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BHARAT HEAVY ELECTRICALS LIMITED, JHANSI



	Spec No-			
	Item No	SP/MISC./7804		
	Quantity	SP/MISC./1/8/7804		
	Location	01 LOT BAY-09 TEST		
	VENDOR must submit complete information against clause No-13 (Qualifying condition) The offer meeting this clause would only be processed			
	The "offered " Column and where applicable, the" Deviation " Column of this format shall be filled in by the vendor and submitted along with the offer . Technical detail also submitted with the offer . Inadequate / incomplete, ambiguous, or unsustainable information against any of the clauses of the specification / requirements shall be treated as non-compliance.			
	The offer and all documents enclosed with offer should be in English language only			
	SCOPE: PART SUPPLY AND ERECTION & COMMISSIONING OF EQUIPMENTS FOR SETTING UP OF A) POWER SUPPLY SOURCE WITH 4MVA SFC, B) INTEGRATION OF SFC WITH EXISTING TEST POINTS AND C) SETTING UP OF 2 NOS. TEST POINTS WITH 99KV/40MVA AND 132KV/2MVA TRANSFORMERS RESPECTIVELY IN BAY-9.			
SL. No.	DESCRIPTION OF BHEL REQUIREMENTS	ACTION BY VENDOR	OFFERED	DEVIATION
1.0	PURPOSE & WORKPIECE MATERIAL			

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SCOPE: PART SUPPLY AND ERECTION & COMMISSIONING OF EQUIPMENTS FOR SETTING UP OF A) POWER SUPPLY SOURCE WITH 4MVA SFC, B) INTEGRATION OF SFC WITH EXISTING TEST POINTS AND C) SETTING UP OF 2 NOS. TEST POINTS WITH 99KV/40MVA AND 132KV/2MVA TRANSFORMERS RESPECTIVELY IN BAY-9.

SL. No. DESCRIPTION OF BHEL REQUIREMENTS

ACTION BY VENDOR OFFERED DEVIATION

The work in this specifications covers part supply of some items (listed in point 2.1 to 2.8 as below, whereas the balance required items shall be supplied by BHEL and E&C of all items (Scope listed in point 3.1 to 3.8 below) required for setting-up the following:

Vendor to confirm

A) Setting Up of Power Supply Source with 4 MVA Static Frequency Converter (SFC): Supply and E&C of SFC will be in the scope of SFC vendor which is being procured separately. The 11kV/(700 or 400)Volt Step Down Transformer and (700 or 400) Volt/11kV Step Up Transformer required for the SFC shall be provided by BHEL. The complete E&C of these transformers, cabling etc shall be in the vendor scope.

B) Integration of 4 MVA SFC with existing Test Point: The 11 kV output of the SFC will have to be integrated with the existing Test Point Selection Panel such that the output of SFC can be switched to different Test Points. Supply of SFC Selection Panel and its integration will be in the vendor scope.

C) Setting up of 2 Nos. Test Points one with 99 kV/40MVA transformer and second with 132 kV/2 MVA Transformer respectively in Bay-9 Testing Area. The 40 MVA/99kV & 2 MVA/132kV transformer shall be supplied by BHEL. Control Cabin for these Test Points shall also be fabricated by BHEL in the test gallery.

The Scope of Supply and Scope of Work required for establishing the above testing system are as listed below.

I.1 OPTIONAL ITEMS:

The following items may or may not be procured during ordering. Hence these are kept as optional items and their price are to be quoted separately.

1.1.1 IPS Tube made from Alluminium Alloy-63401, as per IS-5082-1998 having Dia-60mm and Wall thickness-4mm: 100m

Vendor to confirm

Following accessories for 60mm dia IPS tubes are also to be supplied

- a) Straight Coupler: 12 Nos.
- b) Flexible Coupler: 24 Nos.
- c) T-Drop Coupler: 12 Nos.
- d) End cap: 24 Nos.
- e) Tube Clamp: 12 Nos.

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SL. No.	DESCRIPTION OF BHEL REQUIREMENTS	ACTION BY VENDOR	OFFERED	DEVIATION
2.0	SCOPE OF SUPPLY			
2.1	CONTROL DESK FOR 99KV TEST POINT: Qty.- 01 Nos.			
2.1.1	A new 99KV test point is being set-up for which a control desk is required having the following Specifications. The Control Desk shall be made of 3-4 mm thick CRCA Sheet Steel, powder coated to shade RAL 7032 having all standard accessories.	Vendor to confirm		
2.1.2	The layout of components shall be distributed into three compartments a) For MG Set Control, b) For Test & Measurement and c) For placement of Power analyzer and Laptop. The cable entry shall be from the bottom with gland plates. Panel access shall be from the back door having heavy duty door locks. The tentative size of the control desk shall be 3500 mm(L) X 1000 mm(W) X 1500 mm(H) and Table Height - 900mm .			
2.1.3	The panel wiring shall be done with multistrand PVC cable of 2.5 sq.mm, 1100V(Fimolex, Havells , V-Guard Make), properly dressed/tied, routed in cable trays and terminated with crimped lugs. Wires of each compartment shall be separately terminated on heavy duty DIN Rail mounted Polymide Terminal Blocks rated for 1100V/24 Amps.	Vendor to confirm and specify the make		
2.1.4	Devices to be mounted on the control desk shall be as follows:			
2.1.4.1	Push Buttons: Qty.- 10 Nos. Potential Free, Normally Open, 6Amp/230V (SIEMENS/L&T, BCH Make) having the following nomenclature			
	1) DC Breaker Close PB (Green), 2) DC Breaker Open PB (Red), 3) Field Breaker Close PB (Green) 4) Field Breaker Open PB (Red) 5) Frequency Rise PB (Black) 6) Frequency Lower PB (Black) 7) Voltage Rise PB (Black) 8) Voltage Lower PB (Black) 9) Lamp Test PB (Yellow)	Vendor to confirm and specify the make		
2.1.4.2	Breaker Control Switch Spring loaded 2 pole Trip and Close Middle Neutral : Qty.-01 Nos, 440 V, 25 Amps.(Kay Cee / L&T Make).	Vendor to confirm and specify the make		

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SL. No.	DESCRIPTION OF BHEL REQUIREMENTS	ACTION BY VENDOR	OFFERED	DEVIATION
2.1.4.3	Selectro Switches: 12 Nos 16A, 440V (Kay Cee / L&T Make) having the following other specifications: 1) CT Sencitivity make before break Selector switch 2 way 12 Pole: 1 Nos. 2) CT make before break Selector switch (2 CT per phase for 3 phase): 1 Nos. 3) Ammeter Selector switch for external meter: 1 Nos. 4) Ammeter Selector switch for Generator Amps Meter: 1 Nos. 5) VT Selector Switch 3 Pole 4 Way: 1 Nos. 6) Voltmeter selector for Wattmeter Pressure Coil (1 pole 4 way No OFF): 6 Nos 7) Voltmeter selector switch for external voltmeter: 1 Nos.	Vendor to confirm and specify the the make		
2.1.2.4	Analog Meters: Qty.-3 Nos. Size 144 X 144 mm, (AE / RISHABH Make) having the following nomenclature 1) Ammeter CTR-100/1A, Range 0-100Amp. 2) KV Meter, 110 Volt, Range 0 to 15 kV(Top Scale) ,0 - 8.66kV(Bottom Scale). 3) Frequency Meter - Range 0 to 200 Hz. FSD 200VDC	Vendor to confirm and specify the the make		
2.1.4.5	LED Indication Lamps, 230 VAC : Qty.-25 Nos Size 22mm, (Siemens / L&T /C&S Make) having the following nomenclature			

