sweden					
18	Control valves for Soot blower pressure reducing ,SH/ RH Alternation.	II								Korea / Austria					
		II				Dressor Masconell				France					
		II				HORA				Germany					
		II				EMERSON (Fisher)				USA/France					
		II				Spx Cojias Vulcan				Japan					
		II				KOSO				USA					
		II				Tyco Sampel				Germany					
		II				Leslie				USA					
		I				Dressor				Colombore					
		I				KSB MIL				Palakkad					
		I				KOSO				Alwaye					
		I				EMERSON				Nasik					
		I				Flow Serve				Chennai					
		I				CCI				Bangalore					
		I				Cojias Vulcan				Sri Lanka					
		I				Circor (Leslie)				UK					
		I				CCI				Colombore					
19	Control Valve for BFP Recirculation.	II								USA / Austria / Korea					
		II				EMERSON (Fisher)				USA/France/Japan					
		II				Dressor Masconell				France					
		II				HORA				Germany					
		I				Sampel				Germany					
		I				Leslie				USA					
		I				CCI				Sri Lanka					

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PS-MKTG Delhi

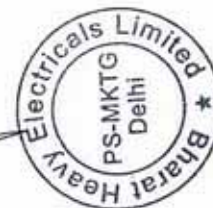


NTPC		PROJECT : Patratu STPS Phase-I (3 X800 MW)				LIST OF ITEMS REQUIRING QP				REVISION NO : 00	
		PACKAGE : EPC PACKAGE				APPROVAL & ACCEPTABLE				DATE : 25.04.2017	
		CONTRACTOR : BHEL Ltd				VENDOR AS APPROVED BY					
		CONTRACT NO : CS-9585-001-2									
No.	Major Equipment	Inspection Category	QP No. 001-QV	QP No. 001-QV	QP No. 001-QV	Proposed Sub Supplier	Country	SS Approval Status	SS Detail Sub SCH	SS Approval Sub OR	Remark
						KOSO	Japan / Nasik	DR			
						Naxkara	Japan	DR			
						Parcel Spa	USA	DR			
						Yamatake	Japan	DR			
						BOPP & ROUTHER	Germany	DR			
						KSB MIL	Germany	DR			
						CCI	USA/Austria	DR			
20	Control valve for feedwater flow Control	II						A			
						Dressor Masonellan	Korea				
						HORA	France	A			
						EMERSON (Fisher)	Germany	A			
							USA/France	A			
							Japan	A			
						Sempell	Germany	A			
						KOSO	Japan	A			
						LESUE	USA	DR			
						CCI	Italy	A			
						Parcel Spa	USA	DR			
						WEIR VALVES and Controls	UK	DR			
						KOSO	Nasik	DR			
						KSB MIL	Germany	DR			
						Emerson Process Management	China	DR			
						ROMAFA Special valve solutions Pvt. Ltd.	Ahmedabad	DR			
						Suzhou delan energy science and technology co. Ltd.	China	DR			
21	Control Valve (other than Sr. No. - 17 to 20)	II				CCI	USA/Switzerland/Korea	A			
						Tyco Sempell	Germany	A			
						EMERSON (Fisher)	USA/France/Japan / Chennai	A			
						Dressor Masonellan	France	A			
						KOSO	Japan	A			
						HORA	Germany	A			
						CCI	Italy	A			
						Spex Copex Vulcan	USA	A			
						Dressor	Colombatore	A			
						IL	Palakkad	A			
						KSB MIL	Germany	A			
						KOSO	Ahmedabad	A			
						EMERSON	Chennai	A			
						Flow Serve	Bangalore	A			
						Copex Vulcan	UK	A			
						Leslie	USA	A			
						Parcel Spa	Italy	A			
						KOSO	Nasik	A			



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PROJECT : Patratu STPS Phase-I (3 X600MW)										LIST OF ITEMS REQUIRING QP					REVISION NO : 00	
PACKAGE : EPC PACKAGE										APPROVAL & ACCEPTABLE					DATE : 26.04.2017	
CONTRACTOR : BHEL Ltd										VENDOR AS APPROVED BY						
CONTRACT NO : CS-9585-001-2																
No.	Major Equipment	Qp Inspection Category	Qp No.	Qp Sub Q	Qp Sub Q	Qp Sub Q	Qp Sub Q	Qp Sub Q	Qp Sub Q	Proposed Sub Supplier	Country	SS Approval Status	SS Detail Sub.SCH	SS Approval SCH	Sub OR	Remark
		II								Forbes Arca	Pune	A				Approved up to 4" and 300 Class. "DR" for Higher rating and Size. M/s BHEL will forward only three proposals after details review of NTPC Technical specification requirements.
		*								Daume Regelmaturen GmbH	Germany	DR				
		*								Meiso Singapore PTE Ltd.	South Korea	DR				
		*								Severn Glocorn	Chennai	DR				
		*								Spx Corporation	USA	DR				
		*								Ringo Valvulas SL	Spain	DR				
		*								Valitalia SPA	Italy	DR				
		*								R K Controls	Thane	DR				
		*								Circor (Lesko)	Colombore	DR				
		*								Spx Flow Technologies	USA	DR				
		*								Circor (Lesko)	Colombore	DR				
		*								Schenjeng valve co. Ltd.	China	DR				
		*								Spx Flow Technologies	Ahmadabad	DR				
		*								WEIR Valves and Controls	UK	DR				
		*								WALDEMAR PRUSS	Germany	DR				
		*								ARMATURENFABRIK GMBH		DR				
		*								BOMABA Special valve solutions Pvt. Ltd.	Ahmedabad	DR				
		*								Suzhou delan enery science and technology co. Ltd.	China	DR				
22	Temperature Transmitter	III								EMERSON	U.S.A/Pawane / Singapore	A			Sub OR	Final testing at M/S YIL, Bangalore is also acceptable
	(Single and Dual Input)	III								Yokogawa	Japan	A				
		III								Moore	USA	A				
		III								M System	JAPAN	A				
		III								ABB	GERMANY/ Bangalore	A				
		III								ENDRESS & HOUSER	Aurangabad	A				
		*								Khrona		DR				
		*								Tokyo Ketsio	Japan	DR				
		*								Honeywell	Pune	DR				
		*								INOR	Sweden	DR				
		*								P & F	Bangalore	DR				
		*								Siemens	JAPAN	DR				
		*								Yamatake	JAPAN	DR				
		*								Yamari	JAPAN	DR				
		*								Foxboro		DR				
23	Conduits/Pipe (GI)									Refer Electrical List						
24	Electronic transmitters (pressure, DP, Flow)	III								EMERSON (Rosemount)	USA/ Pawane	A			Sub OR	
		III								FUJI ELECTRIC	France	A				
		III								YOKOGAWA	JAPAN	A				Testing and Calibration at M/s YIL, Bangalore is also acceptable.



PROJECT : Patratu STPS Phase-I (3 X800MW)										LIST OF ITEMS REQUIRING QP				REVISION NO : 00		Remark
PACKAGE : EPC PACKAGE										APPROVAL & ACCEPTABLE				DATE : 28.04.2017		
CONTRACTOR : BHEL Ltd										VENDOR AS APPROVED BY						
CONTRACT NO : CS-9585-001-2																
No.	Major Equipment	QP Inspect on Category	QP No. 9585-001-QM	QP Submis on Q	QP Appro val SCH	Proposed Sub Supplier		Country	SS Approval Status	SS Detail Sub-SCH	SS Approval SCH	Sub QR				
		III				YOKOGAWA		Bangalore	A				EJA- E series 110,430,530			
		III				ABB		Bangalore	A				Model - 2600 T			
		III				ABB		GERMANY / Italy	A				Model - 2600 T			
		III				Siemens		France / Kolkva	A							
		III				Honeywell		Pune	A							
		III				Laxson Automation		Daman	A				SMAR Make			
		III				Baldor		Mumbai	A				SMAR Make			
		*				ENDRESS & HOUSER		Aurangabad/ Germany	DR							
		*				CHINO		Ghazdabad	DR							
25	Thermocouples, RTD & Thermowells	III				HERAUS SENSOR		GERMANY	A			Sub QR				
		III				WISE Control		Korea	A							
		II				Temprens		Udaipur	A							
		II				Pyroelectric		Goa	A							
		II				Deliv Instrumentation & Electronics Ltd		Mumbai	A							
		III				Minco		USA	A							
		III				OKAZAKI corporation		JAPAN	A							
		III				Yamari		JAPAN	A							
		III				Yamari		Singapore	A							
		III				ABB(SENSECON)		Germany	A				For RTD Reference list and Performance feedback is to be submitted.			
		III				EMERSON (Rosemount)		Germany	A							
		II				EMERSON (Rosemount)		Pawane	A				Imported from Emerson, Germany (make)			
		II				Thermal Instruments(GIC)		Savarkudi	A							
		II				Techno Instruments		Ahmedabad	A							
		II				GOA Instrument Industries		GOA	A							
		*				GOA Instrument Industries		GOA	DR				For Thermowell only			
		*				WIKI		Pune	DR				Ms BHEL will forward only two proposals after details review of NTPC Technical specification requirements.			
		*				Toshinval Industries		Almer	DR							
		*				E & H		Aurangabad	DR							
		*				Nestlech		Vapi	DR							
		*				Industrial Instruments		Kolkata	DR							
		*				Exotherm		Thane	DR							
		*				Baumer Technologies		Vapi	DR							
		*				Eleind Engineering		Noida	DR							
		*				Siemens India		Gurgaon	DR							
		II				Jindal Electronics		Roorkee	DR							
		III				E & H		Aurangabad/ Germany	A			Sub QR	For Generator turbine & Motor			
26	Ultrasonic type level Transmitter	III				EMERSON		Pawane	A							
		III				SIEMENS MILTRONICS		CANADA	A							
		III				Nivelco		Hungary	A							
		*				Vega		Germany	DR							



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PROJECT : Patratu STPS Phase-I (3 X600MW)												
PACKAGE : EPC PACKAGE												
CONTRACTOR : BHEL Ltd												
CONTRACT NO : CS-9585-001-2												
No.	Major Equipment	Inspected on Category	QP No. 9585-001-QV	QP Submis Q	QP Approval SCH	Proposed Sub Supplier	Country	SS Approval Status	SS Detail Sub SCH	SS Approval SCH	Sub QR	Remark
27	Orifice plate assembly	*				Khrona	France / USA / Pune	DR				M/s BHEL will forward only two proposals after details review of NTPC Technical specification requirements.
		*				Yokogawa	Bangalore	DR				
		*				P&F	Germany	DR				
		*				Magnefrol	Belgium	DR				
		*				ABB	Germany / India	DR				
		*				Fobos Marshall	Pune	DR				
		III				Instrumentation Limited	Palghat	A			Sub QR	
		III				Microprecision	Palghat	A				
		III				Starmedh	Pune	A				
		III				Flow Star	Fardabad	A				
		III				SEIKO	Austria	A				
		III				MINCO India Pvt. Ltd.	GOA	A			Up to 32°	
28	Pressure, DP Gauge	III				MINCO India Flow Elements Pvt. Ltd.	GOA	A			Up to 28°	
		III				WISE Control	Korea	A				
		III				T M Technomatic	Italy	A				
		*				IEPL	Hyderabad	DR				
		*				Engg. Specialities	Kolkata	DR				
		*				BALIGA	CHENNAI	DR				
		*				Pyroelectric	Mumbai	DR				
		*				Hydropneumatics	Mapusa	DR				
		*				Tansa Equipment Pvt. Ltd.	Thane	DR				
		*				Dynamic Fluid Vales Pvt. Ltd.	Belgaum	DR				
		III				BUONENBERG	UK	A				
		III				ASHCROFT	USA/Germany/ India	A				
		III				Wika	GERMANY	A				
		III				WISE Control	Korea	A				
		III				Nagano KEIKI	Japan	A				
		III				H.Guru South India	Bangalore	A				
		III				A.N. Instruments	Kolkata	A				
		III				Gauge Bourdon	Parivel	A				
		III				Goa Thermostatic	GOA	A				
		III				Wika	Pune	A				
		III				Baumer	Vapi	A				
		III				Precision mass products Pvt. Ltd.	Gandhinagar	A				
		III				H.Guru	Rishra/Muzaffarpur	A				
		*				US Gauge	USA	DR				
		*				Winers	USA	DR				
		III				Forbes Marshall	Hyderabad	A				
		*				Manometer	Mumbai	DR*				
		III				Walchandnagar Industries Ltd.	Dharwad	A				
III				Nesstech	Vapi	A						
*				Gauges Bourdon Fisher Mess	UK	DR						
*					Germany	DR						

DP Gauge for M/s Nesstech, Japan

DP Gauge for M/s Nesstech, Japan



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PROJECT : Patratu STPS Phase-I (3 X600MW)										LIST OF ITEMS REQUIRING QP APPROVAL & ACCEPTABLE				REVISION NO : 00	
PACKAGE : EPC PACKAGE										VENDOR AS APPROVED BY				DATE : 26.04.2017	
CONTRACTOR : BHEL Ltd															
CONTRACT NO : CS-9585-001-2															
No.	Major Equipment	QP Inspected Category	QP No. 9585-001-QV1-Q SCH	QP Submis on SCH	QP Approval SCH	Proposed Sub Supplier	Country	SS Approval Status	SS Detail Sub.SCH	SS Approval SCH	Sub QR	Remark			
29	Level gauge (Transparent & Reflex, Tubular type)	•				Protech Control	Kolkata	DR							
		•				New Scientific	Kolkata	DR							
		III				PTCI	Kolkata	DR							
30	Press, OP, Vacuum Switch	III				Main Contractor approved Sources	Kolkata	A							
		III				SOR	USA	A			Sub QR				
		III				DRESSOR (ASHCROFT)	USA/Germany	A							
		III				ITT BARTON	USA	A							
		III				HERION	GERMANY	A							
		•				BARKSDALE	GERMANY	A							
		•				Nagano KEIKI	Japan	DR							
		II				Switzer Process Instrument	Chennai	A				Up to 40kg/cm2 & not for Compound Switch and except 900 series			
		II				Trafag	Gurgaon	A				Up to 40kg/cm2 & not for Compound Switch			
		II				Switzer Process Instrument	Ghaziabad	A				Up to 40kg/cm2 & not for Compound Switch			
		III				Delta control	UK	A				Up to 40kg/cm2 & not for Compound Switch			
		I				Gauges Bourdon (GIC)	Panvel	A				Up to 40kg/cm2 & not for Compound Switch			
		I				ASHCROFT	Gandhinagar	A				M/s BHEL will forward only two proposals after details review of NTPC Technical specification requirements.			
		•				Wika	Pune	DR							
		III				Gorgeson	France	DR							
		III				United Electric	USA	A							
		•				SMC	Japan	DR							
		•				Neodyne	USA	DR							
		•				IMI NORGREN	Noida	DR							
		•				WISE Control	Korea	DR							
		•				Baumer	Vapi	DR							
		•				Vasu Tech	New Delhi	DR							
		III				Bell & Krich	Germany	DR							
31	Temperature Switch	III				SOR	USA	A			Sub QR				
		III				DRESSOR (ASHCROFT)	USA/Germany	A							
		III				ITT BARTON	USA	A							
		III				DELTA CONTROLS	UK	A							
		I				Switzer Process Instrument	Chennai	A				up to 200 Deg. C			
		II				Switzer Process Instrument	Ghaziabad	A				up to 200 Deg. C			
		I				Trafag	Gurgaon	A				up to 200 Deg. C			
		•				ASHCROFT	Gandhinagar	A							
		III				Wika	Pune	DR							
		III				Gorgeson	France	A							
		III				United Electric	USA	A							
		•				SMC	Japan	DR							
32	Flow switch	III				UNIVERSAL FLOW METER	Japan	DR			Sub QR				
		III				Switzer	Chennai	A							

PROJECT : Patraut STPS Phase-I (3 X800MW)										LIST OF ITEMS REQUIRING QP				REVISION NO : 00	
PACKAGE : EPC PACKAGE										APPROVAL & ACCEPTABLE				DATE : 26.04.2017	
CONTRACTOR :BHEL Ltd										VENDOR AS APPROVED BY					
CONTRACT NO : CS-9555-001-2															
No.	Major Equipment	QP Inspect on Category	QP No. 9555-001-QV1	QP Submission SCH	QP Approval SCH	Proposed Sub Supplier	Country	SS Approval Status	SS Detail Sub SCH	SS Approval SCH	Sub QR	Remark			
		III				Levcon	Kolkata	A							
		III				DK Instrument	Kolkata	A							
		III				Khrona Marshal	Pune	A							
		III				Chemtrol	India	DR							
		III				V Automat	NewDelhi	DR							
		III				Gaugas Bourdon	Panvel	A							
		III				Magnetrol	Belgium	A							
		III				Ashcroft	Germany	A							
		III				Auxitrol	UK	A							
		III				Mercoild	USA	A							
		III				Delta Control	UK	A							
		III				Merium	USA	A							
		*				Sunag Corporation		DR							
33	Condensing Pots	III				Main Contractor approved Sources		A							
34	Electric to Pneumatic converter	III				IMI NORGEN	India	A			Sub QR	Make : WATSON SMITH			
		III				Fair child	USA	A							
		*				ABB	India	A							
		*				SMC Pneumatics	Noida	DR							
		*				P & F	Bangalore	DR							
		*				Fairchild India Pvt. Ltd.	Noida	DR							
		*				FESTO	Bangalore	DR							
35	Conduits lead coated (Flexible)	III				Plica	Ghaziabad	A				Main contractor can propose additional vendor for this item			
		III				Bansal laboratories	BHOPAL	A							
30	Intelligent Battery charger 24V DC & DCDB/BHMS	II				Chabbi Electricals	Jalgaon	A			Sub QR	Modules from EMERSON			
		II				Eltech	Gurgaon	A				Modules from ELTEK			
		II				VasTech	Jalgaon	A				Modules from ELTEK			
		II				Emerson	India	A							
		II				MasTech (Selet Modules)	Jalgaon	A							
		*				HBL Power Systems	India	DR							
		*				Dobas	India	DR							
		*				Chabbi Electricals (Chabbi Modules)	Jalgaon	DR							
		*				Hirachi Hi Rel	Gandhinagar	DR							
		*				Station Power Controls Pvt. Ltd.	Noida	DR							
		*				Chloride Power Systems (caldyne)	India	DR							
		*				Amararaja	Tirupati	DR							
		*				Kollon Power Electronics	Tiruvendram	DR							
												M/s BHEL will forward only two proposals after details review of NTPC Technical specification requirements.			

