

AMENDMENT - I TO THE BIDDING DOCUMENT FOR  $\pm 800$  KV, 6000 MW HVDC MULTITERMINAL SYSTEM PACKAGE ASSOCIATED WITH NORTH EAST/EASTERN REGION- NORTHERN/WESTERN REGION INTERCONNECTOR-I PROJECT UNDER SUPPLIER'S CREDIT.

S.No.	TS Clause No.	Existing Clause	Amended Clause
1.	1.2.3.5	However, Thyristor valves, converter transformers, shunt reactors, smoothing reactors, wall bushings and transformer valve bushings (800 kV level), shall be type tested under this contract and type test report shall be approved by the Employer.	However, Thyristor valves, converter transformers, auto transformers, shunt reactors, smoothing reactors, wall bushings and transformer valve bushings (800 kV level), shall be type tested under this contract and type test report shall be approved by the Employer.
2.	2.2.1	POWERGRID is constructing a $\pm 800$ kV, 6000 MW HVDC Multi terminal Transmission System from Biswanath Chariali (in North Eastern Region), Siliguri (New) (in Eastern Region) and Agra (in Northern region) to transmit bulk power over a distance of approximately 1980 km.	POWERGRID is constructing a $\pm 800$ kV, 6000 MW HVDC Multi terminal Transmission System from Biswanath Chariali (in North Eastern Region), Siliguri (New) (in Eastern Region) and Agra (in Northern region) to transmit bulk power over a distance of approximately 1728 km.
3.	2.4.1.8	AIR POLLUTION Lightly polluted for Biswanath Chariali and Siliguri (New) terminal and very heavily polluted for Agra terminal as per IEC 60815 (1986).	AIR POLLUTION Lightly polluted for Biswanath Chariali and Siliguri (New) terminal and heavily polluted for Agra terminal as per IEC 60815 (1986). However creepages shall be as per section 4.4.6 of TS
4.	4.3.1	The reactive power control equipments shall also include dynamic compensation devices of suitable rating based on the outcome of studies at Agra inverter station, which shall be continuously controllable to achieve dynamic reactive power support at the HVDC station. The Dynamic compensation shall also be used for dynamic	If required by system studies, the reactive power control equipments shall also include dynamic compensation devices of suitable rating at each of the converter stations. The Dynamic compensation shall also be used for dynamic voltage correction of each individual 400 kV AC phase voltage at the converter AC bus in the event

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		voltage correction of each individual 400 kV AC phase voltage at the converter AC bus in the event of unbalanced voltage conditions during AC system faults.	of unbalanced voltage conditions during AC system faults.
5.	4.4.6.1	The leakage distance for all ac insulators & bushings shall not be less than 43 mm per kV of the maximum normal operating phase to phase voltage at the insulator. The maximum normal operating voltage is defined as the crest value of the voltage, including voltage distortion effects divided by the square root of 2. For equipment connected to the 400 kV ac bus the leakage distance shall not be less than 10500 mm.	The leakage distance for all ac insulators & bushings shall not be less than 43 mm per kV of the maximum normal operating phase to ground voltage at the insulator. The maximum normal operating voltage is defined as the crest value of the voltage, including voltage distortion effects divided by the square root of 2. For equipment connected to the 400 kV ac bus the leakage distance shall not be less than 10500 mm.
6.	4.9.2.1.a) xiii)	Data transmission rate of up to 384 Mbps shall be supported on ISDN, and upto 1 Mbps on IP	Data transmission rate of up to 384 kbps shall be supported on ISDN, and upto 1 Mbps on IP
7.	5.5.3	The Contractor shall supply two complete sets of portable grounding connections for each station to apply the grounds and shall demonstrate during commissioning stage.	The Contractor shall supply portable grounding connections for each station to apply the grounds and shall demonstrate the same during commissioning stage.
8.	6.3.5	TESTS The arresters shall be tested to verify all specified protective characteristic and duty cycles as determined by studies carried out by the Contractor. In accordance with the requirements stipulated under section General the surge arresters shall carry out type, acceptance and routine tests as per IEC-60099 and IEC TC No. 37 WG4 for metal-oxide surge arresters.	TESTS The arresters shall be tested to verify all specified protective characteristic and duty cycles as determined by studies carried out by the Contractor. The tests shall be carried out as per IEC-60099-4 and CIGRE report 33/14-05: "Application guide for metal oxide arresters without gaps for HVDC converter stations".