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SL. No.	DESCRIPTION OF BHEL REQUIREMENTS	ACTION BY VENDOR	OFFERED	DEVIATION
	1) DC Breaker OFF indication Green 2) DC Breaker ON indication Red 3) Field Breaker OFF indication GREEN 4) Field Breaker ON indication RED 5) Gen. Breaker OFF Indication GREEN 6) Gen. Breaker ON Indication RED 7) Source Selection MG#1 YELLOW 8) Source Selection MG#3 YELLOW 9) Source Selection MG#4 YELLOW 10) Source Selection SFC YELLOW 11) Gen. Wdg. Selection Series YELLOW 12) Gen. Wdg. Selection Star YELLOW 13) Gen. Wdg. Selection Parallel YELLOW 14) Gen. Wdg. Selection Delta YELLOW 15) Capacitor Bank ON RED 16) Capacitor Bank OFF GREEN 17) Ammeter Reading X 1 White 18) Ammeter Reading X 4 White 19) Ammeter Reading X 12 White 20) KV Meter Top Scale X 1 White 21) KV Meter Top Scale X 1/2 White 22) KV Meter Bottom Scale X 1 White 23) KV Meter Bottom Scale X 1/2 White	Vendor to confirm and specify the make		
2.1.4.6	20 Amp, 440V Banana Knobs for Wattmeter Pressure coil, Current coil, external voltmeter and Ammeter			
2.1.4.7	Other Panel Accessories required are as follows:			
	Control Supply MCB 16A, 2 Pole (C&S / Havells Make)	Vendor to confirm and specify the make		
	Panel Lighting LED Fitting, 9 W, 230 VAC with ON-OFF or door switch: Qty.-03Nos. (Havells, Philips, C&S Make)			
	5 Amp Switch/Socket (Anchor / Havells Make) Qty.-03 Nos			

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SL. No.	DESCRIPTION OF BHEL REQUIREMENTS	ACTION BY VENDOR	OFFERED	DEVIATION
2.1.4.8	After placement of order, the OGA and layout drawings will have to be prepared by the vendor, in consultation with BHEL . Manufacturing shall only be undertaken after obtaining approval from BHEL.	Vendor to confirm		
2.2	CONTROL DESK FOR 132KV TEST POINT : Qty.- 01 Nos.			
2.2.1	A new 132KV test point is being set-up for which a control desk is required having the following Specifications. The Control Desk shall be made of 4mm thick CRCA Sheet Steel, powder coated to shade RAL 7032 having all standard accessories.	Vendor to confirm		
2.2.2	The layout of components shall be distributed into three compartments a) For MG Set Control, b) For Test & Measurement and c) For placement of Power analyzer and Laptop. The cable entry shall be from the bottom with gland plates. Panel access shall be from the back door having heavy duty door locks. The tentative size of the control desk shall be 3500 mm(L) X 1000 mm(W) X 1500 mm(H) and Table Height - 900mm .	Vendor to confirm		
2.2.3	The panel wiring shall be done with multistrand PVC cable of 2.5 sq.mm, 1100V((Finolex, Havells , V-Guard Make), properly dressed/tied, routed in cable trays and terminated with crimped lugs. Wires of each compartment shall be separately terminated on heavy duty DIN Rail mounted Polyimide Terminal Blocks rated for 1100V/24 Amps.	Vendor to confirm and specify the make		
2.2.4	Devices to be mounted on the control desk shall be as follows:			
2.2.4.1	Push Buttons: Qty.-09 Nos. Potential Free, Normally Open, 6Amp/230V (SIEMENS/L&T, BCH Make) having the following nomenclature 1) DC Breaker Close PB (Green), 2) DC Breaker Open PB (Red), 3) Field Breaker Close PB (Green) 4) Field Breaker Open PB (Red) 5) Frequency Rise PB (Black) 6) Frequency Lower PB (Black) 7) Voltage Rise PB (Black) 8) Voltage Lower PB (Black) 9) Lamp Test PB (Yellow)	Vendor to confirm and specify the make		

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SL. No.	DESCRIPTION OF BHEL REQUIREMENTS	ACTION BY VENDOR	OFFERED	DEVIATION
2.2.4.2	Breaker Control Switch Spring loaded 2 pole Trip and Close Middle Neutral : Qty.-01 Nos, 440 V, 25 Amps.(Kay Cee / L&T Make).	Vendor to confirm and specify the the make		
2.2.4.3	Selectro Switches: Qty.- 12 Nos 16A, 440V (Kay Cee / L&T Make) having the following other specifications: 1) CT Sencivity make before break Selector switch 2 way 12 Pole: 1 Nos. 2) CT make before break Selector switch (2 CT per phase for 3 phase): 1 Nos. 3) Ammeter Selector switch for external meter: 1 Nos. 4) Ammeter Selector switch for Generator Amps Meter: 1 Nos. 5) VT Selector Switch 3 Pole 4 Way: 1 Nos. 6) Voltmeter selector for Wattmeter Pressure Coil (1 pole 4 way No OFF): 6 Nos 7) Voltmeter selector switch for external voltmeter: 1 Nos.	Vendor to confirm and specify the the make		
2.2.4.4	Analog Meters: Qty.-03 Nos. Size 144 X 144 mm, (AE / RISHABH Make) having the following nomenclature 1) Ammeter CTR-100/1A 2) KV Meter, 110 Volt, Range 0 to 15 kV(Top Scale) ,0 - 8.66kV(Bottom Scale). 3) Frequency Meter - Range 0 to 200 Hz, FSD 200VDC	Vendor to confirm and specify the the make		
2.2.4.5	LED Indication Lamps, 230 VAC : Qty.- 25 Nos Size 22mm, (Siemens / L&T /C&S Make) having the following nomenclature			

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SL. No.	DESCRIPTION OF BHEL REQUIREMENTS	ACTION BY VENDOR	OFFERED	DEVIATION
2.2.4.6	1) DC Breaker OFF indication Green 2) DC Breaker ON indication Red 3) Field Breaker OFF indication GREEN 4) Field Breaker ON indication RED 5) Gen. Breaker OFF Indication GREEN 6) Gen. Breaker ON Indication RED 7) Source Selection MG#1 YELLOW 8) Source Selection MG#3 YELLOW 9) Source Selection MG#4 YELLOW 10) Source Selection SFC YELLOW 11) Gen. Wdg. Selection Series YELLOW 12) Gen. Wdg. Selection Star YELLOW 13) Gen. Wdg. Selection Parallel YELLOW 14) Gen. Wdg. Selection Delta YELLOW 15) Capacitor Bank ON RED 16) Capacitor Bank OFF GREEN 17) Ammeter Reading X 1 White 18) Ammeter Reading X 4 White 19) Ammeter Reading X 12 White 20) KV Meter Top Scale X 1 White 21) KV Meter Top Scale X 1/2 White 22) KV Meter Bottom Scale X 1 White 23) KV Meter Bottom Scale X 1/2 White	Vendor to confirm and specify the make		
2.2.4.7	20 Amp, 440V Banana Knobs for Wattmeter Pressure coil, Current coil, external voltmeter and Ammeter Other Panel Accessories required are as follows: Control Supply MCB 16A, 2 Pole (C&S / Havells Make) Panel Lighting LED Fitting, 9 W, 230 VAC with ON-OFF/door switch: Qty.-03Nos. (Havells, Philips, C&S Make) 5 Amp Switch/Socket (Anchor / Havells Make). Qty.-0 3 Nos	Vendor to confirm and specify the make.		