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Mrs BHEL will forward only two proposals after details review of NTPC Technical specification requirements.

NTPC		PROJECT : Patratu STPS Phase-I (3 X60MW)				LIST OF ITEMS REQUIRING QP				REVISION NO : 00		
		PACKAGE : EPC PACKAGE				APPROVAL & ACCEPTABLE				DATE : 26.04.2017		
		CONTRACTOR : BHEL Ltd				VENDOR AS APPROVED BY						
		CONTRACT NO : CS-9585-001-2										
No.	Major Equipment	QP Inspect on Category	QP No. 9585-001-QVI	QP Submis on SCH	QP Appro val SCH	Proposed Sub Supplier	Country	SS Approval Status	SS Detail Sub-SCH	SS Approval SCH	Sub QR	Remark
37	Battery Health Monitoring System	-				Universal Instrument manufacturing co P Ltd	India	DR				
		-				Hind Rectifier Ltd	India	DR				
		III				Emerson	Mumbai	A				
		III				Eltek SGS Pvt Ltd	Gurgaon	A				
		-				B Tech Inc	USA	DR				
		III				Hilachi Hi Rel	Gandhinagar	A				
		-				Hopckeb	Germany	DR				
		-				Hilachi Hi Rel	Gandhinagar	DR				
		I				AMCO SAFT	Bangalore	A				
		II				SAFT	France/Sweden	A				
38	Battery(NI-cd)	I				HBL POWER	Hyderabad	A				
		I				Hopckee	Germany	A				
		II				BHEL Approved Sources		A				
		III				Maharashtra Seamless	Raigarh	A				Carbon steel only
		II				SunilomokawasaKihippon	Japan	A				
		II				TPS TECHINTUBE	Germany	A				
		II				Veluric & mannessmann	Germany	A				
		II				BHEL	Trichy	A				
		II				Trouvay and Cauvin	France	A				Makes shall be as per approved list (Sr. No. 41)
		II				ISMT	Ahmadnagar	A				Carbon steel only.
		II				Sandvik		A				For SS only.
		-				TUBACES	Spain	DR				
		-				Salzgitter Mannesmann International	Germany	DR				
		-				Jindal saw	India	DR				
		II				Rafinamant Metal and Tubes	Ahmadabad	A				SS only
		II				Heavy metals and Tubes	Ahmadabad	A				SS and CS only.
		-				Shubhashmi Metal and Tubes	Mumbai	DR				
		III				Parker	USA	A				
		III				Precision	Mumbai	A				
		III				Asiech	Mumbai	A				
		III				Fluid control Pvt. Ltd.	Pune	A				
		III				HP Valves and fittings	CHENNAI	A				Fenuleas are to be hardened at Exim Holland for pressure above 9000 psi.
		III				Excel hydro	Mumbai	A				Fenuleas are to be hardened at Exim Holland for pressure above 9000 psi.
		III				Swagelok	USA	A				
		III				Panam	Mumbai	A				
		III				Melgross	Kolkata	DR				
		-				AURA INC	New Delhi	DR				
		-				Prime Engineers		DR				
41	Compression fittings											



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PROJECT : Patratu STPS Phase-I (3 X200MW)										LIST OF ITEMS REQUIRING QP			
PACKAGE : EPC PACKAGE										APPROVAL & ACCEPTABLE			
CONTRACTOR : BHEL Ltd										VENDOR AS APPROVED BY			
CONTRACT NO : CS-9585-001-2													
No.	Major Equipment	QP Inspect on Category	QP No. 9585-001-Q	QP Submis sion SCH	QP Appro val SCH	Proposed Sub Supplier	Country	SS Approval Status	SS Detail Sub-SCH	SS Approval Sub SCH	Sub QR	Remark	
		I				Finolex Cable	Pune	DR -				M/s BHEL will forward only two proposals after details review of NTPC Technical specification requirements.	
		I				Incab	Pune	DR -					
		I				Gupta Power Infrastructure Ltd.	Khurda	A					
		-				Lapp cables	India	DR					
		-				Lion cable	Pune	DR					
		-				HR Kabel	Shivesa	DR					
		-				Gemsab	Bhivadi	DR					
		-				KEC International	Mysore	DR					
		-				Advance cable Technologies	Bangalore	DR					
		-				Suyog Electricals Ltd.	Vadodara	DR					
		-				Special Cable	India	DR					
		-				CMF	Fardabad	DR					
		-				Govind Cables	Kolkata	DR					
		-				Associate Cables	Mumbai	DR					
		-				Radiant RSCC Speciality	Hyderabad	DR					
		-				APAR Industries	Bangalore	DR					
		-				Tempsons Cable	Udaipur	DR					
		-				Mansfield cables co. Ltd.	Hyderabad	DR					
		-				Servel India Pvt. Ltd.	Neemrana	DR					
		-				TC Communication Pvt. Ltd.	Ghaziabad	DR					
46	Electrical actuator	III				Auma	Germany	A				For Low torque application such as SHRH vent, circulation isolation	
		III				Limitorque	USA	A					
		III				Relorg	UK	A					
		II				Limitorque	Fardabad	A					
		II				Relork	Chennai/ Bangalore	A					
		III				Nippon gear	Japan	A					
		II				Auma	Bangalore	A					
		III				Harold Beck	USA	A					
		III				Drehmo	Germany	A					
		I				Antrieb	Chennai	A					
		-				Linbo	USA	DR					
		-				Siemens	Germany	DR					
		III				Harold Beck	USA	A					
47	Electrical actuator for ID/F-DIPA Blade pitch and Guide vane control	III				SIPOS Aktrotek GmbH	Germany	A					Sub QR
		-				ABB	Germany	DR					
48	Flow nozzle / Venturi assembly	II				Microprecision	Fardabad	A					
		II				SEIKO	Austria	A					
		II				TECHNOMATIC	Italy	A					
		II				Instrumentation Limited	Paigant	A					
		I				Starrock	Pune	A					



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L. M. Adair

Deptt.

United * Dist. Ranger

~~1901/12~~

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PROJECT : Patrau STPS Phase-I (3 X600MW)										LIST OF ITEMS REQUIRING QP						REVISION NO : 00	
PACKAGE : EPC PACKAGE										APPROVAL & ACCEPTABLE						DATE : 26.04.2017	
CONTRACTOR : BHEL Ltd										VENDOR AS APPROVED BY							
CONTRACT NO : CS-955-001-2																	
No.	Major Equipment	Qp Inspection Category	Qp No. 955- 001-QV	Qp Submis- sion	Qp SCH	Qp SCH	Qp SCH	Qp SCH	Qp SCH	Proposed Sub Supplier	Country	SS Approval Status	SS Detail Sub-SCH	SS Approval SCH	Sub OR	Remark	
53	Transducer	III								LEVCON	KOLKATA	A					
		III								Nivo Controls	Indore	A					
		•								V AUTOMAT	New Delhi	DR					
		•								D K Instrument	Kolkata	DR					
		•								Siemens	Germany	DR					
		•								ABB	Korea	DR					
		•								Rosemount	Korea	DR					
		II								AE	Mumbai	A					
		II								Southern Transducer	Chennai	A					
		III								Elster	Mumbai	A					
54	Mini UPS up to 3.5 KVA	III								Camille Bauer	Germany	A					
		III							Meirawal	Germany	A						
		II							Rishab	Nask	A						
		•							Pyrotech	Udaipur	DR						
		•							Masibus	Gandhinagar	DR						
		III							SIEMENS	Germany	DR						
		III							EMERSON	Mumbai	A						
		III							EMERSON	Pune	A						
		III							Hiachi Hi-Rel	Gandhinagar	A						
		III							APC	Bangalore	A						
55	Level switch- cond type	III								APLAB	Mumbai	A					
		•							Delta	Gurgaon	A						
		•							Powertronix	Bangalore	DR						
		•							DUBAS ENGG PVT LTD.,		DR						
		•							BANGALORE		DR						
		•							Grid power conversion Pvt Ltd.	Bangalore	DR						
		III							Schneider	UK	A						
		III							EMERSON (Solartion mobrey)	Kolkata	A			Sub OR	Levelstate, UK System		
		III							Hi Tech	USA	A						
		III							Yarway	UK	A						
56	Level switch - Float/Displacer Type	II								LEVELSTATE	Delhi	A					
		•							Raman Instruments	Trichy	A						
		•							BHEL	Germany	DR						
		•							IGEMA	AURANGABAD	A						
		III							ENDRESS & HOUSER		A			Sub OR	Emerson (Mobrey) System		
		III							MAGNETROL	BELGIUM	A						
		III							LEVCON	KOLKATA	A						
		III							SBEM	PUNE	A						
		III							Chemtrols samil	Mumbai	A						
		III							NAKATIYA	JAPAN	A						



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P. P. Chh.

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PROJECT : Patratu STPS Phase-I (3 X800MW)											
PACKAGE : EPC PACKAGE											
CONTRACTOR : BHEL Ltd											
CONTRACT NO : CS-9566-001-2											
LIST OF ITEMS REQUIRING QP APPROVAL & ACCEPTABLE VENDOR AS APPROVED BY											
REVISION NO : 00											
DATE : 26.04.2017											
No.	Major Equipment	QP Inspect on Category	QP No. 5565-001-QV	QP Submis on SCH	QP Appro val SCH	Proposed Sub Supplier	Country	SS Approval Status	SS Detail Sub.SCH	SS Approval Sub QR	Remark
		Y				Krone	France	DR			
		*				HONEYWELL	Pune	DR			
		*				Voga	Germany / India	DR			
		*				Siemens	India	DR			
		*				SBEM	Pune	DR			
						Main Contractor will propose the vendors during detail Engineering.					
63	Maintenance and Calibration Equipment					BUDENBERG	UK	A			
64	Temperature Gauge	III				DRESSOR (ASHCROFT)	USA/Germany	A			
		III				Wika	GERMANY/ Pune	A			
		III				WISE Control	Korea	A			
		III				Nagano KEIKI	Japan	A			
		III				H.Guru South India	Bangalore	A			
		III				A.N. Instruments	Kolakkalla	A			
		III				NUOVA FIMA	ITALY	A			
		III				Gea Thermosatic	Goa	A			
		III				Gea Instrument Industries	Goa	A			
		III				Baumer	Vapi	A			
		III				Precision mass products Pvt. Ltd.	Gandhinagar	A			
		III				H Guru	Risra/Muzaffarpur	A			
		III				Baumer	Vapi	A			
		III				Forbes Marshall	Hyderabad	A			
		III				Gauges Bourdon (GIC)	Panvel	A			
		*				Konica	Korea	DR			
		*				Pyroelectric	GOA	DR			
		*				Winlers Gauge	USA	DR			
		*				Walchandnagar Industries Ltd,	Dharwad	DR			
		*				Nestech	Vapi	A			
		*				US Gauge	USA	DR			
		III				Main contractor approved sources					
65	Furniture for computer (Chair, Almirah, Lock etc.)	III				Weldmuller	Germany	A			
66	Terminal Block (Cage and Clamp type)	III				Phoenix	Germany / India	A			
		III				Wago	Germany / India	A			
		III				Elmet	Vadodra	A			
67	FRP Junction Box for C&I system	III				BHEL Approved Sources		A			CE Mark only
68	PLC System (if applicable)	I				GE Intelligent platforms	Bangalore	A			
		I				ABB	Bangalore	A			
		I				Schneider	Nasik	A			
		I				Rockwell	Sahibabad	A			
		I				Siemens	Nasik	A			
		I				HONEYWELL	Pune	A			
69	SMART POSITIONER (Make)	#				ABB		A			

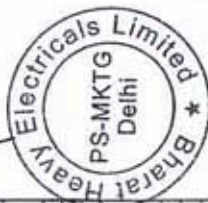
M/s BHEL will forward only two proposals after details review of NTPC Technical specification requirements.

CE Mark only

- To be bought in Control Valve

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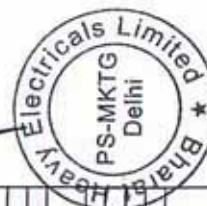
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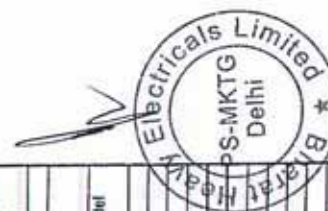
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PROJECT : Patrauli STPS Phase-I (3 X800MW)										LIST OF ITEMS REQUIRING QP APPROVAL & ACCEPTABLE VENDOR AS APPROVED BY				REVISION NO : 00 DATE : 28.04.2017		
PACKAGE : EPC PACKAGE CONTRACTOR : BHEL Ltd CONTRACT NO : CS-9585-001-2										Country		SS Approval Status	SS Detail Sub.SCH	SS Approval SCH	Sub QR	Remark
No.	Major Equipment	QP Inspect on Category	QP No. 9585-001-QM	QP Submis on Q	QP Appro val SCH	Proposed Sub Supplier	Country	SS Approval Status	SS Detail Sub.SCH	SS Approval SCH	Sub QR	Remark				
77	Blank Panels / Cabinets	III				COSA XENTAUR	USA	A				through Spectrum automation (andabed)				
		*				VAISHALA	Sweden / Japan	DR								
		*				DWER	USA	DR								
		*				Endee	Mumbai	DR								
		*				Nivo Controls	Indore	DR								
		III				Barlec GMIH	Germany	DR								
78	CCTV Components (IP) Integrators will be decided during detail Engineering.	III				Rital	Bangalore	A								
		III				Hoffman	BANGALORE	A								
		III				Pyrotech	Udaipur	A								
		III				BHEL	Bangalore	A								
		III				Schneider	Bangalore	DR								
		*				Sony	Japan	DR								
79	Control Desk, Server / PC Rack for Unit Control room and Auxiliary control room.	*				Siemens	Pondichery	DR								
		*				Dv Tel	USA	DR								
		*				Honey Well	Gurgaon	DR								
		II				Bosch	Bangalore	A				With Bosch Software				
		*				Axis	Sweden	A				With Bosch Software				
		II				Polco	USA	DR								
80	Digital Indicators	III				Axis	Sweden	A				With Milestone Software				
		I				Pyrotech works Space	Udaipur	A								
		I				Games	Noida	A								
		*				Adash Control	Bangalore	A								
		*				Chem Control	Pondichery	A								
		III				Harmony Systems	New Delhi	DR								
81	Dust Emission Monitor	III				Mashbus	Gandhi Nagar	DR				For Non mosaic mounting				
		III				ABB	Germany	A								
		III				Foxboro	UK	A								
		III				Yokogawa	Japan	A								
		III				Gossen / Metrowall / Camille Bauer	Germany	A								
		III				Siemens	Germany	A								
82	Dust Emission Monitor	III				Chino	Germany	A								
		III				Weigel Messgerate	Japan	A								
		III				Pyrotech	Germany	A								
		III				Chino Corporation	Udaipur	A								
		*				Yokogawa	Mumbai	DR								
		*				Lektroux	Bangalore	DR								
83	Dust Emission Monitor	*				Teletherm	Pune	DR								
		III				Land Instrument International	Chennai	DR								
		III					UK	DR								
		III				Durag	Germany	A								
		III				Sick Mahak	Germany	A								
		III				Emerson Process Management	Ireland	A				Land Combustion Division				
84	Dust Emission Monitor	III				Codel	UK	A								
		III						A								
		III						A								
		III						A								
		III						A								
		III						A								



PROJECT : Patratu STPS Phase-I (3 X800MW)												LIST OF ITEMS REQUIRING QP			
PACKAGE : EPC PACKAGE												APPROVAL & ACCEPTABLE			
CONTRACTOR :BHEL Ltd												VENDOR AS APPROVED BY			
CONTRACT NO : CS-9585-001-2															
No.	Major Equipment	QP Inspect Category	QP No. 9585-001-QVI Q	QP Submis sion SCH	QP Appro val SCH	Proposed Sub Supplier	Country	SS Approval Status	SS Detail Sub SCH	SS Approval SCH	Sub OR	Remark			
82	Electrical Indicating Instruments (Mosaic Compatible)	II				Forbes Marshall	Pune	A				Main kit from M/s Codel, UK			
		III				Siemens	Germany	A							
		III				Gossen / Metrowall / Camille Bauer	Germany	A							
		III				Ganz	Germany	A							
83	Flue Gas Analyser (CO)	III				Weigel Messgerate Codel	Germany UK	A			Sub OR				
		III				Emerson Process Management	Pawane	A				Analysar from M/s Emerson, Germany / USA.			
		III				Land Instrument International	UK	A				Land Combustion Div			
		III				Sick Mathak	Germany	A							
84	Flue Gas Analyser (CO2)	*				Codel	UK	DR			Sub OR				
		*				Sick Mathak	Germany	DR							
85	Flue Gas Analyser (SO2 and Nox)	III				Kirwaake Procal Ltd, Sick Mathak	Germany	A			Sub OR	Analysar from M/s Emerson, Germany / USA.			
		III				Emerson Process Management	Pawane	A							
		III				Siemens	Germany	A							
		III				Fuji Electric	Japan	A							
		*				Yokogawa	Japan	DR							
		*				Codel	UK	DR							
		*				ABB	Gloucestershire	DR							
86	Flue Gas Analyser (O2 Analyser (HT))	II				SECO	Chennai	A			Sub OR	Main Contractor Can propose additional vendor for this item			
87	Flue Gas Analyser (O2 Analyser (LT))	III				Marathon Monitor Emerson (Rosemount)	USA Pawane	A A			Sub OR	Make EMERSON, USA			
		III				Forbes Marshall	Pune	A				Make Endotec, Germany : Model Oxitec 5000 series			
		III				ICE	Mumbai	A				Make Ametek, USA			
		III				Yokogawa	Bangalore	A				Make Yokogawa, Japan			
		*				ABB	Bangalore	A				Make ABB, UK			
		*				AMETEK (P and AI division)	Singapore	DR							
		*				Endotec	Germany	DR							
		*				Fuji Electric	Japan	DR							
		*				Teledyne	USA	DR							
88	Flue Gas Analyser Panel	I				Chemtrol	Goa	A			Sub OR				
		*				Emerson Process Management	Navi Mumbai	A				Analysar from M/s Fuji, Japan			
		*				Pyrotech	Udaipur	A							
		*				Analytical Instrument Company	Kola	A							
		*				Yokogawa	Bangalore	DR							
		*				Adago	Mumbai	A							
		*				Mavel Engrg Company	Chennai	DR							



