

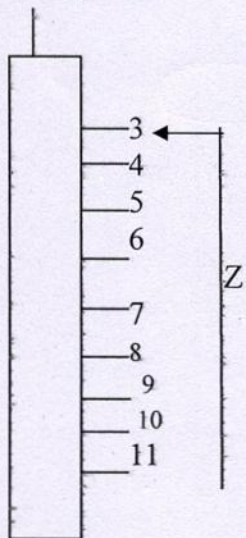
ANNEXURE-II

P.I. NO 440690953 DT.15.11.2019

PI Item No. 02

SPECIFICATION FOR VERTICAL MOUNTED OFF CIRCUIT TAP SWITCH

Sl		Technical Requirements	Suppliers Confirmation													
1	General:	600Amp, 33 kV class, 9 position, 3-phase (linear) type Off circuit Tap Switch with operating handle at top/bottom for vertical mounting with bevel gear arrangement to operate from tank side wall. The switch should be rugged in construction and robust in design with best quality of material and workmanship. It should conform to following technical specification and all the requirements of governing IEC 60214-1. Note: Top or bottom handle requirement to be intimated at the time of ordering .														
2	Trfr Data:	<table><tr><td>Rated Voltage</td><td>:</td><td rowspan="6">To be furnished at the time of Ordering</td></tr><tr><td>Rated current</td><td>:</td></tr><tr><td>No. of Phases</td><td>:</td></tr><tr><td>Frequency</td><td>:</td></tr><tr><td>Tapping range</td><td>:</td></tr><tr><td>Connection</td><td>:</td></tr></table>	Rated Voltage	:	To be furnished at the time of Ordering	Rated current	:	No. of Phases	:	Frequency	:	Tapping range	:	Connection	:	
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Rated current	:															
No. of Phases	:															
Frequency	:															
Tapping range	:															
Connection	:															
3	Tap Switch Data:															
	(i)	Current Rating of Contact: 600 Amp.														
	(ii)	Extended current rating : 125 % of rated														
	(iii)	Step Voltage :To be furnished at the time of Ordering														
	(iv)	No. of Position : 9														
	(v)	Short circuit with stand time: 3 sec.														
	(vi)	Lead joints as per table given below:														

		Phase Diagram 	Tap Position. Lead Joint <table><tr><td>1</td><td>Z - 11</td></tr><tr><td>2</td><td>Z- 10</td></tr><tr><td>3</td><td>Z - 9</td></tr><tr><td>4</td><td>Z - 8</td></tr><tr><td>5</td><td>Z - 7</td></tr><tr><td>6</td><td>Z - 6</td></tr><tr><td>7</td><td>Z - 5</td></tr><tr><td>8</td><td>Z - 4</td></tr><tr><td>9</td><td>Z - 3</td></tr></table>	1	Z - 11	2	Z- 10	3	Z - 9	4	Z - 8	5	Z - 7	6	Z - 6	7	Z - 5	8	Z - 4	9	Z - 3	
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7	Z - 5																					
8	Z - 4																					
9	Z - 3																					
NOTE: Terminal marking may change during ordering stage and to be done accordingly.																						
4	Test Voltages																					
			Power Frequency	Lightening Imp.																		
			rms	1.2/50 Micro																		
				Sec																		
	(i)	Tap Switch to Earth	70kV	170 kVp																		
	(ii)	Between Phases	70kV	170 kVp																		
	(iii)	Between Step	10kV	40 kVp																		
	(iv)	Across Range	70kV	170 kVp																		
5	Provisions:	The tap switch must have following provisions: a) Tap position indication b) End limit stops c) Pad locking arrangement d) Leak proof stuffing box e) Smooth operation of tap switch to be ensured. f) Lead No. on fixed & moving contacts as per table given above to be engraved or painted on each phase board. g) Switch should be suitable to mount in vertical position and smooth operation from external tank wall.																				
6	Surface treatment & protection:	i) Fixed & moving contacts shall be silver plated minimum thickness of silver plating should be 15 microns. ii) All steel parts to be mounted inside transformer tank should be protected with Epilux-4 varnish to HE std.5371. iii) External parts should be chromium plated and passivated /power coated suitably to avoid rusting in saline & humid																				

		atmosphere.											
7	Shipment:	The switch shall be supplied in suitable packing to avoid any damage. Any damage if occurred during transport, same shall be made good within one-week time by the supplier free of cost.											
8	Drawing & Documents:	Following details drawings/documents required along with quotation in triplicate for our review at technical evaluation and for final approval at order execution stage. a) Outline general arrangement. b) Mounting arrangement of Tap switch & handle arrangement. c) Type test/routine test reports conducted on similar rating of OCTS.											
9	Test Schedule:	Following checks/Tests shall be conducted on the tap switch at supplier's / BHEL works. a. Construction & dimensional checks as per approved drawings including silver plating of 15 Microns minimum. b. Contact resistance measurement on all positions by milli volts method. c. Mechanical operation test for 500 cycles shall be performed, each cycle consists of complete operation 1 to 5 & 5 to 1. d. Contact resistance measurement after 500 cycles of mechanical operation & check the healthiness of contact. Variation should not be more than + 5%. e. Leakage proof test on stuffing box applying 1Kg/Sq Cm oil pressure. f. Insulation resistance measurement Test. g. Power frequency test keeping the switch inside transformer oil. <table><tr><td></td><td>Power Frequency Voltage (rms)</td></tr><tr><td>Tap switch to Earth</td><td>70kV</td></tr><tr><td>Between Phases</td><td>70kV</td></tr><tr><td>Between step</td><td>10kV</td></tr><tr><td>Across Range</td><td>70kV</td></tr></table>		Power Frequency Voltage (rms)	Tap switch to Earth	70kV	Between Phases	70kV	Between step	10kV	Across Range	70kV	
	Power Frequency Voltage (rms)												
Tap switch to Earth	70kV												
Between Phases	70kV												
Between step	10kV												
Across Range	70kV												
10	Apart from above, other general requirements applicable for OCTS may be accepted as per ultimate user/Customer.												


 15/11/19
 [PVK Bara]
 DGM(TRE)