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SL. No.	DESCRIPTION OF BHEL REQUIREMENTS	ACTION BY VENDOR	OFFERED	DEVIATION
2.2.4.8	After placement of order, the OGA and layout drawings will have to be prepared by the vendor, in consultation with BHEL. Manufacturing shall only be undertaken after obtaining approval from BHEL.	Vendor to confirm		
2.3	132KV, 03-POLE, 2000 AMP, DOUBLE BREAK MOTORISED ISOLATOR:QTY-1 Nos.			
2.3.1	A 132KV, 2000 Amp. 3 pole outdoor motorised isolator for connection of capacitor bank to the testing transformer. It will be double break rotary type isolator with earth switch complete with all accessories, namely mounting stand, mounting bracket insulators, motor, manual operating mechanism, earth switch complete with manual operating handle, motor operating panel, conforming to IS-9921. Broad specification shall be as under, for which test certificate to be submitted along with material.	Vendor to confirm		
2.3.2.1	Rated Voltage- 132KV	Vendor to specify		
2.3.2.2	Highest System Voltage 145KV	Vendor to specify		
2.3.2.3	Rated Current 2000 AMP.	Vendor to specify		
2.3.2.4	Breaking Current Capacity - As per IS	Vendor to specify		
2.3.2.5	Rated Short Time withstand Current - 25KA for 03 Sec.	Vendor to confirm		
2.3.2.6	Rated peak withstand current 78.5 KA	Vendor to confirm		
2.3.2.7	System Frequency 50Hz(+/- 3%)	Vendor to confirm		
2.3.2.8	Creeping Distance As per IS	Vendor to specify		
2.3.2.9	Rated Power Frequency Withstand Voltage - INSULATION LEVEL			
	(A) Rated One Minute Power Frequency WET withstand Voltage			
	(i) To Earth and Between Poles - As per IS	Vendor to specify		
	(ii) Across Isolating Distance - As per IS	Vendor to specify		
	(B) Rated One Minute Power Frequency DRY withstand Voltage			
	(i) To Earth and Between Poles - As per IS	Vendor to specify		
	(ii) Across Isolating Distance - As per IS	Vendor to specify		
2.3.2.10	Lightning Impulse Withstand Voltage	Vendor to specify		
	(i) To Earth and Between Poles - As per IS	Vendor to specify		
	(ii) Across Isolating Distance - As per IS	Vendor to specify		
2.3.2.11	Minimum Clearance	Vendor to specify		
	(i) Phase to Phase As Per IS	Vendor to specify		

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SL. No.	DESCRIPTION OF BHEL REQUIREMENTS	ACTION BY	OFFERED	DEVIATION
	(ii) Phase to Earth - As Per IS	VENDOR		
2.3.2.12	No of Poles - 03	Vendor to specify		
2.3.2.13	No of Breaks per pole - 02	Vendor to confirm		
2.3.2.14	Auxiliary contacts for interlocking(08 NO + 8 NC) , Aux Contacts in earthswitch (4NO+4NC)	Vendor to confirm		
2.3.2.15	Motor Make	Vendor to specify		
2.3.2.16	Motor Rating (KW / HP)	Vendor to specify		
2.3.2.17	Motor Supply Voltage	Vendor to specify		
2.3.2.18	Make Of Isolator	Vendor to specify		
2.3.2.19	Model Of Isolator	Vendor to specify		
2.4	PROTECTION & ALARM ANNUNCIATION PANEL QTY- 01 Nos			
2.4.1	A Protection and Alarm Annunciation panel for two testing transformers namely a) 2.0 MVA, 11/132kV and b) 40 MVA, 11/99KV.	Vendor to confirm		
2.4.2	The panel shall foot mounted, rear door access, made from 4mm thick CRCA Sheet Steel, powder coated to shade RAL 7032 having all standard accessories. Tentative dimension of the panel shall be 600 mm(W) X 400 mm(D) X 2000 mm(H).	Vendor to confirm		
2.4.3	The panel wiring shall be done with multistrand PVC cable of 2.5 sq.mm, 1100V (Finolex, Havells, V-Guard Make), properly dressed, cable tied, routed in cable trays and terminated with crimped lugs on heavy duty DIN Rail mounted Polyimide Terminal Blocks rated for 1100V/24 Amps.	Vendor to confirm		
2.4.4	The Devices to be mounted in the panel as follows..			
2.4.4.1	12 Window annunciator panel for 40MVA 11/99KV Trfr. : 1Nos Supply Voltage 230 VAC (Minilec /equivalent Make) Alarm Nomenclature (Bucholtz Alarm, Bucholtz Trip, Winding Temp Alarm, Winding Temp Trip, Oil Temp Alarm, Oil Temp Trip, Low Oil Level Alarm, Over Current Trip.	Vendor to confirm		
2.4.4.2	12 Window annunciator panel for 2 MVA 11/132 KV Trfr. : Qty.-01Nos Supply Voltage 230 VAC (Minilec /equivalent Make) Alarm Nomenclature (Bucholtz Alarm, Bucholtz Trip, Winding Temp Alarm, Winding Temp Trip, Oil Temp Alarm, Oil Temp Trip, Low Oil Level Alarm, Over Current Trip.	Vendor to confirm		

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SL. No.	DESCRIPTION OF BHEL REQUIREMENTS	ACTION BY VENDOR	OFFERED	DEVIATION
2.4.4.3	Numerical Over Current and Earth Fault Relay for 40 MVA Trfr. The relay shall be micro-controller based, having 4 programmable 1/5 Amps analog current input, Bright LCD/LED display, having fault recording with time stamping and suitable for measuring true RMS with DFT filter having following protection functions: - Three Phase Instantaneous, Time overcurrent protection (50/51) - Three Phase Earth Instantaneous, Time overcurrent protection (50N/51N) - Circuit Breaker failure protection.	Vendor to confirm		
2.4.4.4	Numerical Over Current and Earth Fault Relay for 2 MVA Trfr (specifications same as with point 2.4.4.3).	Vendor to confirm		
2.5	11KV, TEST POINT SELECTOR PANEL			
2.5.1	A 11 kV Test Point Selector panel is required for transfer of SFC output to various Test Points. The panel shall be made from CRCA sheet steel, powder coated to shade RAL 7032 having all standard accessories, fitted with 5 Nos. off-load break switches in two columns, with one Incoming Bus chamber at the centre and two columns of out going cable chamber. The tentative Schematic Diagram of Test Point selection Panel is shown in point 3.6 below. The entry of all the power & control cables are from the bottom. The major specifications of the panel shall be as follows:	Vendor to confirm		
2.5.2	Selector Switches			
2.5.2.1	11KV, 1200A, 3-pole Off-Load Break Switch having following specifications: Qty.-01 Nos			
	a) Rated Voltage - 11 KV b) Highest System Voltage - 12.5 KV c) Rated Current - 1200 Amp. d) Number Of Poles - 03 e) Minimum Clearance from Line to Earth and Line to Line - As per IS f) Operation - Manual and No Load operation only. g) Break - Single h) Aux. Contacts - 8NO + 8 NC (Mechanically Operated)			
2.5.2.2	11KV, 630 A, 3-pole Off-load Break Switch having following specifications: Qty.-04 Nos.			