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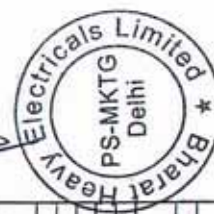
PROJECT : Patratu STPS Phase-I (3 X600MW)		LIST OF ITEMS REQUIRING QP				REVISION NO : 00						
PACKAGE : EPG PACKAGE		APPROVAL & ACCEPTABLE				DATE : 28.04.2017						
CONTRACTOR : BHEL Ltd		VENDOR AS APPROVED BY										
CONTRACT NO : CS-9555-001-2												
No.	Major Equipment	QP Inspection Category	QP No. 5595- 001-QVI	QP Submis- sion SCH	QP Approval SCH	Proposed Sub Supplier	Country	SS Approval Status	SS Detail Sub-SCH	SS Approval SCH	Sub QR	Remark
89	Graphic Interface Unit	III				Forbes Marshall Codel ICE(Asia) Private India Rockwell Automation	Pune Mumbai	DR DR				
		III				Digital Instruments and Control System (Proface)	Bangalore	A				Proface Brand
		III				Red Lion	USA	A				
		III				Schneider Electric		A				
90	Hand Held Calibrator	III				Main contractor approved sources		A				Compatible with the Transmitter to be Supplied & Subject to meeting NTPC specification requirement
91	Heart Management System	III				Yokogawa	India	A				
		III				Emerson Process Mgmt	USA / Singapore / India	A				
		III				P & F	Germany / Bangalore	A				
		III				MTL	Chennai	A				
		III				Stahl	Germany	DR				
92	Impact Head Type Flow Element	II				Detrich / Emerson	USA	A			Sub QR	
		II				Midwest	USA	A				
		II				Veis Inc	USA	A				
		II				TM Technomatic SPA	Italy	DR				
93	Isolator	III				Main contractor approved sources						
94	Master Slave Clock System	II				Hopf	Germany	A				
		I				Serial	Chennai	A				
		II				Halfway	USA	A				
		II				Moser Baer AG	Switzerland	A				
		II				Mein Berg	Germany	A				
		I				Sands	Chennai	A				
		I				Masbus	Gandhinagar	A				
		I				Synsis & System	Chennai	DR				
95	Mosaic Tiles / Console Items	III				Pro-Plan	Germany	A				Earlier Boyko Surey Earlier SubMew
96	Network Components	III				Tew	Germany	A				
97	Online Mercury Analyzer	III				Main contractor approved sources						
		III				Durag	Bangalore	A			Sub QR	Main Contractor Can propose additional vendor for this item
		III				Mihak	Germany	DR				
		III				Thermo	USA	DR				
		III				Command	Austria	DR				
		III				Stantphone Zenitel	Norway	DR				
		III				Amuel	Russia	DR				
		III				Industrie Electronic GmbH and Co. KG	Germany	DR				
		III				LARADN Engineers and Consultants Pvt. Ltd.	Gurgaon	DR				
		III				Aishan Technologies India Pvt. Ltd.	Bangalore	DR				



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PROJECT : Patratu STPS Phase-I (3 X800MW)										LIST OF ITEMS REQUIRING QP			
PACKAGE : EPC PACKAGE										APPROVAL & ACCEPTABLE			
CONTRACTOR : BHEL Ltd										VENDOR AS APPROVED BY			
CONTRACT NO : CS-9585-001-2													
No.	Major Equipment	QP Inspected Category	QP No. 9585-001-QV	QP Submis sion SCH	QP Appro val SCH	Proposed Sub Supplier	Country	SS Approval Status	SS Detail Sub-SCH	SS Approval SCH	Sub OR	Remark	
98	Printer (Dot Matrix)	III				BHEL Approved Sources						Make	
99	Printer (Inkjet)	III				BHEL Approved Sources						Make	
100	Printer (Laser)	III				BHEL Approved Sources						Make	
101	Semaphore Indicators	III				Subview							
		III				K & N	Germany	A					
		III				ABB	Austria	A					
		III				ABB	Germany	A					
102	Synchronising Relay	III				Siemens	Germany	A					
		III				Siemens	Mumbai	A			Sub OR		
		III				Areva	Chennai	A					
		III				ABB	Bangalore	A					
103	Synchroscope	III				BHEL Approved Sources							
104	Ultrasonic Type Flow Meter (for Slack)	III				Mahak	Germany	A			Sub OR		
		III				Durag	Germany	A			Sub OR		
		III				Teledyne	USA	A					
		*				GE Sensing	USA	DR					
105	UPS / ACDB	I				EMERSON (DB Power)	Pune	A					
		I				Merlin & Gerin	France	A			Sub OR	Approved up to 105 kVA, 1ø	
		I				Gutur	Switzerland	A					
		I				AEG (Salt)	Germany	A					
		I				Hitachi Hirel	Gandhinagar	A					
		I				Emerson (Tala Liben)	Ambamath	A				Approved up to 150 kVA, 1ø	
		I				Fuji Electric	Japan	A				Approved up to 150 kVA, 1ø	
		*				Kellron	Kerala	DR					
		*				APC	India	DR					
		*				DUBAS ENGG-PVT LTD., BANGALORE		DR					
		*				Grid power conversion Pvt Ltd.		DR					
106	Vibration Monitoring System for BOP	II / I				Shinkawa	Japan	A			Sub OR		
	Refer Note - 1	II / I				Bentley Nevada	USA	A					
		II / I				Vibrometer	Switzerland	A					
		II / I				Rockwell Automation	USA	A					
		II / I				SKF	USA	A					
		I				GE	Pune	A				Refer Note - 1	
		I				Meggil	Bangalore	A				GE Benby, USA make System	
		I				Forbes Marshall	Pune	A				Vibromer, Switzerland make System	
		I				Rockwell Automation	Sahibabad	A				Shinkawa, Japan make System	
		*				Emerson	Mumbai	DR					
		*				Burel and Kajer		DR					
		*				IRD Mechanalysis	Mumbai	DR					
107	Volimeter	III				Rishabh	Nask	A			Sub OR		
		III				AE	Mumbai	A					
		III				Yokogawa	Japan	A					
		*				MECO		A					
108	Walhour Meters	III				LAT	Bangalore	DR					



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NTPC		PROJECT : Patratu STPS Phase-I (3 X800MW)				LIST OF ITEMS REQUIRING QP				REVISION NO : 00	
		PACKAGE : EPC PACKAGE				APPROVAL & ACCEPTABLE				DATE : 28.04.2017	
		CONTRACTOR : BHEL Ltd				VENDOR AS APPROVED BY					
		CONTRACT NO : CS-9555-001-2									
No.	Major Equipment	QP Inspect on Category	QP No. 9555-001-QV1	QP Submis sion SCH	QP Appro val SCH	Proposed Sub Supplier	Country	SS Approval Status	SS Detail Sub SCH	SS Approval Sub QR	Remark
		III				Elster	Mumbai	A			
		III				Secure Motors	Udaipur	A			
		III				Yokogawa	Japan	A			
		III				GEC	UK	A			
		III				Schneider Electric	India	DR			
		III				Lendis + Gyr	Kolkata	DR			
109	Wireless Solution (Microwave Tower Communication)	III				D Link	Goa	A			
		III				Sheetal	Pune	A			
		III				Pyrotech	Udaipur	A			
		III				Arya Communications	New Delhi	A			
		*				Lohus Wireless	Vishakhapatnam	DR			
		*				Avion	Israel	DR			
		*				Prudent Automation Pvt. Ltd.	Hyderabad	DR			
		*				AMG Systems Ltd.	UK	DR			
110	Large Video Screen (LED Based)	III				Della	Gurgaon	A			
		III				Barco	Noida	A			
		III				Planet System	USA	A			
		*				Christie	USA	DR			
		*				Evidis	Germany	DR			
111	CJC Box (if applicable)	III				Main Contractor will propose the vendors during detail Engineering.		DR			
112	3 D level Scanner for Solid Application	III				APM	ISRAEL	A			
113	Dust Sensor	III				BHEL Approved Sources		A			
114	Pulse jet Controller	III				Switching Circuit	Kolkata	A			
		III				Advance Concept	Kolkata	A			
		III				Control Devices	Kolkata	A			
		*				Volzcraft	Kolkata	DR			
115	Solid Mass Flow Meter	III				Micro System	Kolkata	DR			
		III				Schrenk	Ranchi	A			
		III				Thermofisher (Ramsay)	Nasik	A			
		III				Siemens Milltronics	Canada	A			
		III				Murec	Germany	A			
		III				SWR	Germany	A			
		III				E & H	Aurangabad	A			
116	Nuclear Density meter	III				Thermofisher Scientific	UK	A			
		*				Siemens	Germany	DR			
		*				EMERSON	USA	DR			
		*				GE Sensing	USA	DR			
		*				Benthold	Germany	DR			
117	Humidistat / Thermostat /	III				BHEL Approved Sources		A			
118	Gyresstat / Aursial	II				EIP Enviro	Noida	A			
	Level Switch (RF Type)	II				FLOW STAR	Fardabad	A			
		II				Nivo Controls	Indore	A			
		*				BHEL		DR			



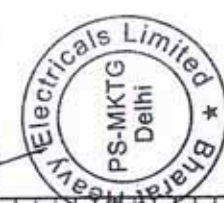
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NTPC		PROJECT : Patratu STPS Phase-I (3 X800MW)					LIST OF ITEMS REQUIRING QP					REVISION NO : 00	
		PACKAGE : EPC PACKAGE					APPROVAL & ACCEPTABLE					DATE : 20.04.2017	
		CONTRACTOR : BHEL Ltd					VENDOR AS APPROVED BY						
		CONTRACT NO : CS-9585-001-2											
No.	Major Equipment	QP Inspect on Category	QP No. 9585-001-Q	QP Submis sion SCH	QP Appro val SCH	Proposed Sub Supplier	Country	SS Approval Status	SS Detail Sub.SCH	SS Approval SCH	Sub QR	Remark	
119	Turbine supervisory instruments along with vibration analysis system.	II				GE BENTLY	USA	A					
	Refer Note - 1	II				MEGGITT (VIBROMETER)	SWITZERLAND	A					
		II				SHINKAWA	JAPAN	A					
		I				GE	Pune	A					
		I				MEGGITT (VIBROMETER)	Bangalore	A				For GE Bently, USA System	
		I				Forbes Marshall	Pune	A				For Meggit, Switzerland System	
		-				EMERSON	INDIA	DR					
		-				Bruel and Kjaer		DR					
		-				Rockwell Automation	Sahibabad	DR					
		-				SKF	USA / India	DR					
		-				BHEL EDN	Bangalore	DR					
120	SWAS (Sampling Handling System and Dry Panel)	I				Emerson Process Management	Navi Mumbai	A			Sub QR		
		I				Forbes Marshall	Pune	A					
		I				Low	UK	A					
		I				ABB	Bangalore	A				Conditional	
		I				Yokogawa	Bangalore	DR					
		I				Analysar Instrument Co. Ltd.	Kota	DR					
		-				Swam Equipment	Pune	A					
		-				Flow Line Instrument	Bangalore	DR					
		-				Instrumentation Limited	Kota	DR					
		-				Chemim Controls	Pondichery	DR					
121	SWAS Analyser (Chloride)	III				ABB	UK	A			Sub QR		
		III				Orion	USA	A				Orion Brand	
		-				DKK	Japan	DR					
122	SWAS Analyser (Conductivity)	III				Hach	Switzerland	A					
		III				Emerson Process Management	Navi Mumbai	A			Sub QR	Polymetron Brand	
		III				Yokogawa	Japan	A					
		III				ABB	UK	A					
		-				Honeywell	USA	DR					
		-				DKK	Japan	DR					
		-				Orion	USA	DR					
123	SWAS Analyser (Dissolved Oxygen)	III				Orion	USA	A			Sub QR	Orion Brand	
		III				Hach	Switzerland	A				Polymetron Brand	
		III				Emerson Process Management	USA	A					
		III				ABB	UK	A					
		-				Honeywell	USA	DR					
		-				DKK	Japan	DR					
		III				Hach	Switzerland	A			Sub QR	Polymetron Brand	
124	SWAS Analyser (Hydrazine)	III				Orion	USA	A				Orion Brand	
		III				ABB	UK	A					

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PROJECT : Patratu STPS Phase-I (3 X600MW)										LIST OF ITEMS REQUIRING QP APPROVAL & ACCEPTABLE				REVISION NO : 00		DATE : 26.04.2017	
PACKAGE : EPC PACKAGE										VENDOR AS APPROVED BY							
CONTRACTOR : IBHEL Ltd																	
CONTRACT NO : CS-9585-001-2																	
No.	Major Equipment	Inspect on Category	QP No. 9585-001-QM	QP Submis on SCH	QP Appro val SCH	Proposed Sub Supplier	Country	SS Approval Status	SS Detail Sub-SCH	SS Approval SCH	Sub QR	Remark					
125	SWAS Analyser (pH)	III				DKK	Japan	DR									
						Rosemount Analytical Inc Irvine		DR									
						ABB	UK	DR			Sub QR						
						Hach	Switzerland	A				Polymetron Brand					
						Emerson Process Management	Navi Mumbai	A									
						Yokogawa	Japan	A									
						Honeywell	USA	DR									
						DKK	Japan	DR									
126	SWAS Analyser (Phosphate)	III				Orion	USA	DR			Sub QR						
						Hach	Switzerland	A				Polymetron Brand					
						ABB	UK	A									
						DKK	Japan	DR									
						Orion	USA	DR									
127	SWAS Analyser (Silica)	III				Rosemount Analytical Inc Irvine		DR									
						Hach	Switzerland	A			Sub QR						
						ABB	UK	A				Polymetron Brand					
						DKK	Japan	DR									
						Orion	USA	DR									
128	SWAS Analyser (Sodium)	III				Rosemount Analytical Inc Irvine		DR									
						Hach	Switzerland	A			Sub QR						
						Orion	USA	A				Polymetron Brand					
						ABB	UK	A				Orion Brand					
						DKK	Japan	A									
129	SWAS Analyser (Turbidity)	III				ABB	UK	DR			Sub QR						
						Emerson	USA	A									
						WTW	Germany	A									
						E & H	Germany	A									
						DKK	Japan	A									
130	Operator Testing Simulator					Main Contractor will propose the vendors during detail Engineering.											
131	Concentration Analyser					Main Contractor will propose the vendors during detail Engineering.											
132	Electromagnetic Flow Meter	II				Krohne Marshall	Pune	A			Sub QR						
						E & H	Aurangabad	A									
						Emerson	Pawane	A									
						Yokogawa	Japan / China	DR									
						SIEMENS	Germany	DR				Only Ref list and catalogues to be submitted.					
133	Fiber Optic Generator End winding VMS	II				Vibro System INC	Canada	A									
						MC-Monitoring SA	Switzerland	A				Nola-6					
						ABB	Bangalore	A				H2 Gas Analyser Germany					
134	H2 Gas Analyser Cabinet	II				Adage Automation	Mumbai	A				H2 Gas Analyser Siemens					
						Yokogawa	Bangalore	A				Germany Model Cabomat-6					
						Siemens	India	A				H2 Gas Analyser from Yokogawa					
												H2 Gas Analyser Siemens					



1.10.11

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NTPC		PROJECT : Patratu STPS Phase-I (3 X800MW)				LIST OF ITEMS REQUIRING QP				REVISION NO : 00	
		PACKAGE : EPC PACKAGE				APPROVAL & ACCEPTABLE				DATE : 26.04.2017	
		CONTRACTOR : BHEL Ltd				VENDOR AS APPROVED BY					
		CONTRACT NO : CS-9585-001-2									
No.	Major Equipment	QP Inspect on Category	QP No. 9585-001-QVI	QP Submis sion Q	QP Appro val SCH	Proposed Sub Supplier	Country	SS Approval Status	SS Detail Sub.SCH	SS Approval Sub OR	Remark
135	Slight Flow Indicator	III				BHEL Approved Sources		A			
136	Ammonia Analyzer	*				Sick Mahlak	Germany	DR			
		*				Emerson Process Management	Pawane	DR			
		*				Siemens	Germany	DR			
		*				Fuji Electric	Japan	DR			
		*				Thermofisher	Mumbai	DR			
		*				Yokogawa	Banglore	DR			
		*				Dongwoo Opton		DR			
137	AAQMS	I				Environment SA India Pvt. Ltd.	Bangalore	A		Sub OR	Analysers for Environment SA, France : Multipoint Calibrator from M/s L N Industial, Switzerland and Metrollogical Sensors from M/s LSI Laslam SRL, Italy.
		I				Chemitrols	GOA	A			Analysers for Teledyne API, USA: Metrollogical Sensors & SPM from M/s Melone Instruments, USA.
		I				Therma Electron LLS India Pvt. Ltd.	Mumbai	A			Analysers for M/s Thermoevironmental Instruments Inc., USA & Metrollogical Sensors from M/s Melone Instruments, USA.
138	EOMS	*				Land Combustion	UK	DR		Sub OR	
		*				Thermofisher	India / USA	DR			
		*				SEPL	Pune	DR			
		*				AIGPL	Kota	DR			
		*				Nivco	Sural	DR			
		*				Thermofisher	Mumbai	DR			
		*				Thermax	Pune	DR			
139	RESIDUAL CHLORINE ANALYSER	III				Suprema Technology IE & II	Mumbai	DR			
						EMERSON PROCESS	GERMANY	A			
						HACII	PAWANE	A			
140	ORP ANALYZER	III				Emerson process	USA	A			
						ABB	USAPawane	A			
						HACH	UKUSA	A			
						Yokogawa	Switzerland	A			
						W&T	Japan	A			
141	CL2 Leak detector	III				Thermocable	Germany	A			
142	Fibre Scanner Cable	I				Delton cables	Hyderabad	A			
		I					Fardabad	A			



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Adm.
AMT YARN
mgc. mch.
RUEL

~~Prashant P. Patil~~
Prashant P. Patil
Dgm (CA-C&F)

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1.0 SYSTEM SUPPLIER / SUB SUPPLIER APPROVAL STATUS CATEGORY (SHALL BE FILLED BY NTPC)

A. For those items proposed vendor is acceptable to NTPC, subject to meeting the NTPC Specification requirement. To be indicated with letter "A" in the list alongwith the condition of approval, if any.

NOTED : For these items vendors are approved by Main Supplier and accepted by NTPC without specific vendor approval from NTPC. To be identified with "NOTED"

2.0 QP INSPECTION CATEGORY :

CAT - I : For those items the Quality Plans are approved by NTPC and final acceptance will be on physical inspection witness by NTPC

CAT - II : For those items the Quality Plans are approved by NTPC. However no physical inspection shall be done by NTPC. The final acceptance by NTPC shall be on the basis of review of documents.

UNITSWORKS : place of manufacturing- place of main supplier of multi units/works.

* - Inspection category will be decided during vendor evaluation.

NOTE - 1 : EMPTY CABINETS, COMPUTERS, SIGNAL ISOLATOR/MULTIPLIER, MCB, TB, POWER SUPPLY ETC. SHALL ALSO BE ACCEPTABLE FROM INDEGENOUS SOURCES AGREED BY NTPC IN QP. IF THE TOTAL INTEGRATED PANEL AND FAT IS CONDUCTED INDEGENOUSLY ITEM TO BE TREATED AS CAT - 1.

NOTE. 2: Mandatory Sapro will be treated as CAT.III

NOTE - 3 : For the items not appearing in the proward list, bidder and NTPC will mutually discussed in future.

NOTE - 4 : Integration testing of DICMIS shall be done with monitor connected to the LVS workstation. This would be tied up in the QAP/ATST. Dispatch of LVS can be allowed like a CAT-III item but only after successful testing of functionality as indicated in QP and completion of ATST of first unit.

NOTE - 5 : C&I Items Integral for skid,Fan, Motor,Pump etc Instrument shall be supplied as per OEM standard/ approved sources.

NOTE: -6: for instrumentation cable quantity less than 1 km of each type inspection category is III and for less than 2.5 km of each type inspection category is CAT-II
FORMAT NO.: QS-01-QALP-1/F3-R0
Engg. Div/O&I

SR. NO.	ITEM	SUB SYSTEM: CIVIL WORKS				NTPC DOC NO	REMARKS
		QAP / INSP. CAT	QAP NO.	PROPOSED SUB SUPPLIER	PLACE OF MANUFACTURING		
1.	CEMENT	III	-	BIS APPROVED SOURCES HAVING VALID BIS LICENCE	-	-	
2.	CONSTRUCTION CHEMICALS - ADMIXTURES, PLASTISIZERS, RETARDERS WATER PROOFING COMPOUNDS GROUTS	III	-	SIKA INDIA LTD CICO TECHNOLOGIES LTD FOSROC CHEMICALS (I) PVT LTD BASF	- - - -	N N N N	
3.	FALSE CEILING - GLASS REINFORCED GYPSUM SYSTEM, MINERAL FIBRE BOARD SYSTEM, PREPAINTED COIL COATED STEEL SYSTEM	III	-	SAINT GOBAIN HUNTER DOUGLASS TIGER STEEL INTERARCH LLOYD INSULATION MG INDUSTRIES ARM STRONG	NEW DELHI MUMBAI PUNE/MUMBAI NOIDA - FARIDABAD NEW DELHI	N N N N N N N	
4.	PAINT AND PAINTING SYSTEM	III	-	BERGER SHALIMAR PAINTS JENSON AND NICHOLSON KANSAL NEROLAC AKZO NOBEL ASIAN PAINTS	- - - - - -	N N N N N N	
5.	COLOUR COATED SHEET (FOR COIL)	I	-	UNION STEEL DONGBU STEEL BHUSHAN STEEL AND STRIPS LTD. ESSAR STEEL LTD NATIONAL STEEL AND AGRO	KOREA KOREA RAIGAD PUNE DHAR	A A A A A	

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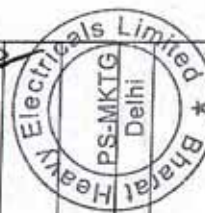
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A
 R
 C & M
 Depty
 Vaidy Ustapan Nigam Limited * (pub)
 PAKISTAN * Distt-Rawalpindi

Dr. J. H. H. H.

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SR. NO.	PROJECT: PATRATU STPP-I (3X800 MW) PACKAGE: EPC MAIN SUPPLIER: BHEL CONTRACT NO.: CS-9585-001-2 ITEM	LIST OF ITEMS REQUIRING QUALITY PLAN AND SUB-SUPPLIER APPROVAL				NTPC DOC		REMARKS
		SUB SYSTEM: CIVIL WORKS				NO	REV. NO.	
						DATE	05.04.2017	
QAP / INSP. CAT	QAP NO.	PROPOSED SUB SUPPLIER	PLACE OF MANUFACTURING	APPROVAL STATUS / CATEGORY				
I		JSW STEEL COATED PRODUCTS LTD	KAMLESHWAR	A	Formerly JSW ISPAT Steel Ltd			
		BHUSHAN STEEL LTD.	SAHIBABAD	A				
		JSW LTD	THANE	A				
		BHUSHAN POWER & STEEL LTD	SAMBALPUR (ODISHA)	A				
		TATA BLUESCOPE STEEL LTD	JAMSHEDPUR	A	*AL-ZN COIL FOR CLADDING			
		UNIMET PROFILES LIMITED	DHARUHERA	A				
		MULTICOLOUR STEEL INDIA LIMITED	GURGAON	A				
		ISOLLOYD	SOLAN	A				
		NATIONAL STEEL AND AGRO	DHAR	A				
		ERA BUILD SYS	RUDRAPUR	A				
II		TATA BLUE SCOPE	PUNE	A	HINJEWARI WORKS			
		TATA BLUE SCOPE	BHIWADI	A				
		PENNAR INDUSTRIES	ISNAPUR	A	FOR DECKING			
		PENNAR INDUSTRIES	TARAPUR	A	FOR CLADDING			
		METALKRAFT FORMING INDUSTRIES PVT. LTD.	MEDAK (AP)	A				
		BHUSHAN POWER & STEEL LTD	SAMBALPUR (ODISHA)	A				
		ALFA STEEL BUILDING SOLUTIONS	HOSUR	A				
		INDIANA GRATING	PUNE	A				
		PREMIER POWER PRODUCTS (CALCUTTA) PVT LTD	HOWRAH	A				
				A				
6.	PROFILERS FOR DECKING/ CLADDING SHEETS							
7.	ELECTROFORGED GRATING							



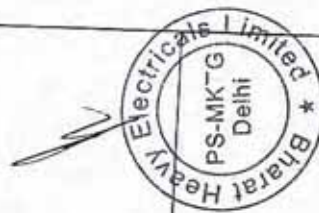
ANNEXURE-I

PROJECT: PATRATU STPP-1 (3X800 MW)		LIST OF ITEMS REQUIRING QUALITY PLAN AND SUB- SUPPLIER APPROVAL					NTPC DOC NO		0	
PACKAGE: EPC							REV. NO.		05.04.2017	
MAIN SUPPLIER: BHEL							DATE			
CONTRACT NO.: CS-9585-001-2										
ITEM										



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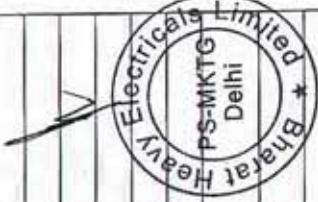
PROJECT: PATRATU STPP-I (3X800 MW)			LIST OF ITEMS REQUIRING QUALITY PLAN AND SUB- SUPPLIER APPROVAL				ANNEXURE-1	
PACKAGE: EPC			SUB SYSTEM: CIVIL WORKS				NTPC DOC NO	
MAIN SUPPLIER: BHEL							REV. NO.	
CONTRACT NO.: CS-9585-001-2							DATE	
ITEM							05.04.2017	
SR. NO.	QAP / INSP. CAT	QAP NO.	PROPOSED SUB SUPPLIER	PLACE OF MANUFACTURING	APPROVAL STATUS / CATEGORY	REMARKS		
15.	III		PERFECT ACID WARE	JABALPUR	N			
			BABA BAIKATH REFRACTORIES	PURULIA	N			
			NAVIAIR INTERNATIONAL LTD.	NEW DELHI	N			
			SHAKTI MET DOOR	HYDERABAD	N			
			SUPER STEEL	DELHI	N			
16.	III		SIGNUM FIRE PROTECTION	NAGPUR	N			
			RADIANT SAFE DOORS	AHMEDABAD	N			
17.	III		BIS APPROVED SOURCES HAVING VALID BIS LICENCE	-	-			
			HINDALCO	-	N			
			INDALCO	-	N			
			BALCO (VEDANTA)	-	N			
			NALCO	-	N			
18.	III		ALOM EXTRUSIONS LTD	-	N			
			JINDAL	-	N			
			STP	-	N			
			IWL INDIA LTD	-	N			
			LLOYDS	-	N			
19.	III		CICO TECHONOLGIES LTD	-	N			
			MK PETRO	-	N			
			PARRYWARE	-	N			
			HINDWARE	-	N			
			SEABIRD	-	N			
			ORIENT	-	N			

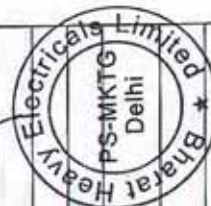


25/04/17

ANNEXURE-I

PROJECT: PATRATU STPP-I (3X800 MW)		LIST OF ITEMS REQUIRING QUALITY PLAN AND SUB-SUPPLIER APPROVAL					NTPC DOC NO
PACKAGE: EPC		SUB SYSTEM: CIVIL WORKS					REV. NO.
MAIN SUPPLIER: BHEL							0
CONTRACT NO.: CS-9585-001-2							05.04.2017
Sr. No.	ITEM	QAP / INSP. CAT	QAP NO.	PROPOSED SUB SUPPLIER	PLACE OF MANUFACTURING	APPROVAL STATUS / CATEGORY	REMARKS
				HINDUSTAN	-	N	
				CERA	-	N	
20.	CP BRASS TAP AND OTHER SANITARY FITTINGS	III	-	GEM	-	N	
				PARKO	-	N	
				JAGUAR	-	N	
				MARC	-	N	
21.	POLYTHENE WATER STORAGE TANKS	III	-	BIS APPROVED SOURCES HAVING VALID BIS LICENCE	-	-	
22.	RCC PIPES	III	-	BIS APPROVED SOURCES HAVING VALID BIS LICENCE	-	-	
23.	STOP LOG GATES, TRASH RACK AND LIFTING BEAM	I		GENERAL MECHANICAL WORKS	BARODA	A	
				TRIVENI	NOIDA	A	
				MACMET	KOLKATA	A	
				PRADEEP STRUCTURES	HOWRAH	A	
				RED FAB	HYDERABAD	A	
				L&T	KANCHIPURAM	A	
				BSBK ENGG	NOIDA	A	
24.	PTFE BEARING / ELASTOMERIC BEARING	III		ALL CURRENT MORTH / RDSO APPROVED VENDORS		-	
25.	FABRIC EXPANSION COMPENSATOR	I		KELD ELLENTOFT INDIA LTD	CHENNAI	A	
				EAGLE BURGMANN KE PRIVATE LTD	CHENNAI	A	
				FRENZELIT EXPANSION JOINT PVT. LTD	BANGALORE	A	
26.	MINERAL WOOL FOR THERMAL	I		ROCKWOOL INDIA LTD.	HYDERABAD	A	A*: subject to





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G. V. Babu. 05/04/17

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ANNEXURE-I

PROJECT: PATRATU STPP-I (3X800 MW)			LIST OF ITEMS REQUIRING QUALITY PLAN AND SUB- SUPPLIER APPROVAL				NTPC DOC NO	
PACKAGE: EPC			SUB SYSTEM: CIVIL WORKS				REV. NO.	0
MAIN SUPPLIER: BHEL							DATE	05.04.2017
CONTRACT NO.: CS-9585-001-2								
Sr. No.	ITEM	QAP / INSP. CAT	QAP NO.	PROPOSED SUB SUPPLIER	PLACE OF MANUFACTURING	APPROVAL STATUS / CATEGORY	REMARKS	
	INSULATION			PUNJSTAR INSULATION FIBRE COMPANY	BHILAI	A	carrying out K-value test at CBRI Roorkee / NTPC approved lab.	
				LAPINUS	MALANPUR (MP)	A*		
				MINWOOL	RAJANANDGAON	A*		
				LLOYD INSULATION	BHILAI	A*		
				SHREERAM EQUITECH PVT. LTD.	DURG	A		
				GOENKA ROOKWOOL (I) PVT. LTD.	RAIPUR	A		
				U.P. TWIGA	BULEND SHAHAR	A		
27.	CHIMNEY ELEVATOR*	I		MEKASTER ENGG. & EQPT (P) LTD., ALIKRAFT ENGINEERS PVT. LTD.	HALOL, GUJARAT SAVIL (VADODARA) PUNE	A		
28.	GEOTEXTILE	III		UNIVERSAL CONSTRUCTION MACHINERY & EQUIPMENTS GARWARE WALL ROPES Ltd	PUNE	N		
29.	GEOMEMBRANE (HDPE LINER)	II		TENCATE GEOSYNTHETICS ASIA	MALAYSIA	N		
	CI PIPES	III		D P WIRES PVT. LTD	RATLAM	A		
				CLIMAX SYTHETICS PVT. LTD	VADODARA	A		
				SHIVALIK AGROPOLY	PARWANOO	A		
30.	CI PIPES	III		BIS APPROVED SOURCES HAVING VALID BIS LICENCE				



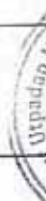
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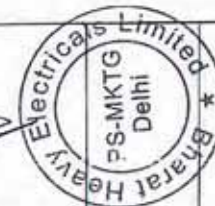
G.V. Rastogi .. 05/04/17

Signature

ANNEXURE-I

PROJECT: PATRATU STPP-I (3X800 MW)		LIST OF ITEMS REQUIRING QUALITY PLAN AND SUB- SUPPLIER APPROVAL				NTPC DOC NO	
PACKAGE: EPC		SUB SYSTEM: CIVIL WORKS				REV. NO. 0	
MAIN SUPPLIER: BHEL						DATE 05.04.2017	
CONTRACT NO.: CS-9585-001-2							
ITEM		QAP / INSP. CAT	QAP NO.	PROPOSED SUB SUPPLIER	PLACE OF MANUFACTURING	APPROVAL STATUS / CATEGORY	REMARKS
31.	GALVANISED STEEL STRUCTURES (FOR TRANSMISSION LINE, LATTICE & PIPE)	I		VIJAY TRANSMISSION LTD	RAIPUR	A	Subject to clearance of Provenness criteria for Transmission Line Structures
				UNITECH POWER TRANSMISSION LTD	NAGPUR	A	
				ASSOCIATED POWER STRUCTURES	VADODARA	A	
				R.S. INFRAPROJECTS PVT. LTD	SURAJPUR	A	
				NEW MODERN TECHNOMECH	MAYURBHANJ (ORRISA)	A	
				GOOD LUCK STEEL TUBES	SIKANDRABAD	A	
				UNIQUE STRUCTURES & TOWERS LTD.	RAIPUR	A	
				VATCO ELEC-POWER PVT. LTD.	NAVIMUMBAI (GALVANISING AT SIGMA GALVANISER NAVI MUMBAI)	A	
				R.S. INFRAPROJECTS PVT. LTD	GHAZIABAD	A	
				ADVANCE STEEL TUBE ,	SAHIBABAD	A	
				SANGAM STRUCTURES LTD.	ALLAHABAD	A	
				RICHARDSON & CRUDDAS (1972) LTD	NAGPUR	A	
32.	HIGH PERFORMANCE MOISTURE COMPATIBLE CORROSION RESISTANT COATING SYSTEM	III		CECRI LICENSED SOURCES		-	
33.	MS PIPES (IS:3589, WELDED PIPES)	III		BIS APPROVED SOURCES HAVING VALID BIS LICENCE		-	





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G.V. Patra 05/01/17

Signature

ANNEXURE-I

SR. NO.	PROJECT: PATRATU STPP-I (3X800 MW)	LIST OF ITEMS REQUIRING QUALITY PLAN AND SUB-SUPPLIER APPROVAL				NTPC DOC		REMARKS
		PACKAGE: EPC	SUB SYSTEM: CIVIL WORKS				NO	
		MAIN SUPPLIER: BHEL					REV. NO.	0
		CONTRACT NO.: CS-9585-001-2					DATE	05.04.2017
SR. NO.	ITEM	QAP / INSP. CAT	QAP NO.	PROPOSED SUB SUPPLIER	PLACE OF MANUFACTURING	APPROVAL STATUS / CATEGORY		
34.	Factory Fabricated Steel Structure (Subject to clearance of Provenness criteria)	I		JSW SEVERFIELD	BELLARY	A		
				CAPACITE STRUCTURES Ltd.	Paighar	A		
				ATMASTCO PVT LTD	DURG	A		
				Corefab Projects Pvt Ltd	Bhilai	A		
				Indiana Gratings Pvt Ltd	PURANDAR	A		Acceptable for Columns & Beams (maximum single piece size up to 15 MT)
				JINDAL STEEL & POWER LTD.	RAIGARH	A		
				JINDAL STEEL & POWER LTD.	Angul	A		
				ALLIANCE INTEGRATED METALIKS LTD	RAJPURA	A		
				MIURA INFRASTRUCTURE LTD.	BHILAI	A		Acceptable upto maximum single piece weight of 30 MT
				BHEL	RANIPET	DR		
				INTERARCH	PANT NAGAR	A		
				DEVASHISH INFRASTRUCTURE PVT. LTD	VADODARA	A		
				EVEREST STEEL	ROORKEE	A		
35.	PRE ENGINEERED BUILDINGS	I						



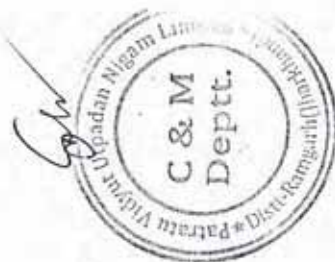
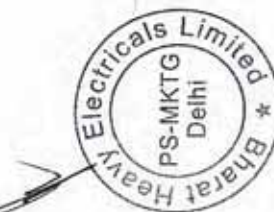
Amrinder



G.V. Babbar, 05/04/17, Page 8 of 9
(B.H.E.L.)