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SL. No.	DESCRIPTION OF BHEL REQUIREMENTS	ACTION BY VENDOR	OFFERED	DEVIATION
	a) Rated Voltage - 11 KV b) Highest System Voltage - 12.5 KV c) Rated Current - 630 Amp. d) Number Of Poles - 03 e) Minimum Clearance from Line to Earth and Line to Line - As per IS f) Operation - Manual and No Load operation only. G) Break - Single h) Aux. Contacts - 8NO + 8 NC (Mechanically Operated)	Vendor to confirm		
2.5.3	BUS BARS The Main BUS and incoming and out going Bus Bar of 1200A Switch shall be made from Copper with a minimum cross section of 500 Sq.mm. Whereas the Bus Bars from and to 630A switches shall be made from copper with a minimum cross section of 300 Sq.mm.	Vendor to confirm		
2.5.4	Insulators - As Per IS All the off-load break switches shall be mounted on insulators suitable for 11KV and all ratings as per IS.	Vendor to confirm		
2.5.5	Interlocks (Using Castle Lock & Key) The interlocks of selector switches shall be Mechanical Type. Sample set of LOCK & KEY shall be made available by BHEL. Insertion and withdrawal of key shall be from front facia without opening the panel cover.			
2.5.5.2	Interlock Condition to be fulfilled: One set of three Locks shall be mounted in each load break switch . All the three keys are required to CLOSE / OPEN the switch. Two keys will not come out from the lock and the third one will come out from the lock when the switch is in CLOSE position. All the three keys will come out when the switch is in OPEN position.	Vendor to confirm		
2.5.6	Panel Accessories			
2.5.6.1	2 Nos 9 W LED Fittings with door interlock			
2.5.6.2	2 Nos: 5 Amps Switch/Socket			
2.5.6.3	LED Indication lamps(Close-Red and Open-Green) to be provided on the panel doors for each Load Break Switch.	Vendor to confirm		
2.5.7	Panel Wiring			

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	At the wires from Aux. Contacts (8NO+8NC = 32 Wires per Load Break Switch) shall be done with multistrand PVC cable of 2.5 sq.mm, 1100V (Finolex, Havells, V-Guard Make), properly dressed, cable tied, routed in cable trays and terminated with crimped lugs on heavy duty DIN Rail mounted Polymide Terminal Blocks rated for 1100V/24 Amps.	Vendor to confirm		
2.6	33/36 KV SOLID POST INSULATOR QTY- 30 No.			
	As per enclosed drawing No.			
2.7	GALVANISED EARTHING STRIP:			
2.7.1	Galvanised Earthing strips is required for earthing of equipments and structures. The earthing strip shall be made from MS flat of size 50mm x 5mm. The MS Flats shall be hot-dipped galvanized confirming to IS: 2629. The tentative quantity shall be: 50mm X 5mm Hot-dipped Galvanised flats strips: 250 Kgs.	Vendor to confirm		
2.8	MISCELLANEOUS CABLING ITEMS:			
	Following items required for E&C of the system are also required to be supplied.			
2.8.1	CABLE LUGS: All Power & Control cable terminations shall be through suitable lugs. The tentative quantity shall be as under: a) 300 Sqmm Crimpable Eye Type Copper Lug: 50 No b) 185 Sqmm Crimpable Eye Type Copper Lug: 50 Nos. c) 300 Sqmm Crimpable Eye Type Aluminium Lug: 50 Nos d) 185 Sqmm Crimpable Eye Type Aluminium Lug: 50 Nos. e) 2.5 Sqmm Crimpable Eye Type Copper lug: 1000 Nos f) 2.5 Sqmm Crimpable PIN Type Copper lug: 1000 Nos g) 1.0 Sqmm Crimpable PIN Type Copper lug: 1000 Nos	Vendor to confirm		
2.8.2	CABLE TIES: All the wiring shall be dressed properly and bunched together with cable ties. The tentative quantities shall be as under: a) 50 MM Length Cable Tie: 1000 Nos b) 100 MM Length Cable Tie: 1000 Nos c) 150 MM Length Cable Tie: 1000 Nos d) 200 MM Length Cable Tie: 1000 Nos e) 300 MM Length Cable Tie: 1000 Nos	Vendor to confirm		

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SCOPE: PART SUPPLY AND ERECTION & COMMISSIONING OF EQUIPMENTS FOR SETTING UP OF A) POWER SUPPLY SOURCE WITH 4MVA SFC, B) INTEGRATION OF SFC WITH EXISTING TEST POINTS AND C) SETTING UP OF 2 NOS. TEST POINTS WITH 99KV/40MVA AND 132KV/2MVA TRANSFORMERS RESPECTIVELY IN BAY-9.				
SL. No.	DESCRIPTION OF BHEL REQUIREMENTS	ACTION BY VENDOR	OFFERED	DEVIATION
2.8.3	CABLE TRAYS: All the control cables are to be routed through C-Type cable trays without covers. The Cable Trays shall be perforated and made from high grade sheet steel of min. 1.6mm thickness, hot dipped galvenised as per IS-2629. The tentative quantity of cable trays shall be as follows: a) 300mm(W) x 25mm(H) x 1.6mm(T): Total length: 30m. b) 100mm(W) x 25mm(H) x 1.6mm(T): Total length: 30m. c) 50mm(W) x 25mm(H) x 1.6mm(T): Total length: 30m.	Vendor to confirm		
2.8.4	AUXILIARY CONTACTORS, COIL-230 VAC, CONTACT RATING-10A: Loose Auxiliary contactors are required for implementing interlocking scheme of Power Source/test Point selection. The tentative quantities are as follows: a) Auxiliary Contractor having 8 NO contacts: 24 Nos. b) Auxiliary Contractor having 4 NO + 4 NC contacts: 24 Nos.	Vendor to confirm		
2.8.5	CABLES: Single-core multi-strand PVC insulated rated for 1.1kV cables are required for carrying modification in existing the panel wiring. The tentative quantity of cables required are as follows: a) 1 Sq.mm(GREY) : 2000m b) 2.5 Sq.mm(RED): 500m c) 2.5 Sq.mm(YELLOW): 500m D) 2.5 Sq.mm(BLUE): 500m E) 2.5 Sq.mm(GREEN): 500m	Vendor to confirm		
2.8.7	LED WARNING LIGHT: 15 Nos. LED warning light in 150mm dia(approx) made from heat resistant ABS with Stainless Steel body, Red Color, 230V with builtin switch for selection between steady and flashing mode.	Vendor to confirm		
2.8.7	ELECTRONIC HOOTERS/SIREN: 6 Nos. Electric horn (100 db approx) having user selectable warning sounds(DIP switches), Adjustable volume, Operating Voltage -230V AC.	Vendor to confirm		
3	SCOPE OF WORK			