ANNEXURE-I

PROJECT: PATRATU STPP-I (3X800 MW)		LIST OF ITEMS REQUIRING QUALITY PLAN AND SUB- SUPPLIER APPROVAL				NTPC DOC NO	
PACKAGE: EPC		SUB SYSTEM: CIVIL WORKS				REV. NO. 0	
MAIN SUPPLIER: BHEL		PROPOSED SUB SUPPLIER				DATE 05.04.2017	
CONTRACT NO.: CS-9585-001-2		QAP / QAP INSP. NO. CAT				APPROVAL STATUS / CATEGORY	
SR. NO.	ITEM	REMARKS					
LEGENDS: 1. SYSTEM SUPPLIER/SUB-SUPPLIER APPROVAL STATUS CATEGORY (SHALL BE FILLED BY NTPC) A - For these items proposed vendor is acceptable to NTPC. To be indicated with letter "A" in the list along with the condition of approval, if any. DR - For these items "Details required" for NTPC review. To be identified with letter "DR" in the list. 'N' NOTED - For these items vendors are approved by Main Supplier and accepted by NTPC without specific vendor approval from NTPC. To be identified with 'NOTED.' 2. QP/INSPN CATEGORY: CAT-I : For these items the Quality Plans are approved by NTPC and the final acceptance will be on physical inspection witness by NTPC. CAT-II : For these items the Quality Plans approved by NTPC. However no physical inspection shall be done by NTPC. The final acceptance by NTPC shall be on the basis review of documents as per approved quality plan. CAT-III : For these items Main Supplier approves the Quality Plans. UNITS/ WORKS : Place of manufacturing Place of Main Supplier of multi units/works.							
NOTE 1: For the items placed in CAT-III for Civil Works, the review and final acceptance shall be done by NTPC-EIG/ FQA on the basis of MTC / certificate of conformance in line with Indicative FQP / Technical Specifications.							



G.V. Ravi. 05/04/17.
(G.V. RAJASEKHAR)
MANAGER - COMMERCIAL
BHEL - PSNR.

51.420/2020/PS-PEM-MSX P



TITLE:

**TECHNICAL SPECIFICATION FOR
CONDENSATE POLISHING UNIT**

2X660 MW KHURJA STPP

BHEL DOCUMENTS NO.: PE-TS-475-155-A001

VOLUME IIB

SECTION – IA

REV. NO. 00

DATE:

NOTE:

1. The sub vendor list above is indicative only and is subject to BHEL and Customer approval during detailed engineering stage without any commercial & delivery implication to BHEL.

Generally, the vendors who are already approved on NTPC as on date will be accepted. However, this will also be subject to final approval by NTPC/ Customer. In case the proposed vendor is not approved by NTPC/Customer, in that condition bidder shall submit the following back up documents:

- a) Documentation to show that the equipment /system has been supplied for a plant of similar or higher capacity.
 - b) End user performance certificate that the equipment/system has been operating satisfactorily for minimum two years as on the scheduled date of bid opening.
- Bidder to assess the capability of their proposed sub-vendors in terms of preparation of drawings, calculations, documents, quality assurance, supply of material etc. as per project schedule before placing the order on them.

2. The inspection category will be intimated after award of contract by BHEL/customer. However, the same will be adhered by the bidder without any commercial and delivery implication to BHEL/ customer.

51.420/2020/PS-PEM-MSX P



TITLE:

TECHNICAL SPECIFICATION FOR
CONDENSATE POLISHING UNIT

2X660 MW KHURJA STPP

BHEL DOCUMENTS NO.: PE-TS-475-155-A001

VOLUME IIB

SECTION – IA

REV. NO. 00

DATE:

ANNEXURE-III

FUNCTIONAL GUARANTEES AND LIQUIDATED DAMAGES



TITLE:

**TECHNICAL SPECIFICATION FOR
CONDENSATE POLISHING UNIT**
2X660 MW KHURJA STPP

BHEL DOCUMENTS NO.: PE-TS-475-155-A001

VOLUME IIB

SECTION – IA

REV. NO. 00

DATE:

FUNCTIONAL GUARANTEES, LIQUIDATED DAMAGES FOR SHORTFALL IN PERFORMANCE AND GUARANTEE TESTS

(The term "Performance Guarantees" wherever appears in this Sub-Section shall have the same meaning and shall be synonymous to "Functional Guarantees". Similarly, the term "Performance Tests" wherever appears in this Sub-Section shall have the same meaning and shall be synonymous to "Guarantee Test(s)". The term "TMCR" (Turbine maximum continuous rating) appearing in the Technical Specification shall mean 660 MW electrical power output at generator terminals (power at generator terminals as per clause indicated in this sub-section) under rated steam parameters, 0% cycle make-up and 77 mm Hg (abs) condenser pressure unless used in conjunction with a different cycle make-up and/or a different condenser pressure.

1.00.00 PERFORMANCE GUARANTEES

1.00.01 General Requirements

- a) The bidder shall guarantee that the equipment offered shall meet the ratings and performance requirements stipulated for various equipment covered in these specifications.
- b) The guaranteed performance parameters furnished by the Bidder in his offer, shall be without any tolerance values and all margins required for instrument inaccuracies and other uncertainties shall be deemed to have been included in the guaranteed figures
- c) The Contractor shall conduct performance test and demonstrate all the guarantees covered herein during functional guarantee / acceptance test. The various tests which are to be carried out during performance guarantee/acceptance test are listed in this Sub-section. The guarantee tests shall be conducted by the Contractor at site in presence of Employer on each unit individually.
- d) All costs associated with the tests including cost associated with the calibration shall be included in the bid price.
- e) It is the responsibility of the contractor to perform the Performance Guarantee/Acceptance test as specified in this subsection. The performance tests will be performed using only the normal number of Employer supplied operating staff. Contractor, vendor or other subcontractor personnel shall only be used for instructional purposes or data collection. At all times during the Performance Tests the emissions and effluents if any as per scope from the Plant shall not exceed the Guaranteed Emission and Effluent Limits.
- f) The Contractor shall make their system ready for the performance guarantee tests before start of initial operation.
- g) The instruments to be used for process control shall also be used for PG test. Minimum number of instruments to be used for PG test has been identified in respective P&IDs with accuracy class meeting the code requirement. All instruments required for performance testing shall be of the type and accuracy required by the ASME PTC code. Prior to the start of the initial operation, the contractor shall get these instruments calibrated in an independent test Institute approved by the Employer. All test instrumentation, Personal computer(s), necessary server and required interface, software for on line computation of test results & report as required for PG tests shall be supplied by the contractor and shall be retained by the Employer. Separate system shall be supplied for each unit. All calibration procedures and standards shall be subjected to the approval of the Employer. The protecting tubes, pressure connections and other test connections required for conducting guarantee test shall conform to the relevant codes.
- h) Tools and tackles, instruments/devices including flow devices, matching flanges, impulse piping & valves etc. and any special equipment, required for the successful completion of the tests, shall be provided by the contractor free of cost.
- i) The Performance / Acceptance test shall be carried out as per the agreed procedure. The PG test procedure including demonstration tests shall be submitted within 90 days of the date of Notification of Award and finalization of the PG test procedure shall be done within 180 days from the date of Notification of Award. After the conductance of Performance test, the preliminary test results shall be calculated automatically by the server/software provided by



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the contractor. The correction curves approved by the employer shall be fed/inbuilt in the PG test program/software. Preliminary test reports shall be submitted to the Employer instantly after completing each test run. The contractor shall also submit the detailed test evaluation report of Performance test results to Employer promptly but not later than one months from the date of conductance of Performance test.

The PG test procedures shall be submitted for equipment/ system & subsystem under Contractor's scope for all Guarantees under category I, II & III as per latest International codes / standard meeting the specification requirements. The procedure shall also include correction curves, detailed activity plan of conductance of test and sample calculations.

- j) The Contractor shall submit for Employer's approval the detailed Performance Test procedure containing the following:
- Object of the test.
 - Various guaranteed parameters & tests as per contract.
 - Method of conductance of test and test code.
 - Duration of test, frequency of readings & number of test runs.
 - Method of calculation.
 - Correction curves and respective equations for graphs to be fed for the online computation
 - Instrument list consisting of range, accuracy, least count, and location of instruments along with reference approved P&IDs.
 - Scheme showing measurement points.
 - Sample calculation.
 - Acceptance criteria.
 - Any other information required for conducting the test.

- k) In case during performance guarantee tests it is found that the equipment/system has failed to meet the guarantees, the Contractor shall carry out all necessary modifications and/or replacements to make the equipment/system comply with the guaranteed requirements at no extra cost to the Employer and re-conduct the performance guarantee test(s) with Employer's consent. However, if the specified performance guarantee(s) are still not met but are achieved within the Acceptable Shortfall Limit specified at clause 1.01.02 of this subsection, Employer will accept the equipment/system/plant after levying liquidated damages as per clause 1.01.02 of this sub-section. If, however, the demonstrated guarantee(s) continue to be more than the stipulated Acceptable Shortfall Limit, even after the above modifications/replacements within ninety (90) days or a reasonable period allowed by the Employer, after the tests have been completed, the Employer will have the right to either of the following:

- (i) For Category-I Guarantees

Reject the equipment / system / plant and recover from the Contractor the payments already made

OR

Accept the equipment /system/ plant after levying Liquidated Damages as specified hereunder. The liquidated damages for shortfall in performance indicated in clause 1.01.02 of this sub-section shall be levied separately for each unit. The liquidated damages shall be prorated for the fractional parts of deficiencies. The performance guarantees coming under this category are called 'Category-I' Guarantees.

- (ii) For Category-II Guarantees

Reject the equipment / system/ plant and recover from the Contractor the payments already made. The performance guarantees under this category shall be called 'Category-II' Guarantees. Conformance to the performance requirements under Category-II is mandatory.

- (iii) For Category-III Guarantees

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Reject the equipment /system / plant and recover from the Contractor the payments already made.

OR

Accept the equipment/system after assessing the deficiency in respect of the various ratings, performance parameters and capabilities and recover from the contract price an amount equivalent to the damages as determined by the Employer. Such damages shall, however be limited to the cost of replacement of the equipment(s) / system(s), replacement of which shall remove the deficiency so as to achieve the guaranteed performance. These parameters/capacities shall be termed as Category-III Guarantees.

1.01.00 GUARANTEES UNDER CATEGORY I

NIL

1.02.00 GUARANTEES UNDER CATEGORY II

NIL

1.03.00 GUARANTEES UNDER CATEGORY III

CONDENSATE POLISHING PLANT

1.03.01 Following shall be guaranteed by the Bidder in the relevant Guarantee Schedule of the Bid Document and falls under “GUARANTEE UNDER CATEGORY –III”:

- 1.0 All the design parameters at clause no 4.0 of Section IA, i.e. the effluent quality, the design flow, design service length and Pressure drop across the resin bed in clean and dirty condition at rated design flow shall be guaranteed by the Bidder

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ANNEXURE IV**DRAWING/ DOCUMENTS REQUIREMENT & DISTRIBUTION SCHEDULE**

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After award of LOI, the drawing documents listed in MDL are minimum drawing/documents, which shall be submitted by the bidder for BHEL and Customer approval. However, any additional drawing/document if found necessary for completion of the engineering, the same shall be submitted by bidder without any commercial & delivery implication to BHEL.

The bidder has to submit the revised drawing/document along with the compliance sheet indicating enumerate reply to all BHEL and customer comments or observations. Without compliance sheet the submission of the drawings/documents will not be considered and the delay on this account will be solely on bidder's side only. Bidder to comply with the observations of the BHEL and CUSTOMER without price & delivery implication.

Every revised submission incorporating BHEL/Customer comments shall be resubmitted within 7 days by bidder.

Bidder further confirmed that drawings submitted shall be complete in all respects with revised drawing submitted incorporating all comments. Any incomplete drawing submitted shall be treated as non-submission with delays attributable to bidder's account. For any clarification/ discussion required to complete the drawings, the bidder shall himself depute his personal to BHEL for across the table discussions/ finalizations/ submissions of drawings.

- List and schedule of drawings/documents to be submitted after award of contract shall be as per MDL.
- Bidder to note that drawings/documents submission shall be through web based Document Management System. Bidder would be provided access to the DMS for drawings/documents approval and adequate training for the same. Detailed methodology would be finalized during the kick-off meeting. Bidder to ensure following at their end.
 - Internet explorer version – Minimum Internet Explorer 7
 - Internet speed – 2 mbps (Minimum preferred)
 - Pop ups from our external DMS IP (124.124.36.198) should not be blocked
 - Vendor's internal proxy setting should not block DMS application's link
 - (<http://124.124.36.198/wrenchwebaccess/login.aspx>)
 - DMS user manuals to be used by BHEL PEM vendors for uploading, viewing, revising, commenting and tracking documents on PEM's DMS have been uploaded on PEM internet website (www.bhelpem.com) under the Vendor session.
 - For quick access bidder may refer the link <http://bhelpem.com/DMSManuals/DMSManuals.html>
- Bidder shall submit soft copy/hard copy/CD ROMs of all the finally approved drawings and O&M Manuals as required by Customer/Customer consultant/BHEL-site/BHEL-PEM. The exact number of hard copies/CD ROMs of these documents to be submitted shall be notified to the bidder at the time of detailed engineering and bidder shall submit the same without any commercial/delivery implications to BHEL/Customer.
- All the drawing documents along with the O&M manual (of all the revisions) are necessarily to be submitted in soft copies in addition to hard copies.
- Bidder to submit soft copies of all the drawing and document along with quality plans for BHEL review and approval.
- Editable copy of all the drawings and documents shall be provided.
- The date of submission of drawing documents shall be considered as the date of submission of hard and soft copies whichever is later.
- All the drawings shall be prepared on computer auto cad and other documents (like datasheet etc.) on MS office software. Bidder not complying to the requirement shall not be considered. For the execution of the contract regular meeting (generally once in 15 days or as per project requirement) is required.
- Vendor to come for meeting with the concerned dealing persons as per BHEL or customer requirement in a short notice.
- Bidder to submit instrument schedule, cable schedule and valve schedule in MS- Excel format during detailed engineering.

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- Bidder to also furnish the auto cad copy/MS-Excel/MS-word (as applicable) of the following documents after award of contract. However, any other auto cad copy/MS-Excel/MS-word of any other document as per the insistence of BHEL and customer will also be submitted by the bidder without any delivery and commercial implication to BHEL and customer.

- P&IDs.
- Equipment lay out of CPU Plant.
- Equipment Cable tray layout of CPU Plant.
- Civil assignment drawings.
- Piping lay out drawing of CPU Plant.

Other requirements

- Engineering for this project is to be carried out in Integrated Intelligent Engineering environment at BHEL end. The engineering platform on which BHEL is doing the project is based on Smart Plant Suite. This is being done to have automated interface checking and thereby minimising rework at site. Hence in line with above, bidder shall provide necessary support with respect to detailed piping drawing, isometric drawing, etc. as and when required during detail engineering.
- Successful bidder shall furnish detailed erection manual for each of the equipment as well as complete system supplied under this contract at least 3 months before the scheduled erection of the concerned equipment / component or along with supply of concerned equipment / component whichever is earlier.
- Document approval by customer under Approval category or information category shall not absolve the vendor of their contractual obligations of completing the work as per specification requirement. Any deviation from specified requirement shall be reported by the vendor in writing and require written approval. Unless any change in specified requirement has been brought out by the vendor during detail engineering in writing while submitting the document to customer for approval, approved document (with implicit deviation) will not be cited as a reason for not following the specification requirement.
- In case vendor submits revised drawing after approval of the corresponding drawing, any delay in approval of revised drawing shall be to vendor's account and shall not be used as a reason for extension in contract completion. However, in case changes are necessitated due to any constraints at customer end, delay in review/ approval of such revised drawing beyond one month will be to customer's account.