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SCOPE: PART SUPPLY AND ERECTION & COMMISSIONING OF EQUIPMENTS FOR SETTING UP OF A) POWER SUPPLY SOURCE WITH 4MVA SFC, B) INTEGRATION OF SFC WITH EXISTING TEST POINTS AND C) SETTING UP OF 2 NOS. TEST POINTS WITH 99KV/40MVA AND 132KV/2MVA TRANSFORMERS RESPECTIVELY IN BAY-9.				
SL. No.	DESCRIPTION OF BHEL REQUIREMENTS	ACTION BY VENDOR	OFFERED	DEVIATION
	All the Erection & Commissioning work associated with the following systems shall be under vendor scope: a) Creation of 2 Nos. Test Points one with 99 kV/40MVA transformer and second with 132 kV/2 MVA Transformer in Bay-9 Testing Area, b) Creation of Power Supply Source with 4 MVA Static Frequency Converter (SFC) c) Integration of 4 MVA SFC with existing Test Point The 4MVA SFC which is being procured seperately shall be erected and commissioned by the vendor supplying SFC directly. The scope of work shall broadly comprise of the following:	Vendor to confirm		
3.1	E&C OF EQUIPMENTS FOR SETTING UP OF POWER SUPPLY SOURCE WITH 4MVA STATIC FREQUENCY CONVERTER:			
	The work will broadly comprise of the following:			
3.1.1	E&C OF 11kV/700V or 400V, 2.5MVA INPUT STEP DOWN TRANSFORMER : QTY-01	Vendor to confirm		
3.1.1.1	The work broadly shall be as follows: - Shifting and Installation of Of Trfr. at the location. - Wiring of Power & Control Cables. - Neutral & Body Earthing - All Pre-commissioning Test as per IS	Vendor to confirm		
3.1.2	E&C OF 700 or 400V/11kV, 6MVA OUTPUT STEP UP TRANSFORMER: QTY-01			
3.1.2.1	The work broadly shall be as follows: - Shifting and Installation of Of Trfr. at the location. - Wiring of Power & Control Cables. - Neutral & Body Earthing - All Pre-commissioning Test as per IS	Vendor to confirm		
3.1.3	E&C OF INPUT VCB & OUTPUT VCB QTY-04			

SCOPE: PART SUPPLY AND ERECTION & COMMISSIONING OF EQUIPMENTS FOR SETTING UP OF A) POWER SUPPLY SOURCE WITH 4MVA SFC, B) INTEGRATION OF SFC WITH EXISTING TEST POINTS AND C) SETTING UP OF 2 NOS. TEST POINTS WITH 99KV/40MVA AND 132KV/2MVA TRANSFORMERS RESPECTIVELY IN BAY-9.

SL. No.	DESCRIPTION OF BHEL REQUIREMENTS	ACTION BY VENDOR	OFFERED	DEVIATION
3.1.3.1	The work broadly shall be as follows: - Shifting & Installation Of VCBs at the location. - Wiring of Power & Control Cables. - Body Earthing - All Pre-commissioning Test as per IS	Vendor to confirm		
3.1.4	E&C OF STATIC FREQUENCY CONVERTER: The E&C of SFC shall be undertaken by the vendor supplying the SFC.	Vendor to confirm		
3.2	E&C OF EQUIPMENTS FOR INTEGRATION OF 4 MVA SFC WITH EXISTING TEST POINTS: The work will broadly comprise of the following:	Vendor to confirm		
3.2.1	E&C OF TEST POINT SELECTOR PANEL: QTY-01	Vendor to confirm		
3.4.1	The work broadly shall be as follows: - Shifting and Installation of Test point Selector Panel at the location. - Wiring of Power & Control Cables. - Body Earthing - All Pre-commissioning Test as per IS	Vendor to confirm		
3.3	E&C OF EQUIPMENTS FOR SETTING UP OF 99KV TEST POINT: QTY-01	Vendor to confirm		
3.3.1	The work required for setting up of new 99KV Test point will broadly comprise of the following: E&C OF 40MVA, 11/99KV TESTING TRANSFORMER OF 99 KV TEST POINT: QTY-01	Vendor to confirm		
3.3.1.1	The work broadly shall be as follows: - Shifting and Installation of Trfr. at the location. - Erection of Bushings, Radiators, Conservator, Marshalling Box etc. - Oil filling & HOC of Transformer (Filter Machine shall be provided by BHEL) - Wiring of Power & Control Cables. - Routing, Fixing & Termination of IPS Tubes/Busbars - Body Earthing - All Pre-commissioning Test as per IS	Vendor to confirm		
3.3.2	FABRICATION OF MS STEEL PLATFORM:			

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SCOPE: PART SUPPLY AND ERECTION & COMMISSIONING OF EQUIPMENTS FOR SETTING UP OF A) POWER SUPPLY SOURCE WITH 4MVA SFC, B) INTEGRATION OF SFC WITH EXISTING TEST POINTS AND C) SETTING UP OF 2 NOS. TEST POINTS WITH 99KV/40MVA AND 132KV/2MVA TRANSFORMERS RESPECTIVELY IN BAY-9.			
SL. No.	DESCRIPTION OF BHEL REQUIREMENTS	ACTION BY	OFFERED DEVIATION
3.3.2.1	A MS Steel Platform Structure is required to be fabricated for mounting of CT's & VT's of 99KV Test Point. The tentative dimensions of the platform shall be Width-2000mm, Length-3500mm and Height-2000mm. Material- C-Channel , L-Angle and checkered plate. (All the structural steel shall be provided by BHEL). QTY-01	Vendor to confirm	
3.3.2.2	Adjacent to above platform, another platform for mounting of 132KV , 1250A Isolator is also required to be fabricated. This will also serve as access point for connection of Transformer under test. The tentative dimensions of the platform shall be Width-3000mm, Length- 6000mm and Height-3500mm. Material- C-Channel , L-Angle and checkered plate. (All the structural steel shall be provided by BHEL). QTY-01	Vendor to confirm	
3.3.3	E&C OF 3 Nos CT & 3 Nos VT of 99KV TEST POINT:	Vendor to confirm	
3.3.2.1	The work broadly shall be as follows: - Shifting and Installation of CT's & VT's on the above platform. - Wiring of CT's & VT's secondary control cables. - Routing, Fixing & Termination of IPS Tubes/Busbars on primary terminal of CT's & VT's - Body Earthing - All Pre-commissioning Test as per IS .	Vendor to confirm	
3.3.4	E&C of 132KV , 3-POLE, 1250A ISOLATOR FOR SEPERATION OF TRANSFORMER UNDER TEST FROM 99KV TEST POINT: 01 Nos	Vendor to confirm	
3.3.3.1	The work broadly shall be as follows: - Shifting and Installation of 132KV , 3-Pole, 1250A on the above platform. - Routing, Fixing & Termination of IPS Tubes/Busbars on Incoming & outgoing terminal of Isolator. - Body Earthing - All control wiring - All Pre-commissioning Test as per IS	Vendor to confirm	
3.3.5	E&C of 99KV, 120 MVAR CAPACITOR BANK: QTY-01 SET	Vendor to confirm	