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MASTER DRAWING LIST (MDL)

S.No.	BHEL Drawing No	NTPC Drawing No	Drawing Title	No. Of Weeks for Document Submission After Placing LOI/LOA
1.	PE-V0-475-155A-A001	9915-371-110-PEM-PVM-F-165	P & I DIAGRAM OF CONDENSATE POLISHING UNIT (LEGENDS)	4
2.	PE-V0-475-155A-A001-1	9915-371-110-PEM-PVM-F-166	P & I DIAGRAM OF CONDENSATE POLISHING PLANT (CPP)	4
3.	PE-V0-475-155A-A001-2	9915-371-110-PEM-PVM-F-167	P & I DIAGRAM OF CONDENSATE POLISHING PLANT (CPP)	4
4.	PE-V0-475-155A-A001-3	9915-371-110-PEM-PVM-F-168	P & I DIAGRAM OF REGENERATION SYSTEM OF CPP	4
5.	PE-V0-475-155A-A006	9915-371-110-PEM-PVM-G-175	OPERATION & CONTROL PHILOSOPHY FOR CPU	4
6.	PE-V0-475-155A-A004	9915-371-110-PEM-PVM-U-171	PROCESS CALCULATION AND EQUIPMENT SIZING FOR CPP	4
7.	PE-V0-475-155A-A004-1	9915-371-110-PEM-PVM-U-172	THICKNESS CALCULATION FOR PRESSURE VESSEL FOR CPP	4
8.	PE-V0-475-155A-A004-2	9915-371-110-PEM-PVM-U-173	PRESSURE DROP CALCULATION FOR CPP	4
9.	PE-V0-475-155A-A005	9915-371-110-PEM-PVM-W-174	SUB-VENDOR LIST AND INSPECTION CRITERIA	4
10.	PE-V0-475-155A-A004-3	9915-371-110-PEM-PVM-Y-177	DATASHEET OF RESIN	6
11.	PE-V0-475-155A-A048	9915-371-110-PEM-PVI-G-218	ALARM AND ANNUNCIATION LIST	6
12.	PE-V0-475-155A-A002	9915-371-110-PEM-PVM-F-169	EQUIPMENT LAYOUT OF CONDENSATE POLISHING UNIT (SERVICE VESSEL AREA)	6
13.	PE-V0-475-155A-A003	9915-371-110-PEM-PVM-F-170	EQUIPMENT LAYOUT OF CONDENSATE POLISHING UNIT (REGENERATION AREA)	6
14.	PE-V0-475-155A-A050	9915-371-110-PEM-PVM-H-220	VALVE SCHEDULE (VALVE LIST) FOR CPP	8
15.	PE-V0-475-155A-A015	9915-371-110-PEM-QVE-Q-184	QP FOR CONTROL CABLE FOR CPU	8
16.	PE-V0-475-155A-A124	9915-371-110-PEM-PVI-G-283	INSTRUMENTS SCHEDULE FOR FOR CPP	8
17.	PE-V0-475-155A-A122	9915-371-110-PEM-PVM-H-281	PAINTING SCHEDULE FOR CPU	8
18.	PE-V0-475-155A-A018		WPS FOR DM WATER STORAGE TANK FOR CPU	8
19.	PE-V0-475-155A-A019		WPS FOR MS PIPE (IS: 1239/3589) AT SITE FOR CPU	8

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20.	PE-V0-475-155A-A044		WPS FOR SS PIPES AT SITE FOR CPU	8
21.	PE-V0-475-155A-A045	9915-371-110-PEM-PVE-Y-215	Data Sheet of Motorized Butterfly Valve	10
22.	PE-V0-475-155A-A021	9915-371-110-PEM-PVI-Y-190	DATASHEET AND GA OF ANALYSER RACK/PANEL	10
23.	PE-V0-475-155A-A022	9915-371-110-PEM-PVI-Y-191	DATA SHEET FOR ELECTRONIC TRANSMITTERS	10
24.	PE-V0-475-155A-A023	9915-371-110-PEM-PVI-Y-192	DATA SHEET FOR LEVEL TRANSMITTER - ULTRASONIC	10
25.	PE-V0-475-155A-A024	9915-371-110-PEM-PVI-Y-193	DATASHEET OF SOLENOID VALVES	10
26.	PE-V0-475-155A-A025	9915-371-110-PEM-PVI-Y-194	DATA SHEET FOR AIR FILTER REGULATOR	10
27.	PE-V0-475-155A-A026	9915-371-110-PEM-PVI-Y-195	DATA SHEET FOR PH ANALYSER	10
28.	PE-V0-475-155A-A027	9915-371-110-PEM-PVI-Y-196	DATA SHEET FOR SODIUM ANALYSER	10
29.	PE-V0-475-155A-A028	9915-371-110-PEM-PVI-Y-197	DATA SHEET FOR CONDUCTIVITY ANALYSER	10
30.	PE-V0-475-155A-A030	9915-371-110-PEM-PVI-Y-199	DATA SHEET FOR PNEUMATIC OPERATED CONTROL VALVES FOR CPP	10
31.	PE-V0-475-155A-A031	9915-371-110-PEM-PVI-Y-200	DATA SHEET OF LIR FOR INSTRUMENTS FOR CPP	10
32.	PE-V0-475-155A-A049	9915-371-110-PEM-PVM-H-219	PIPING SCHEDULE (LINE LIST) FOR CPP	10
33.	PE-V0-475-155A-A014	9915-371-110-PEM-QVM-Q-183	MQP FOR BUTTERFLY VALVE (MANUAL/PNEUMATIC/MOTOR OPERATED)	10
34.	PE-V0-475-155A-A123	9915-371-110-PEM-PVI-G-282	I/O LIST AND DRIVE LIST	10
35.	PE-V0-475-155A-A119	9915-371-110-PEM-PVM-H-279	CIVIL SCOPE OF SERVICE VESSEL AERA	10
36.	PE-V0-475-155A-A127	9915-371-110-PEM-PVM-H-285	CIVIL SCOPE DRG FOR REGN AREA	10
37.	PE-V0-475-155A-A138	9915-371-110-PEM-PVM-Y-296	DATASHEET AND GA OF PRE-FILTERS	10
38.	PE-V0-475-155A-A088	9915-371-110-PEM-QVM-Q-256	MQP FOR HORIZONTAL CENTRIFUGAL PUMPS (M/s SAM TURBO MAKE)	10
39.	PE-V0-475-155A-A089	9915-371-110-PEM-QVM-Q-257	MQP FOR ELECTRIC ACTUATOR (WITH GEAR BOX)	10
40.	PE-V0-475-155A-A092	9915-371-110-PEM-QVM-Q-258	MQP FOR HEMI HEADS (PETAL & CROWN IN MOCKUP CONDITION/HEMIHEADS)	10
41.	PE-V0-475-155A-A093	9915-371-110-PEM-QVM-Q-259	MQP FOR PRESSURE VESSEL (OTHER THAN SERVICE VESSEL)	10

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42.	PE-V0-475-155A-A094	9915-371-110-PEM-QVM-Q-260	MQP FOR ATMOSPHERIC TANKS/OPEN TANKS/IRU/PRIMING CHAMBER	10
43.	PE-V0-475-155A-A095	9915-371-110-PEM-QVM-Q-261	MQP FOR ALKALI/ ACID STORAGE TANKS/HOT WATER TANK	10
44.	PE-V0-475-155A-A096	9915-371-110-PEM-QVM-Q-262	MQP FOR HORIZONTAL CENTRIFUGAL PUMPS	10
45.	PE-V0-475-155A-A098	9915-371-110-PEM-QVM-Q-263	MQP FOR HORIZONTAL CENTRIFUGAL PUMPS (RUBBERLINED)	10
46.	PE-V0-475-155A-A099	9915-371-110-PEM-QVM-Q-264	MQP FOR POLYPROPLENE ACID/ALKALI UNLOADING PUMP(HORIZONTAL)	10
47.	PE-V0-475-155A-A100	9915-371-110-PEM-QVM-Q-265	MQP FOR METERING PUMPS (DIAPHRAGM TYPE)	10
48.	PE-V0-475-155A-A101	9915-371-110-PEM-QVM-Q-266	MQP FOR AIR BLOWER (LOBE TYPE)	10
49.	PE-V0-475-155A-A102	9915-371-110-PEM-QVM-Q-267	MQP FOR RUBBER LINING	10
50.	PE-V0-475-155A-A103	9915-371-110-PEM-QVM-Q-268	MQP FOR FABRICATION OF HIGH PRESSURE PIPES & FITTINGS	10
51.	PE-V0-475-155A-A105	9915-371-110-PEM-QVM-Q-269	MQP FOR BUTTERFLY VALVES (MANUAL & PNEU/ELEC) 150 LBS	10
52.	PE-V0-475-155A-A106	9915-371-110-PEM-QVM-Q-270	MQP FOR LT POWER CABLES AS PER IS:1554 (PART-1)	10
53.	PE-V0-475-155A-A107	9915-371-110-PEM-QVM-Q-271	MQP FOR DIAPHRAGM VALVE (MANUAL/PNEU.)	10
54.	PE-V0-475-155A-A109	9915-371-110-PEM-QVM-Q-272	MQP FOR DUAL PLATE TYPE VALVES(SS & CI CLASS 150)	10
55.	PE-V0-475-155A-A111	9915-371-110-PEM-QVM-Q-273	MQP FOR BALL VALVE (UPTO PN 10) (CAT III ITEM- QP IS NOT APPLICABLE)	10
56.	PE-V0-475-155A-A112	9915-371-110-PEM-QVM-Q-274	MQP FOR AGITATOR WITH MOTOR	10
57.	PE-V0-475-155A-A113	9915-371-110-PEM-QVM-Q-275	MQP FOR MS PIPES (IS:1239 & 3589)	10
58.	PE-V0-475-155A-A115	9915-371-110-PEM-QVM-Q-276	MQP FOR CS PIPE(ASTM A 106 GR B)	10
59.	PE-V0-475-155A-A116	9915-371-110-PEM-QVM-Q-277	MQP FOR SS PIPES (ERW/SEAMLESS)	10
60.	PE-V0-475-155A-A118	9915-371-110-PEM-QVM-Q-278	MQP FOR PRE-ASSEMBLY OF SKIDS FOR REGENERATION AREA FOR CPU	10
61.	PE-V0-475-155A-A008	9915-371-110-PEM-PVI-G-178	LIST OF 230V AC UPS LOAD (FOR CPP)	12
62.	PE-V0-475-155A-A007-1	9915-371-110-PEM-PVI-Q-177	HOOK UP & INSTALLATION DRAWING FOR INSTRUMENTS FOR CPP	12

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63.	PE-V0-475-155A-A009	9915-371-110-PEM-PVI-S-179	POWER DISTRIBUTION SCHEME-230 VAC. FOR CPP SYSTEM	12
64.	PE-V0-475-155A-A020	9915-371-110-PEM-PVI-B-189	GA OF AC & DC POWER DISTRIBUTION BOARD (FOR CPP)	12
65.	PE-V0-475-155A-A017	9915-371-110-PEM-PVI-P-186	HMI - LOGS, TRENDS AND BAR CHARTS FOR CPP	12
66.	PE-V0-475-155A-A033	9915-371-110-PEM-PVM-B-199	GA DRAWING OF SERVICE VESSEL	12
67.	PE-V0-475-155A-A032	9915-371-110-PEM-PVM-B-201	GA DRAWING OF DM WATER STORAGE TANKS	12
68.	PE-V0-475-155A-A034	9915-371-110-PEM-PVM-B-203	GA DRAWING OF REGENERATION VESSELS	12
69.	PE-V0-475-155A-A035	9915-371-110-PEM-PVM-B-204	GA DRAWING OF ACID STORAGE TANK	12
70.	PE-V0-475-155A-A036	9915-371-110-PEM-PVM-B-205	GA DRAWING OF ALKALI STORAGE TANK	12
71.	PE-V0-475-155A-A037	9915-371-110-PEM-PVM-B-206	GA DRAWING OF ACID MEASURING TANK	12
72.	PE-V0-475-155A-A038	9915-371-110-PEM-PVM-B-208	GA DRAWING OF ALKALI PREPARATION TANK	12
73.	PE-V0-475-155A-A039	9915-371-110-PEM-PVM-B-209	GA DRAWING OF ALKALI DAY TANK	12
74.	PE-V0-475-155A-A040	9915-371-110-PEM-PVM-B-210	GA DRAWING OF AC FILTER FOR ALKALI	12
75.	PE-V0-475-155A-A041	9915-371-110-PEM-PVM-B-211	GA DRAWING OF HOT WATER TANK	12
76.	PE-V0-475-155A-A042	9915-371-110-PEM-PVM-B-212	GA DRAWING OF PRIMING TANK OF NEUTRALISATION PIT	12
77.	PE-V0-475-155A-A043	9915-371-110-PEM-PVM-B-213	GA DRAWING OF LIME TANK OF NEUTRALISATION PIT	12
78.	PE-V0-475-155A-A046	9915-371-110-PEM-PVM-B-216	GA FOR RESIN MAKE-UP HOPPER	12
79.	PE-V0-475-155A-A047	9915-371-110-PEM-PVM-B-217	GA FOR RESIN TRANSFER WASTE WATER COLLECTION SUMP (IF APPLICABLE)	12
80.	PE-V0-475-155A-A051	9915-371-110-PEM-PVM-H-221	INTERCONNECTION SCHEDULE FOR CPP	12
81.	PE-V0-475-155A-A125	9915-371-110-PEM-PVI-G-284	INSTRUMENTATION CABLE LIST & ICS FOR CPP	12
82.	PE-V0-475-155A-A059	9915-371-110-PEM-PVM-Y-229	DATA SHEET OF AC FILTER MEDIA	12
83.	PE-V0-475-155A-A060	9915-371-110-PEM-PVM-Y-230	DATA SHEET ALONG WITH GA OF PLUG VALVE	12
84.	PE-V0-475-155A-A061	9915-371-110-PEM-PVM-Y-231	DATA SHEET ALONG WITH GA OF DUAL PLATE VALVE	12
85.	PE-V0-475-155A-A063	9915-371-110-PEM-PVM-Y-232	DATA SHEET ALONG WITH GA OF BALL VALVE (MANUAL)	12

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86.	PE-V0-475-155A-A064	9915-371-110-PEM-PVM-Y-233	DATA SHEET ALONG WITH GA OF BALL VALVE (AUTO)	12
87.	PE-V0-475-155A-A065	9915-371-110-PEM-PVM-Y-234	DATA SHEET ALONG WITH GA OF HIGH PR BALL VALVE (MANUAL)	12
88.	PE-V0-475-155A-A066	9915-371-110-PEM-PVM-Y-235	DATA SHEET ALONG WITH GA OF HIGH PR BALL VALVE (AUTO)	12
89.	PE-V0-475-155A-A068	9915-371-110-PEM-PVM-Y-236	DATA SHEET ALONG WITH GA, C/S AND CH. CURVE OF REGENERATION PUMPS	12
90.	PE-V0-475-155A-A069	9915-371-110-PEM-PVM-Y-237	DATA SHEET ALONG WITH GA, C/S AND CH. CURVE OF ACID UNLOADING PUMPS	12
91.	PE-V0-475-155A-A070	9915-371-110-PEM-PVM-Y-238	DATA SHEET ALONG WITH GA, C/S AND CH. CURVE OF ALKALI UNLOADING PUMPS	12
92.	PE-V0-475-155A-A071	9915-371-110-PEM-PVM-Y-239	DATA SHEET ALONG WITH GA, C/S AND CH. CURVE OF EFFLUENT DISPOSAL PUMPS	12
93.	PE-V0-475-155A-A072	9915-371-110-PEM-PVM-Y-240	DATA SHEET ALONG WITH GA, C/S AND CH. CURVE OF METERING PUMPS (ALKALI)	12
94.	PE-V0-475-155A-A073	9915-371-110-PEM-PVM-Y-241	DATA SHEET ALONG WITH GA, C/S AND CH. CURVE OF METERING PUMPS (ACID)	12
95.	PE-V0-475-155A-A074	9915-371-110-PEM-PVM-Y-242	DATA SHEET ALONG WITH GA, C/S OF BLOWERS OF SERVICE AREA	12
96.	PE-V0-475-155A-A075	9915-371-110-PEM-PVM-Y-243	DATA SHEET ALONG WITH GA, C/S OF BLOWERS OF REGENERATION AREA	12
97.	PE-V0-475-155A-A076	9915-371-110-PEM-PVM-Y-244	DATA SHEET OF SAFETY SHOWERS	12
98.	PE-V0-475-155A-A077	9915-371-110-PEM-PVM-Y-245	DATA SHEET OF AGITATORS FOR ALKALI PREPARATION AND ALKALI DAY TANK	12
99.	PE-V0-475-155A-A079	9915-371-110-PEM-PVM-Y-247	DATA SHEET ALONG WITH GA OF DIAPHRAGM VALVE (MANUAL)	12
100.	PE-V0-475-155A-A080	9915-371-110-PEM-PVM-Y-248	DATA SHEET ALONG WITH GA OF DIAPHRAGM VALVE (AUTO)	12
101.	PE-V0-475-155A-A081	9915-371-110-PEM-PVM-Y-249	DATA SHEET ALONG WITH GA OF BUTTERFLY VALVE (MANUAL)	12
102.	PE-V0-475-155A-A082	9915-371-110-PEM-PVM-Y-250	DATA SHEET ALONG WITH GA OF BUTTERFLY VALVE (AUTO)	12
103.	PE-V0-475-155A-A083	9915-371-110-PEM-PVM-Y-251	DATA SHEET ALONG WITH GA OF HIGH PR BUTTERFLY VALVE (MANUAL)	12
104.	PE-V0-475-155A-A084	9915-371-110-PEM-PVM-Y-252	DATA SHEET ALONG WITH GA OF HIGH PR BUTTERFLY VALVE (AUTO)	12
105.	PE-V0-475-155A-A085	9915-371-110-PEM-PVM-Y-253	DATA SHEET ALONG WITH GA, C/S AND CH. CURVE OF ALKALI	12

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			TRANSFER PUMPS	
106.	PE-V0-475-155A-A086	9915-371-110-PEM-PVM-Y-254	DATA SHEET ALONG WITH GA, C/S AND CH. CURVE OF DM WATER PUMPS FOR RESIN TRANSFER	12
107.	PE-V0-475-155A-A087	9915-371-110-PEM-PVM-Y-255	DATA SHEET ALONG WITH GA, C/S AND CH. CURVE OF RESIN TRANSFER WASTE WATER RECYCLE PUMPS	12
108.	PE-V0-475-155A-A037-1	9915-371-110-PEM-PVI-F-207	CABLE TRAY/TRENCH & CONDUIT ROUTING DIAGRAM FOR CONDENSATE POLISHING UNIT(SERVICE VESSEL AREA)	14
109.	PE-V0-475-155A-A129	9915-371-110-PEM-PVE-H-287	CABLE SCHEDULE (POWER) FOR CPU	14
110.	PE-V0-475-155A-A078	9915-371-110-PEM-PVM-Y-246	DATA SHEET AND GA FOR JUNCTION BOX / ANALYZER PANEL AND JB LAYOUT	14
111.	PE-V0-475-155A-A121	9915-371-110-PEM-PVM-Y-280	DATA SHEET OF MOTORS FOR CPP	14
112.	PE-V0-475-155A-A011	9915-371-110-PEM-PVI-T-180	CONTROL LOGICS FOR CPP	16
113.	PE-V0-475-155A-A052	9915-371-110-PEM-PVM-P-222	EXTERNAL PIPING LAYOUT FROM CPP SERVICE VESSELS TO REGENERATION AREA	16
114.	PE-V0-475-155A-A053	9915-371-110-PEM-PVM-P-223	EXTERNAL PIPING LAYOUT IN REGENERATON AREA	16
115.	PE-V0-475-155A-A054	9915-371-110-PEM-PVM-P-224	PIPING LAYOUT AROUND SERVICE VESSELS	16
116.	PE-V0-475-155A-A055	9915-371-110-PEM-PVM-P-225	INTERNAL PIPING LAYOUT IN REGENERATION BUILDING	16
117.	PE-V0-475-155A-A056	9915-371-110-PEM-PVM-P-226	YARD PIPING FROM N-PIT TO ASH SLURRY SUMP	16
118.	PE-V0-475-155A-A130	9915-371-110-PEM-PVE-F-288	EARTHING LAYOUT OF CPU SERVICE VESSEL AREA	16
119.	PE-V0-475-155A-A131	9915-371-110-PEM-PVE-F-289	EARTHING LAYOUT OF CPU REGENERATION AREA	16
120.	PE-V0-475-155A-A134	9915-371-110-PEM-PVE-F-292	CABLE TRAY/TRENCH & CONDUIT ROUTING DIAGRAM FOR CONDENSATE POLISHING UNIT(REGENERATION AREA)	16
121.	PE-V0-475-155A-A128	9915-371-110-PEM-PVE-H-286	ELECTRICAL LOAD LIST FOR CPU	16
122.	PE-V0-475-155A-A132	9915-371-110-PEM-PVE-W-290	TYPE TEST REPORT OF CV TEST FOR CONTROL VALVE (FOR CPP)	16
123.	PE-V0-475-155A-A133	9915-371-110-PEM-PVE-W-291	TYPE TEST REPORT FOR FLOW NOZZLES & ORIFICE PLATES (FOR CPP)	16

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124.	PE-V0-475-155A-A012	9915-371-110-PEM-PVI-W-181	TYPE TEST REPORT FOR ELECTRONIC TRANSMITTERS (FOR CPP)	18
125.	PE-V0-475-155A-A013	9915-371-110-PEM-PVI-W-182	TYPE TEST REPORT FOR G & F TYPE INSTRUMENTATION CABLE (FOR CPP)	18
126.	PE-V0-475-155A-A029	9915-371-110-PEM-PVI-W-198	TYPE TEST REPORT OF CABLE (ELECTRICAL)	18
127.	PE-V0-475-155A-A016		TYPE TEST REPORT OF JUNCTION BOX (DEGREE OF PROTECTION) FOR CPP	18
128.	PE-V0-475-155A-A057		PERFORMANCE & GUARANTEE TEST PROCEDURE FOR CONDENSATE POLISHING PLANT	20
129.	PE-V0-475-155A-A058		O&M MANUAL OF CPP	22

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DRAWING/DOCUMENTS DISTRIBUTION SCHEDULE

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S.No	Description of Drgs/Docs	No of Prints	No of CD ROMs/DVDs/Portable Hard Disk
1	Drawings, Data sheets, Design calculations, Purchase specifications and other documents		
	First submission and submission with major changes		
	▪ Layout (A0&A1 sizes)	4	-
	▪ Other Drawings/Documents (A0&A1 sizes)	2	-
	▪ P&ID (All sizes)	4	-
	a) Final drawings/documents (Directly to site)	6	2
	b) “As Built” Drawing/Documents (Directly to site)	6	2
	c) Analysis reports of Equipments / piping /structures components/system employing software packages as detailed in the specifications.	2	2
2	Erection Manual (Directly to site)	4 sets	2
3	Operation & Maintenance manual	1 set	--
	i) First Submission		
	ii) Final Submission (Directly to site)	4 sets	2
4	Plant Hand Book	1	1
	i) First Submission		
5	Commissioning and Performance Test Procedure manual	1 set	--
	i) First Submission		
	ii) Final Submission (Directly to site)	4 sets	2

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S.No	Description of Drgs/Docs	No of Prints	No of ROMs/DVDs/Portable Hard Disk	CD
6	Performance and Functional Guarantee Test Report i) First Submission	2 sets	--	
	ii) Approved Copies (Direct to Site)	4 sets	2	
7	Project Completion Report (Directly to site)	6 sets	2	
8	QA programme including Organisation for implementation and QA system manual(with revisions)	1	--	
9	Vendor details in respect of proposed vendors including contractor's evaluation report.	2	--	
10	Manufacturing QPs, Field QPs, Field welding schedules and their reference document like test procedures, WPS, POR etc i) For review/comment	1	--	
	ii) Approved final copies of Field QPs, Field welding schedules and their reference document like test procedures, WPS, POR etc (Direct to Site)	4	2	
11	Welding Manual, Heat Treatment Manuals, Storage & preservation manuals i) For review/comment	1 set	--	
	ii) Approved copies (Direct to Site)	4 sets	2	
12	QA Documentation Package for items / equipment manufactured and despatched to site	2 sets	2	
13	QA Documentation Package for field activities on equipment/systems at site	2 sets	2	

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Note:

- Quantity of prints may change during detailed engineering stage based on BHEL / Customer requirement. However, the same will be adhered by the bidder without any delivery/commercial implication to BHEL.
- All the drawing documents along with the O&M manual (of all the revisions) are necessarily to be submitted in soft copies in addition to hard copies.
- Bidder to submit soft copies of all the drawing and document along with quality plans for BHEL review and approval.
- The date of submission of drawing documents shall be considered as the date of submission of hard and soft copies whichever is later.
- All the drawings shall be prepared on computer auto cad and other documents (like datasheet etc.) on MS office software. Bidder not complying to the requirement shall not be considered. For the execution of the contract regular meeting (generally once in 15 days or as per project requirement) is required.
- Bidder has to come for meeting with the concerned dealing persons as per BHEL or customer requirement in a short notice.
- Bidder to submit instrument schedule, cable schedule and valve schedule in MS- Excel format during detailed engineering.
- Bidder to also furnish the auto cad copy / MS-word (as applicable)/MS-Excel (as applicable) of the following documents after award of contract. However, any other auto cad copy/MS-Excel/MS-word of any other document as per the insistence of BHEL / customer will also be submitted by the bidder without any delivery/commercial implication to BHEL.
 - P&IDs.
 - Equipment lay out of the service vessel area and regeneration area.
 - Equipment Cable tray layout for service vessel area and regeneration area
 - Equipment earthing layout service vessel area and regeneration area
 - Civil scope drawings.
 - Piping lay out drawing for Service vessel area, regenerative area and yard piping layout.
 - Valve schedule.
 - Instrument schedule.
 - Any Other Dwg/Docs as required.

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ANNEXURE-V**MANDATORY SPARES FOR CONDENSATE POLISHING UNIT**

S. N.	DESCRIPTION	UNIT	QTY
1.00.00	MECHANICAL-CPU		
1	SCREENS AND NOZZLES FOR UNDER DRAIN SYSTEM		
A)	ACTIVATED CARBON FILTER	%	15% OF AC FITTER VESSEL
B)	POLISHER SERVICE VESSEL	%	100% OF ONE VESSEL
2	UNDER DRAIN SYSTEM SCREENS, NOZZLES/ HEADERAL LATERAL/ANY OTHER TYPE USED FOR		
A)	CATION REGENERATION UNIT	SET	1 SET
B)	ANION REGENERATION UNIT	SET	1 SET
C)	MIXED RESIN STORAGE UNIT WHICHEVER APPLICABLE	SET	1 SET
3	ALL RESINS (CATION, ANION & INERT RESINS)	M3	ONE FULL CHARGE REQUIRED FOR ONE SERVICE VESSEL
2.00.00	ELECTRICAL		
A)	MOTORS	SET	1NO OF EACH TYPE AND RATING
B)	DM WATER REGENERATION PUMPS MOTOR AND MOTOR BEARING (IF APPLICABLE)	NO.	1NO
C)	ALKALI TRANSFER CUM RECIRCULATION PUMP MOTOR AND MOTOR BEARING (IF APPLICABLE)	NO.	1NO
D)	WASTE RECIRCULATION CUM DISPOSAL PUMPS MOTOR AND MOTOR BEARING (IF APPLICABLE)	NO.	1NO
E)	ACID UNLOADING PUMPS AND MOTOR BEARING	NO.	1NO
3.00.00	CONTROL & INSTRUMENTATION -CPU		
	MEASURING INSTRUMENTS		
1	ELECTRONIC TRANSMITTERS		
I)	TRANSMITTERS OF ALL TYPES AND MODEL. (FOR THE MEASUREMENT OF PRESSURE, DIFFERENTIAL PRESSURE, FLOW, LEVEL, ETC.) INCLUDING LOCAL INDICATION (IF APPLICABLE)	%	10 % OR 1 NO. OF EACH TYPE AND MODEL WHICHEVER IS MORE
2	TEMPERATURE ELEMENTS		
I)	TEMPERATURE TRANSMITTER	%	10 % OR 1 NO. OF EACH TYPE AND MODEL WHICHEVER IS MORE
II)	RTD'S*	NO.	1 NO. OF EACH TYPE
III)	THERMO WELL**	NO.	1 NO. OF EACH TYPE
	* (WITH HEAD ASSEMBLY, TERMINAL BLOCK AND NIPPLE) ** (TO BE DIVIDED INTO VARIOUS INSERTION LENGTHS IN PROPORTION TO MAIN POPULATION)		
3	LOCAL INDICATORS (NON-ELECTRICAL TYPE) -AS APPLICABLE FOR THE PACKAGE AS PER THE FOLLOWING ITEMS		
I)	TEMPERATURE GAUGES	NO.	1 NO. OF EACH RANGE AND TYPE
II)	PRESSURE GAUGES	NO.	1 NO. OF EACH RANGE AND TYPE
III)	DIFFERENTIAL PRESSURE GAUGES	NO.	1 NO. OF EACH RANGE

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			AND TYPE
IV)	LEVEL GAUGES	NO.	1 NO. OF EACH RANGE AND TYPE
V)	FLOW GAUGES EXCLUDING ROTAMETERS	NO.	1 NO. OF EACH RANGE AND TYPE
VI)	ALL TYPES OF ROTAMETERS	NO.	1 NO. OF EACH RANGE AND TYPE
4	PROCESS ACTUATED SWITCH DEVICES -AS APPLICABLE FOR THIS PACKAGE,AS PER THE FOLLOWING ITEMS		
I)	TEMPERATURE SWITCHES	NO.	1 NO. OF EACH RANGE AND TYPE
II)	PRESSURE SWITCHES	NO.	1 NO. OF EACH RANGE AND TYPE
III)	DIFFERENTIAL PRESSURE SWITCHES	NO.	1 NO. OF EACH RANGE AND TYPE
IV)	LEVEL SWITCHES	NO.	1 NO. OF EACH RANGE AND TYPE
V)	FLOW SWITCHES	NO.	1 NO. OF EACH RANGE AND TYPE
5	SOLENOID VALVES	%	10 % OR 1 NO. OF EACH TYPE AND MODEL WHICHEVER IS MORE
6	LIMIT SWITCHES (FOR PNEUMATIC VALVES AND MANUAL VALVES)	NO.	2 NO. OF EACH TYPE
7	ANALYSERS		
I)	PH ANALYZER		
A)	FLOW THROUGH TYPE CELL AND ELECTRODE	NO.	1 NO. OF EACH TYPE
B)	ELECTRONIC TRANSMITTER UNIT WITHOUT SENSOR	NO.	1 NO. OF EACH TYPE
C)	PRE-FABRICATED CABLE WITH CONNECTOR	SET	1 SET
II)	CONDUCTIVITY ANALYZER		
A)	FLOW THROUGH TYPE CELL AND ELECTRODE	NO.	1 NO OF EACH TYPE
B)	ELECTRONIC TRANSMITTER UNIT WITHOUT SENSOR	NO.	1 NO OF EACH TYPE
C)	PRE-FABRICATED CABLE WITH CONNECTOR	SET	1 SET
III)	SODIUM ANALYZER		
A)	MAIN PCB ASSEMBLY	NO.	1 NO OF EACH TYPE
B)	POWER SUPPLY CARDS (IF APPLICABLE)	NO.	1 NO OF EACH TYPE
C)	RUBBER TUBES & CAPILLARY TUBES	SET	1 SET
D)	PRE-FABRICATED CABLE WITH CONNECTOR	SET	1 SET
E)	SOLENOID VALVES	SET	1 SET
F)	ALL CHEMICAL REAGENTS FOR 12 MONTH OPERATION (SUPPLY TO BE STAGGERED AS PER THE SHELF LIFE)	SET	1 SET
IV)	SILICA ANALYSER (IF APPLICABLE)		
A)	MAIN PCB ASSEMBLY	NO.	1 NO OF EACH TYPE
B)	POWER SUPPLY CARDS(IF APPLICABLE)	NO.	1 NO OF EACH TYPE
C)	RUBBER TUBES & CAPILLARY TUBES	SET	1 SET
D)	PRE-FABRICATED CABLE WITH CONNECTOR	SET	1 SET
E)	SOLENOID VALVES	SET	1 SET
F)	ALL CHEMICAL REAGENTS FOR 12 MONTH OPERATION (SUPPLY TO BE STAGGERED AS PER THE SHELF LIFE)	SET	1 SET
V)	DISSOLVED O2 ANALYSERS (IF APPLICABLE) - SIMILAR SPARES AS ABOVE ANALYSERS		
VI)	TURBIDITY ANALYSERS (IF APPLICABLE) - SIMILAR SPARES AS ABOVE ANALYESRS		
4.00.00	PROCESS CONNECTION PIPING (FOR IMPULSE PIPING/TUBING,SAMPLING PIPING/TUBING AND AIR SUPPLY PIPING AS APPLICABLE)		
1	2 WAY, 3WAY, 5WAY VALVE MANIFOLDS	NO.	1 NO.OF EACH

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			TYPE, CLASS, SIZE AND MODEL
2	FILTER REGULATOR (IF APPLICABLE)	NO.	1 NO. OF EACH TYPE, CLASS, SIZE AND MODEL
5.00.00	CONTROL VALVES, ACTUATORS AND ACCESSORIES		
1	PNEUMATIC AND ELECTRO-HYDRAULIC ACTUATOR ASSEMBLY	NO.	10% OR 1 NO. OF EACH TYPE, MODEL AND RATING, WHICHEVER IS MORE.
2	DIAPHRAGMS, O' RINGS, SEALS ETC. OF ALL TYPES MAKE ETC.	NO.	100%
3	PRESSURE GAUGES OF ALL TYPES, MAKE, RATING ETC.	NO.	10% OR 2 NOS. OF EACH TYPE WHICHEVER IS MORE
4	SOLENOID VALVES (IF APPLICABLE)	NO.	10% OR 2 NOS. OF EACH TYPE WHICHEVER IS MORE
5	POSITIONER UNITS /SMART POSITIONERS (COMPLETE UNIT) & ACCESSORIES (LINK ASSEMBLY)	NO.	10% OR 1 NO. OF EACH TYPE WHICHEVER IS MORE
6	PNEUMATIC AIR-FILTER/ REGULATOR OF EACH TYPE, MAKE RATING ETC.	NO.	10% OR 2 NOS., WHICHEVER IS MORE
7	AIR LOCK RELAYS	NO.	10% OR 2 NOS. OF EACH TYPE WHICHEVER IS MORE
5.00.01	PNEUMATICALLY OPERATED ISOLATION / BLOCK VALVES, ACTUATORS & ACCESSORIES (FOR ALL ON/OFF VALVES SUPPLIED UNDER THIS PACKAGE EVEN IF ONE OR MORE OF THESE ITEMS ARE ALSO SPECIFIED ELSEWHERE UNDER MANDATORY SPARES)		
1	PNEUMATIC ACTUATOR ASSEMBLY.	NO.	10% OR 1 NO. OF EACH TYPE, MODEL AND RATING, WHICHEVER IS MORE.
2	DIAPHRAGMS, O' RINGS, SEALS ETC. OF ALL TYPES MAKE ETC.	NO.	100%
3	LIMIT SWITCHES (COMPLETE UNIT)& ACCESSORIES (LINK ASSEMBLY)	NO.	10% OR 2 NOS., WHICHEVER IS MORE
4	PNEUMATIC AIR-FILTER/REGULATOR OF EACH TYPE, MAKE RATING ETC.	NO.	10% OR 2 NOS., WHICHEVER IS MORE

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Notes:

- 1) Mandatory spare requirements of Valves and specialties for power cycle piping systems specified above does not include items/valves/specialties which are already specified/ covered elsewhere in this Technical specification for mandatory spare requirement.
- 2) Wherever complete valve assembly as mandatory spare has been specified above for power cycle piping, it shall include complete gear operator/ box assembly which forms part of original valve assembly / supply.
- 3) Mandatory spares for valve actuators (for Pneumatically & Electrically operated valves) shall be supplied as per actuator quantity/details specified elsewhere in this technical specification for mandatory spare requirement.
- 4) Mandatory spare requirement for complete valve assembly above 50NB in power cycle piping systems shall include Gate valve, Globe valve, check valve, safety valve, relief valve, safety relief valve, Angle valve, butterfly valve etc.
- 5) In case the quantity of mandatory spares so calculated happens to be a fraction, the same shall be rounded off to next higher whole number. For example, 10% of 11 is equal to 1.1, then it should be rounded as 2 instead of 1.
- 6) Identification: Each spare shall be clearly marked and labelled on the outside of the packing with its description. When more than one spare part is packed in single case, a general description of the contents shall be shown on the outside of such case and a detailed list enclosed. All cases, containers and other packages must be suitably marked and numbered for the purpose of identification.