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SCOPE: PART SUPPLY AND ERECTION & COMMISSIONING OF EQUIPMENTS FOR SETTING UP OF A) POWER SUPPLY SOURCE WITH 4MVA SFC, B) INTEGRATION OF SFC WITH EXISTING TEST POINTS AND C) SETTING UP OF 2 NOS. TEST POINTS WITH 99KV/40MVA AND 132KV/2MVA TRANSFORMERS RESPECTIVELY IN BAY-9.			
SL. No.	DESCRIPTION OF BHEL REQUIREMENTS	ACTION BY VENDOR	OFFERED DEVIATION
	The work broadly shall be as follows: - Shifting of all components of capacitor bank. - Assembly of all 120MVAr capacitors in the racks. - Installation Racks and Post Insulators on pedestal foundation. (Foundation shall be made by BHEL). - Routing, Fixing & Termination of IPS Tubes/Busbars to the Capacitor Banks. - Body Earthing - All control wiring - All Pre-commissioning Test as per IS.	Vendor to confirm	
3.3.6	INSTALLATION OF 132 KV LIGHTENING ARRESTER & CT (To be provided by BHEL):QTY;01 SET The Lightning Arrestor & CT for cap. bank to be provided by BHEL shall be erected on the fabricated pedestal	Vendor to confirm	
3.3.7	E&C OF 132KV ,3-POLE, 1250A ISOLATOR FOR ISOLATION OF CAPACITOR BANK (To be provided by BHEL): QTY -01 No.	Vendor to confirm	
3.3.7.1	The work broadly shall be as follows: - Shifting and Installation of 132KV ,3-Pole, 1250A on assigned pedestal.. - Routing, Fixing & Termination of IPS Tubes/Busbars on Incoming & outgoing terminal of Isolator. - Body Earthing - All control wiring - All Pre-commissioning Test as per IS	Vendor to confirm	
3.3.8	E&C OF 33 KV SOLID POST INSULATORS: qty 30 No. 33 KV post insulators shall be used for supporting the 132KV Busbar/IPS tube where ever required.	Vendor to confirm	
3.3.9	E&C OF PROTECTION AND ALARM ANNUNCIATION PANEL:QTY -01 No.	Vendor to confirm	
3.3.9.1	The work broadly shall be as follows: - Shifting and Installation of Protection & Alarm Annunciation panel at designated position. - Body Earthing - All control wiring - All Pre-commissioning Test as per IS	Vendor to confirm	

SCOPE: PART SUPPLY AND ERECTION & COMMISSIONING OF EQUIPMENTS FOR SETTING UP OF A) POWER SUPPLY SOURCE WITH 4MVA SFC, B) INTEGRATION OF SFC WITH EXISTING TEST POINTS AND C) SETTING UP OF 2 NOS. TEST POINTS WITH 99KV/40MVA AND 132KV/2MVA TRANSFORMERS RESPECTIVELY IN BAY-9.

SL. No.	DESCRIPTION OF BHEL REQUIREMENTS	ACTION BY VENDOR	OFFERED	DEVIATION
3.3.10	E&C OF 99KV TEST POINT CONTROL DESK, QTY -01 No. The work broadly shall be as follows: - Shifting and Installation of Control desk at designated position in the Control Room located 11m height control gallery (The control room shall be manufactured by BHEL) - Body Earthing - All control cabling to respective location. - All pre-commissioning Test as per IS	Vendor to confirm		
3.4	E&C OF EQUIPMENTS FOR SETTING UP OF 132KV TEST POINT: The work required for setting up of new 132kV Test point will broadly comprise of the following:	Vendor to confirm		
3.4.1	E&C OF 2MVA, 11/132KV TESTING TRANSFORMER OF 132 kV TEST POINT : QTY - 01 No.. The work broadly shall be as follows: - Shifting and Installation of Trfr. at the location. - Erection of Bushings, Radiators, Conservator, Marshalling Box etc. - Oil filling & HOC of Transformer (Filter Machine shall be provided by BHEL) - Wiring of Power & Control Cables. - Routing, Fixing & Termination of IPS Tubes/Busbars - Body Earthing - All Pre-commissioning Test as per IS	Vendor to confirm		
3.4.2	FABRICATION OF MS STEEL PLATFORM:	Vendor to confirm		
3.4.2.1	A MS Steel Platform Structure is required to be fabricated for mounting of CT's & VT's of 132KV Test Point. The tentative dimensions of the platform shall be Width-2000mm, Length-3500mm and Height-2000mm. Material- C-Channel , L-Angle and checkered plate. (All the structural steel shall be provided by BHEL). QTY -01 No.	Vendor to confirm		
3.4.2.2	Adjacent to above platform, another platform for access point for making connection of Transformer under test is required. The tentative dimensions of the platform shall be Width-3000mm, Length-6000mm and Height-3500mm. Material- C-Channel , L-Angle and checkered plate. (All the structural steel shall be provided by BHEL). QTY -01 No.	Vendor to confirm		
3.4.3	E&C OF 3 Nos CT & 3 Nos VT of 132 KV Test Point	Vendor to confirm		

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SCOPE: PART SUPPLY AND EREC, ION & COMMISSIONING OF EQUIPMENTS FOR SETTING UP OF A) POWER SUPPLY SOURCE WITH 4MVA SFC, B) INTEGRATION OF SFC WITH EXISTING TEST POINTS AND C) SETTING UP OF 2 NOS. TEST POINTS WITH 99KV/40MVA AND 132KV/2MVA TRANSFORMERS RESPECTIVELY IN BAY-9.			
SL. No.	DESCRIPTION OF BHEL REQUIREMENTS	ACTION BY VENDOR	OFFERED DEVIATION
3.4.3.1	The work broadly shall be as follows: - Fabrication of elevated platform for mounting of equipment (Required structural steel shall be provided by BHEL). - Shifting and Installation of CT's & VT's on the platform. - Wiring of CT's & VT's secondary control cables. - Routing, Fixing & Termination of IPS Tubes/Busbars on primary terminal of CT's & VT's - Body Earthing - All Pre-commissioning Test as per IS.	Vendor to confirm	
3.4.4	BLANK		
	BLANK		
3.4.5	E&C OF 132KV SOLID POST INSULATORS: 132KV post insulators shall be used for supporting the 132KV Busbar/IPS tube where ever required.	Vendor to confirm	
		Vendor to confirm	
3.4.6	E&C OF 132KV TEST POINT CONTROL DESK, QTY: 01 Nos The work broadly shall be as follows: - Shifting and Installation of Control desk at designated position in the Control Room located 11m height control gallery (The control room shall be manufactured by BHEL) - Body Earthing - All control cabling to respective location. - All pre-commissioning Test as per IS.	Vendor to confirm	
		Vendor to confirm	
3.5	E&C OF MISCELLANEOUS EQUIPMENTS/ITEMS:	Vendor to confirm	
3.5.1	EARTHING PITS: 25 Nos. The earthing pits are to be prepared in accordance to IS-3043. The earth resistance required is less than 0.5 Ohms.	Vendor to confirm	
		Vendor to confirm	
3.5.2	LAYING & CONNECTION OF EARTHING STRIPS: 500m. The earth pits are to be connected to grounding connections of various installations, test points as per requirement.	Vendor to confirm	
		Vendor to confirm	
3.5.3	CABLE LAYING & TERMINATION The requirement for laying and termination of Power & Control Cables are as summarised below. The details are tentative and may vary by +/-10%.	Vendor to confirm	
		Vendor to confirm	

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SCOPE: PART SUPPLY AND ERECTION & COMMISSIONING OF EQUIPMENTS FOR SETTING UP OF A) POWER SUPPLY SOURCE WITH 4MVA SFC, B) INTEGRATION OF SFC WITH EXISTING TEST POINTS AND C) SETTING UP OF 2 NOS. TEST POINTS WITH 99KV/40MVA AND 132KV/2MVA TRANSFORMERS RESPECTIVELY IN BAY-9.

SL. No. DESCRIPTION OF BHEL REQUIREMENTS

ACTION BY
VENDOR

OFFERED

DEVIATION

3.5.3.1 Laying & termination requirement of Aluminium Cables

Vendor to confirm

FROM	TO	VOLT	AMP	Section (sq.mm)	core	length (Meters)	No of lengths
VCB	TP SEL PANEL	11KV	1000	500	1	30	6
Existing TP Panel	New TP sel. panel	11KV	400	500	1	40	18
Existing TP Panel	40 MVA Tfr.	11KV	1000	500	1	75	6
Copper Control Cables							
99kv CT&VT	CD-5	1100V		2.5	24	30	2
132KV CT&VT	CD-4	1100V		2.5	24	30	2
CAP. CT	CAP PANEL	1100V		2.5	4	50	3
CAP ISOLATOR	CAP PANEL	1100V		2.5	12	50	1
DESK SELECTOR	CD-4	1100V		2.5	24	60	4
DESK SELECTOR	CD-5	1100V		2.5	24	20	4
VCB	DESK SELECTOR	1100V		2.5	12	40	2
TP SEL PANEL	PROT PANEL	1100V		2.5	24	40	1
40MVA M. BOX	PROT PANEL	1100V		2.5	24	60	1
2MVA Tfr. CT	PROT PANEL	1100V		2.5	12	60	1
SFC TRFR.	PROT PANEL	1100V		2.5	12	200	2

Vendor to confirm

3.5.3.2 Laying & termination requirement of Copper Cables

Vendor to confirm

FROM	TO	VOLT	AMP	Section (sq.mm)	core	length (Meters)	No of lengths
INPUT SFC TRFR	SFC	1100V	2000	300	1	10	9
SFC	OUTPUT TRFR	1100V	3250	300	1	10	12

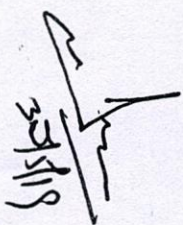
Vendor to confirm

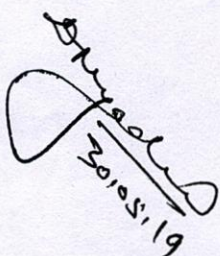
3.5.3.3 Only termination requirement of Aluminium Cables (these cables are already layed)

Vendor to confirm

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	SCOPE: PART SUPPLY AND ERECTION & COMMISSIONING OF EQUIPMENTS FOR SETTING UP OF A) POWER SUPPLY SOURCE WITH 4MVA SFC, B) INTEGRATION OF SFC WITH EXISTING TEST POINTS AND C) SETTING UP OF 2 NOS. TEST POINTS WITH 99KV/40MVA AND 132KV/2MVA TRANSFORMERS RESPECTIVELY IN BAY-9.									
SL. No.	DESCRIPTION OF BHEL REQUIREMENTS							ACTION BY VENDOR	OFFERED	DEVIATION
	FROM	TO	VOLT	AMP	Section (sq.mm)	core	Length (Meters)	No of lengths		
	SUB STATION-1	VCB	11KV	210	95	3	200	2	Vendor to confirm	
	VCB	SFC INPUT TRFR.	11KV	210	500	1	200	3		
	SFC OUTPUT TRFR.	OUTPUT VCB	11KV	1000	500	1	200	6		
	Old TP Sel. Panel	2MVA Trfr.	11KV	100	95	3	100	1		
3.6	Tentative schematic Diagram of 11kV Test Point Selection Panel (Item 2.5 above)							Vendor to confirm		

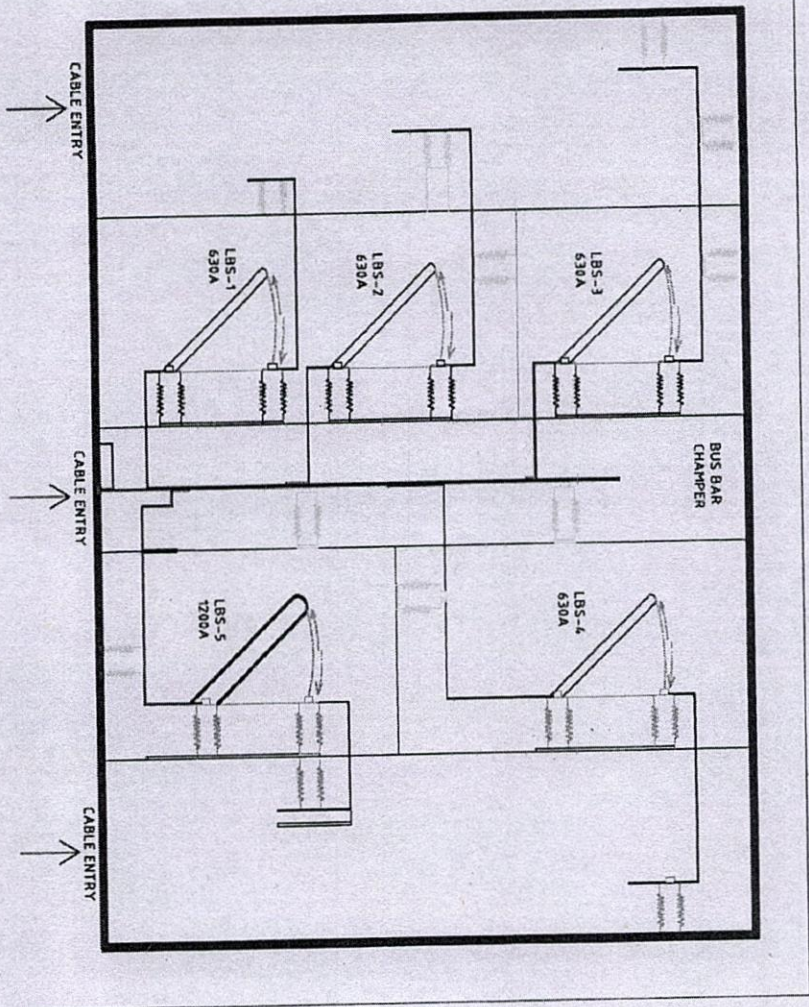





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SCOPE: PART SUPPLY AND ERECTION & COMMISSIONING OF EQUIPMENTS FOR SETTING UP OF A) POWER SUPPLY SOURCE WITH 4MVA SFC, B) INTEGRATION OF SFC WITH EXISTING TEST POINTS AND C) SETTING UP OF 2 NOS. TEST POINTS WITH 99KV/40MVA AND 132KV/2MVA TRANSFORMERS RESPECTIVELY IN BAY-9.