CLAUSE NO.	 MANDATORY SPARES 				
	scheduled date of initial operation of first unit. However, the spares shall not be dispatched before the dispatch of the main equipment. (b) Price of recommended spars will not be used for evaluation of the bids. The price of these spars will remain valid upto 6 months after placement of Notification of Award for the main equipment. However, the Contractor shall be liable to provide necessary justification for the quoted prices for these spares as desired by the Employer.				
1.03.00	START-UP & COMMISSIONING SPARES Start-up and commissioning spares are those spares which may be required during the start-up and commissioning of the equipment/system. All spares used till the plant is handed over to the employer shall come under this category. The Contractor shall provide for an adequate stock of such start up and commissioning spares to be brought by him to the site for the plant erection and commissioning. They must be available at site before the equipments are energized. The unused spares, if any, should be removed from there only after the issue of Taking Over certificate. All start up spares which remain unused at the time shall remain the property of the Contractor.				
1.04.00	The Bidder shall include in his scope of supply all the necessary Mandatory spares, start up and commissioning spares and recommended spares and indicate these in the relevant schedules of the Bid Form and Price Schedules. The general requirements pertaining to the supply of these spars is given below.				
2.00.00	The Contractor shall indicate the service expectancy period for the spares parts (both mandatory and recommended) under normal operating conditions before replacement is necessary.				
3.00.00	All spares supplied under this contract shall be strictly inter changeable with the parts for which they are intended for replacements. The spares shall be treated and packed for long storage under the climatic conditions prevailing at the site e.g. small items shall be packed in sealed transparent plastic with desecrator packs as necessary.				
4.00.00	All the spares (both recommended and mandatory) shall be manufactured alongwith the main equipment components as a continuous operation as per same specification and quality plan.				
5.00.00	The contractor will provide Employer with cross-sectional drawings, catalogues, assembly drawings and other relevant documents so as to enable the Employer to identify and finalise order for recommended spares.				
<table><tr><td>KHURJA SUPER THERMAL POWER PROJECT (2X660 MW) TURBINE GENERATOR AND ASSOCIATED PACKAGES</td><td>TECHNICAL SPECIFICATION SECTION-VI, PART-A BID DOC NO.: THDC/RKSH/CC-9915-371</td><td>MANDATORY SPARES</td><td>PAGE 2 OF 59</td></tr></table>		KHURJA SUPER THERMAL POWER PROJECT (2X660 MW) TURBINE GENERATOR AND ASSOCIATED PACKAGES	TECHNICAL SPECIFICATION SECTION-VI, PART-A BID DOC NO.: THDC/RKSH/CC-9915-371	MANDATORY SPARES	PAGE 2 OF 59
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CLAUSE NO.	 MANDATORY SPARES 		
6.00.00	Each spares part shall be clearly marked or labelled on the outside of the packing with its description. When more than one spares part is packed in a single case, a general description of the content shall be shown on the outside of such case and a detailed list enclosed. All cases, containers and other packages must be suitably marked and numbered for the purposes of identification.		
7.00.00	All cases, containers or other packages are to be opened for such examination as may be considered necessary by the Employer.		
8.00.00	The contractor will provide the Employer with all the addresses and particulars of his sub suppliers while placing the order on vendors for items/components/equipments covered under the contract and will further ensure with his vendors that the Employer, if so desires, will have the right to place order for spares directly on them on mutually agreed terms based on offers of such vendors.		
9.00.00	The Contractor shall warrant that all spares supplied will be new and in accordance with the contract Documents and will be free from defects in design, material and workmanship.		
10.00.00	In addition to the recommended spares listed by the contractor, if the employer further identifies certain particular items of spares, the contractor shall submit the prices and delivery quotation for such spares within 30 days of receipt of such request with a validity period of 6 months for consideration by the Employer and placement of order for additional spares if the Employer so desires.		
11.00.00	The Contractor shall guarantee the long term availability of spares to the Employer for the full life of the equipment covered under the contract. The Contractor shall guarantee that before going out of production of spares parts of the equipment covered under the Contract, he shall give the Employer atleast 2 years advance notice so that the latter may order his bulk requirement of spares, if he so desires. The same provision will also be applicable to sub-contractors. Further, in case of discontinuance of manufacture of any spares by the Contractor and/or his sub contractors, Contractor will provide the Employers, two years in advance, with full manufacturing drawings, material specifications and technical information including information on alternative equivalent makes required by the Employer for the purpose of manufacture/procurement of such items.		
12.00.00	Material Codification The bidder to provide datasheets/ assembly drawings of the manufacturer/ any other relevant document showing Bill of Material(s), Make, Model Number, Part Number etc. through which mandatory spares to be supplied can be uniquely identified. This would facilitate the Employer to assign a unique code to each of the mandatory spare as brought out in GCC. The bidder shall extend all necessary assistance in this regard.		
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CLAUSE NO.	एनटीपीसी NTPC MANDATORY SPARES		
13.00	In case spares indicated in the list are not applicable to the particular design offered by the bidder, the bidder should offer spares applicable to offered design with quantities generally in line with the approach followed in the lists of mandatory spares.		
14.00	Interchangeability and Packings: All spares supplied under this contract shall be strictly interchangeable with parts for which they are intended for replacements. These spares should include all mounted accessories like components, boards, add or items, fitting, connectors etc. and be complete in all respects so that the replacement of the main items by these spares does not require any additional item. The vendors must conform the pair to pair compatibility of each electrical spares modules with the modules should be supplied in the original package. All electronic modules should be preset and/or preprogrammed for ready use at site. Alternatively, suitable instruction sheet indicating the details of required PCB jumper position, BCD which is setting, EPROM/PROM listing etc should be packed along with each module. Also a caution mark sign should be put on all such module which needs pre setting/pre programming before putting them in to service. The spare shall be treated and properly packed for long term storage		
15.0	Identification: Each spare shall be clearly marked and labeled on the outside of the packing with its description. When more than one spare part is packed in single case, a general description of the contents shall be shown on the outside of such case and a detailed list enclosed. All cases, containers and other packages must be suitably marked and numbered for the purpose of identification.		
16.0	Wherever the quantity is given only in percentage, the spare quantity shall be distributed into various ranges/size/rating/type (as the case may be) in the same proportion of the main population. The percentage shall be taken for the full population of the plant, unless otherwise mentioned. For the quantities coming less than 1, shall be treated as 1 only.		
17.0	If the same spare(s) is appearing at two different places, spare has to be considered at only one place, in order to avoid any duplicity.		
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Annexure - VI			
OPERATION AND MAINTENANCE SERVICES			

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1.0 OPERATION AND MAINTENANCE SERVICES

The bidder scope also covers the Operation and Maintenance (O&M) services for Preventive and Breakdown maintenance from the date of successful commissioning till handing over. The date of start of O&M services shall be communicated to successful bidder by BHEL site personnel.

Bidder to note that the spares and consumables (except regeneration chemicals i.e. HCL & NaOH) required for maintenance of the equipment during this O&M period shall be in bidder's scope of supply. Bidder shall use only genuine parts as mentioned in O&M Manual. Any damage or malfunction caused by the use of unauthentic parts or unqualified personnel shall be responsibility of bidder and as a consequence of above bidder is required to replenish the unauthorised part and abridge the qualified person without any commercial implication to BHEL.

O&M Services scope also covers all regular maintenance by trained service engineers and supply of genuine parts and lubricants as per the original equipment manufacturer's recommendations.

For the purpose of Operation of CPU System, One-day shall be considered as 24 hours i.e. 3 shifts of 8 hours each. The CPU (along with related accessories) shall be operated on Round-the-clock basis on all the days of the year including Sundays and Public Holidays meeting outlet guarantee parameter along with service run as defined in Section IA Clause No. 4.

O & M Personnel should be acquainted with local language. Governmental / Statutory approval w.r.t. O&M service as applicable shall be in bidder's scope.

Total duration of the Operation and Maintenance services has been envisaged for twelve (12) months for complete Condensate Polishing Unit identified in price format/specification. The duration of operation & maintenance services can be increased or decreased as per requirement and payment in such case shall be made on pro-rata basis.

The operation and maintenance services can be continuous or intermittent as per site requirement for complete Condensate Polishing Unit identified in price format/specification.

Bidder has to compulsorily maintain log book for the O & M staff engaged for O&M jobs and submit to Engineer in charge for certification for realization of the bills. After certification of the bill by Engineer in charge of BHEL, bidder shall claim the amount after completion of minimum 30 days.

Depending on start of O&M services, there is a possibility that some period of O&M services and Warranty period may overlap. **However, it is clarified that any maintenance required or any spare of CPU System required to be replaced during Warranty period (as**

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part of warranty clause requirement) shall not be made part of O&M Services. Bidder may take care of this fact while working out the prices of O&M services.

Wherever CPU (Condensate Polishing Unit) has been written in O&M Service Specification, the same shall be deemed as complete CPU (Condensate Polishing Unit) with Regeneration Facility.

The vendor shall deploy following minimum manpower for Operation of CPU.

- i. One qualified and experienced CPU operator per shift on "Round the Clock" basis throughout the year for all days of the year including Sundays & Public Holidays. There must be minimum 30 minutes overlapping between two shift operators to get familiarize with the status of CPU.
- ii. Two Helper per shift on " Round the Clock" basis throughout the year for all the days of the year including Sundays and Public Holidays. The helper shall assist the CPU Operator in day to day operation of CPU and accessories and shall assist him for keeping CPU equipment's in neat and tidy condition.
- iii. Wages of all manpower deployed for O&M shall be borne by bidder.

1.1 Responsibility of CPU Operator

- i. CPU operator shall be responsible for proper sequential operation of CPU including operation of standby equipment in a predefined sequence and stopping the same (when necessary) as per the procedural practice. In case of any abnormality (like non availability of power supply at incomer of CPU), he shall immediately report the matter to BHEL site Engineer for further action. Similarly, any malfunctioning in the system shall be immediately resolved by CPU operator with suitable corrective action irrespective of time of occurrence of malfunctioning / abnormality in the system in consultation with BHEL site Engineer. A log book of all such outrages shall be maintained by CPU operator, which shall be shared with BHEL site engineer on periodic basis.
- ii. CPU operator shall take reading of all the parameters of CPU periodically as per requirement which shall be mutually discussed and finalised with BHEL site engineer. However, the frequency of taking the reading may change based upon instruction from BHEL site Engineer. All the readings shall be recorded in a logbook register.

1.2 Responsibility of Helper.

- i. The CPU helper shall assist CPU operator for day to day smooth operation of CPU. He shall be responsible for keeping all the equipment's of CPU in clean and tidy condition. He shall also carry out general cleaning of all CPU equipment's including Electrical & Control Panels (Part of CPU), etc. on regular basis.

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- ii. The helper shall work under the control of CPU operator and shall always ensure that unusable junk materials are not allowed to be kept in CPU area. Under such eventuality, he will report the matter to Plant Operator, who in turn will take suitable action including reporting the matter to BHEL site Engineer.

1.2.1 All the log book registers shall be arranged by vendor. Log book register duly paged and bounded will be maintained in good condition by vendor.

1.2.2 All the necessary tools & tackles and other materials, required for operation of CPU shall be kept by vendor under the control of CPU operator, which shall be handed over to customer in new condition. Required testing instruments should also be always available with Plant Operator.

1.2.3 In case of any operator / helper being on leave, vendor shall immediately take advance action and provide substitution so that minimum manpower as indicated above is not reduced on any day. In case a particular shift duty CPU Operator or helper does not turn up due to any reasons, the earlier duty person shall continue to make sure that CPU never remains unattended.

2.0 Maintenance of CPU

- i. Maintenance work under scope of the vendor shall broadly include but in no way limited to the following:
 - a) Preventive maintenance of the plant.
 - b) Servicing of the CPU and associated equipment's at regular interval
 - c) Attending to complaints.
 - d) Replacement of worn out or defective components
 - e) Replacing of consumables like greases, oil, lubricants, servo fluids/control fluids, gases, reagents for analysers and etc as and when required.

No consumable or any other items of CPU shall be arranged by Customer & BHEL and no extra payment shall be made by customer & BHEL in this regard.

- ii. Vendor shall be responsible at all time, during the entire period of contract for satisfactory performance of CPU (including accessories) with zero down time. During emergency or breakdown, vendor's Engineer along with related technicians shall be available immediately even though it may be beyond normal working hours or on public holidays till the CPU is restored back into normal satisfactory condition. Response time for attending breakdown complaints shall not exceed 2 hours.

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iii. Defective / worn out components shall be replaced only by genuine and original parts. OEM or its authorized dealer's invoice shall be submitted as proof of using genuine parts. All common spares required for CPU shall normally be kept available in the plant by the vendor. However, for critical spares, the same shall be made available in not more than 72 hours from the time of break-down requiring such spare.

iv. Preventive Maintenance, servicing of CPU equipment's and accessories etc. shall be done by vendor in a planned manner in consultation with concerned BHEL engineer. Preventive maintenance and service should be done as per the recommendations / guidelines of various OEMs

v. Vendor shall arrange and maintain separate logbook register for services / maintenance of CPU. Record of work done for services/maintenance repairs etc. shall be recorded by vendor's engineer in this register. This register shall always be with updated records & shall be produced to BHEL engineer on weekly basis or as & when required by him.

vi. Vendor shall arrange and maintain sufficient stock of spares and consumable at site. Similarly, all necessary tools & instruments required for the purpose of servicing / maintenance / routine testing etc. shall also be arranged by vendor and should be available at site at all times.

vii. Repairs / servicing works shall normally be done by vendor at site up to maximum possible extent. However, in case any equipment or accessories is essentially required to be taken by vendor out of the plant premises for repairing / servicing, all necessary arrangements including to and fro transportation shall be the responsibility of vendor. Vendor shall also inform concerned BHEL & customer's engineer for doing procedural formalities (like issue of gate pass etc.), prior to taking out the materials out of Plant premises.

viii. In case bidder fails to supply the spares required for maintenance of the equipment, same shall be provided by BHEL at Bidders risk and cost.

ix. Vendor shall be fully responsible for safety of his personal at all times. Vendor shall also be responsible for taking all safety precautions at all the times, especially during servicing / preventive maintenance and repairs of CPU.

x. Technicians & helpers engaged by the vendor shall wear uniform with nameplate for easy identification, while being within plant premises

xi. Vendor's engineer shall be focal point for BHEL & customer. He shall report to BHEL engineer on daily basis, for taking necessary instructions and to update the status of CPU

xii. If any damage to the equipment and its accessories has happened due to improper maintenance by bidder, same shall be recovered from the bidder.

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xiii. Bidder is to arrange all the safety gears like helmets, air plugs, safety shoes, goggles, Personal Protection Equipment (PPE)] comprising PVC protection suits with hoods, rubber boots, face visors and thick PVC gauntlets shall also be provided by bidder etc. during the maintenance for the O&M Staff. The safety items are only over and above the safety items as included in safety items included in Section IA datasheet A.

xiv. Fabrication and erection of platform/extra support for maintenance of any type of CPU equipment, if felt necessary during operation and maintenance of the system, has to be done by the bidder.

Notes:

1. The bidder shall take approval from Engineer-in charge of BHEL by submitting organization Chart of O&M staff for this site clearly indicating man power deployment with their educational background & experience with supporting documents.
2. The bidder shall be solely and wholly responsible for safety and security of workers engaged in the job and the BHEL property. In case of any accident the contractor shall pay proper compensation to the workers as per workmen's compensation act and repair/replace BHEL property at their own cost & arrangement. The bidder shall also make adequate provision of insurance for their workers at their own cost to cover them against the risk of accident.
3. The bidder and their workers engaged in the job shall follow all safety rules at the time of execution of work. It shall be responsibility of the bidder to supply all safety equipment as necessary to its O&M staff.
4. Beyond general shift if any trouble/breakdown occurs in the plant, Maintenance team must reach the plant without any delay along with Engineer/Site In-charge.
5. No Person from the list of manpower shall leave the plant site without prior permission from the Engineer in charge of BHEL.
6. However, in operation part, if any person is absent, substitute must be given immediately otherwise proportionate deduction will be made.
7. The replacement / substitute personnel for maintenance, manpower shall have the same educational qualification and experience.
8. If any additional manpower is required during O&M whatsoever under the scope of contract the same shall be made available by bidder in time within the cost. To cater the need of time bound maintenance jobs, the bidder shall depute additional manpower without any cost implication to BHEL
9. During execution of work if any personnel is found not suitable for the job or his presence inside premises is felt undesirable, the personnel has to be replaced within 15 days by bidder.
10. BHEL will not be responsible for payment towards idle labour charges

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Statutory Compliance by the bidder:

All Statutory compliances related to Labour, Health & Safety, Quality & Environment protection and insurance shall be as GCC Rev-07.