SL. No.	DESCRIPTION OF BHEL REQUIREMENTS	ACTION BY VENDOR	OFFERED	DEVIATION
4.0	ACCESSORIES:			
4.1	Scope of work shall be in line with above details. Any things else which is required to complete the scope of work & performance of supplied item will be in the scope of vender without extra payment.	Vendor to specify		
5.0	SPARES:			
5.1	List of all necessary spares for two years trouble-free operation for supplied items to be supplied with items/instruments with out extra cost. (item wise list required)	Vendor to Confirm		



Vendor to confirm

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SCOPE: PART SUPPLY AND ERECTION & COMMISSIONING OF EQUIPMENTS FOR SETTING UP OF A) POWER SUPPLY SOURCE WITH 4MVA SFC, B) INTEGRATION OF SFC WITH EXISTING TEST POINTS AND C) SETTING UP OF 2 NOS. TEST POINTS WITH 99KV/40MVA AND 132KV/2MVA TRANSFORMERS RESPECTIVELY IN BAY-9.			
SL. No.	DESCRIPTION OF BHEL REQUIREMENTS	ACTION BY VENDOR	OFFERED DEVIATION
6.0	DOCUMENTATION : 3 copies of each of the following in English language (both in hard copies and soft copies in pen drive) shall be supplied along with the supply.	Vendor to Confirm	
6.1	Detailed GA Drawing, catalogues, of all instrument/accessories along with the offer.	Vendor to Confirm	
6.2	Operation, manual, Maintenance manual & instruction manual of all instrument/accessories with circuit diagrams and schematics for trouble shooting.	Vendor to Confirm	
6.3	Test & Guarantee Certificate of supplied equipments.	Vendor to Confirm	
6.4	Calibration/test certificate of all supplied items.	Vendor to Confirm	
7.0	SYSTEM INSPECTION:(Pre-dispatch inspection)	Vendor to Confirm	
7.1	Pre-dispatch inspection will be carried out by the representative of BHEL at suppliers works.	Vendor to Confirm	
8.0	INSTALLATION & COMMISSIONING (At BHEL Works)	Vendor to Confirm	
8.1	Supplier to take full responsibility for carrying out Erection of supplied equipment, Start-up and Commissioning at BHEL works. Following shall be part of E&C activities	Vendor to Confirm	
8.2	Demonstration of all features of the supplied items with all accessories to the satisfaction of BHEL for their efficient and effective use.	Vendor to Confirm	
8.3	Successful proving of supplied items as per relevant IS by the supplier at BHEL works shall be part of commissioning.	Vendor to Confirm	
8.4	Installation of equipments/items covered under point no. 3.3 should be as per IS.	Vendor to Confirm	
9.0	TRAINING:	Vendor to Confirm	
9.1	BHEL testing and maintenance person should be trained at BHEL Works for (a) Use of all system Features of system & accessories etc. (b) Electrical, Electronic & Maintenance aspects of system & accessories.	Vendor to Confirm	
10.0	AMBIENT CONDITIONS & THERMAL STABILITY :		
10.1	Total System and all supplied items should work trouble free and efficiently under following operating conditions and should give specified accuracies. Input Power Supply: 11 kV, 3 phase, 3-wire system./415 v A/C, 3 phase, 3-wire system/220 v A/C Frequency: 50 Hz $\pm$ 1.5 Hz Operating Humidity : $\leq$ 10% to 80% Operating Temperature : 5°C to 48 °C (Vendor to confirm that all supplied items is suitable for above and details of provisions on the system for the same are to be furnished by Vendor)	Vendor to Confirm	
10.2	Thermal Stability of the complete system keeping in view specified Ambient Conditions and accuracy requirements of BHEL components and trouble free operation of the system should be ensured by vendor. (Vendor to confirm that system is suitable for above and details of provisions on the system for the same should be furnished by Vendor)	Vendor to Confirm	

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SCOPE: PART SUPPLY AND ERECTION & COMMISSIONING OF EQUIPMENTS FOR SETTING UP OF A) POWER SUPPLY SOURCE WITH 4MVA SFC, B) INTEGRATION OF SFC WITH EXISTING TEST POINTS AND C) SETTING UP OF 2 NOS. TEST POINTS WITH 99KV/40MVA AND 132KV/2MVA TRANSFORMERS RESPECTIVELY IN BAY-9.				
SL. No.	DESCRIPTION OF BHEL REQUIREMENTS	ACTION BY VENDOR	OFFERED	DEVIATION
11.0 PACKING:				
11.1	Air worthy/Sea worthy & rigid packing for all items of complete system, all accessories and other supplied items to avoid any damage/loss in transit. When system is dispatched in containers, all small loose items shall be suitably packed in boxes	Vendor to Confirm		
12.0 GUARANTEE :				
12.1	24 months from the date of commissioning of all supplied equipments/items .	Vendor to Confirm		
13.0 QUALIFYING CONDITIONS:				
13.1	Only those vendors who have experience in erection & commissioning of electrical sub station of 33KV and above shall be eligible for participating in the tender.	Vendor to submit		
	Following details from 13.1.1 to 13.1.5 are to be mandatorily furnished-			
13.1.1	Name of the customer / company where similar work is completed. (Copy of Purchase order/work order/LOA should be furnished).	Vendor to submit		
13.1.2	Name and designation, phone, email address, postal address of the contact person of the customer.	Vendor to submit		
13.1.3	Year of completion of work.	Vendor to submit		
13.1.4	Work completion certificate regarding completion of work mentioned in clause 13.1 from the customer whose details have been mentioned in clause 13.1.1 to 13.1.3 above.	Vendor to submit		
13.1.5	Reference list of all customers mentioning the customer name, contact details and year of completion, where 33 kv and above sub station work has been undertaken.	Vendor to submit		
14.0	BHEL reserves the right to verify information submitted by vendor. In case the information is found to be false/incorrect, the offer shall be rejected.	Vendor to note		

Sh. Shashank Dubey
Sr. Eng./Testing

Sh. Satish SoniSh.
Dy. Manager/ Electronics Maint.

Sh. D.N. Yadav
Manager/ Testing

Sh. Payan Kumar
Sr. Manager/ WEX