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		<p>The following additional type tests shall also be conducted along with other type tests as per IEC 60099 and IEC TC 37-WG4 in relevant schedule:</p> <ul style="list-style-type: none"> <li>i) RIV test</li> <li>ii) Seismic withstand test</li> <li>iii) Contamination test for DC Yard arresters (as per IEC draft "Artificial Pollution Test with respect to thermal stress on multi unit metal oxide surge arrester)</li> </ul> <p>Each ZnO block shall be tested to the guaranteed specific energy capability in addition to the routine / acceptance test as per IEC 99 / IEC TC 37 -WG4.</p>	<p>The following additional type tests shall also be conducted along with other type tests as per IEC 60099 and IEC TC 37-WG4 in relevant schedule:</p> <ul style="list-style-type: none"> <li>i) Contamination test for DC Yard arresters (as per IEC draft "Artificial Pollution Test with respect to thermal stress on multi unit metal oxide surge arrester)</li> </ul>
9.	6.4.6.8 c)	<p>The insulation of core to bolts and core to clamp plates shall be able to withstand at least a voltage of 2 kV (rms) for 1 minute. The core shall be of mitred construction with the steel properly stacked and all insulation designed so that no detrimental changes in physical or electrical properties shall occur during the life of the Transformer.</p>	<p>The core shall be of mitred construction with the steel properly stacked and all insulation designed so that no detrimental changes in physical or electrical properties shall occur during the life of the Transformer.</p>
10.	6.17.11	<p>The rating of the UPS shall be decided by the Contractor. The UPS system shall provide continuous ac power to critical loads in the event of power failure.</p> <p>The UPS shall consist of the following, í í ..</p>	<p>The rating of the UPS shall be decided by the Contractor. The UPS system shall provide continuous ac power to critical loads in the event of power failure. The critical loads shall include at least the VPS&amp;SCADA systems, computer systems and printers in the control room.</p> <p>The UPS shall consist of the following, í í ..</p>
11.	6.17.12.5	<p>Wall mounted panels of 415V fitted with a switch and current rating suitable for the oil handling plant shall be provided. The supply for the oil handling</p>	<p>Wall mounted panels of 415V fitted with a switch and current rating suitable for the oil handling plant shall be provided. The supply for the oil</p>

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		plant shall be taken from this panel. The panel shall be suitable for outdoor installation and termination of a 4-wire system. 4 numbers of such panels close to converter transformer shall be provided.	handling plant shall be taken from this panel. The panel shall be suitable for outdoor installation and termination of a 4-wire system. 2 numbers of such panels close to converter transformer shall be provided in each pole of each of the converter stations.
12.	7.3.1	For cooling of valves, the Contractor shall use a closed water cooling system. Operation of Valve cooling system and its subsystems í í	For cooling of valves, the Contractor shall use a closed water cooling system without any secondary cooling. Operation of Valve cooling system and its subsystems í í
13.	7.3.2 b)	Cooling towers or closed circuit evaporative coolers for valve cooling shall be on a pole basis. Storage for make up water to cooling towers or closed circuit evaporative coolers shall be on a pole basis.	Cooling towers for valve cooling shall be on a pole basis. Storage for spray water to the cooling towers shall be on a pole basis.
14.	7.3.2 c)	Make up water for cooling tower or evaporative cooler systems shall be supplied on a pole basis with facilities to supply both poles from one system in emergency or during maintenance.	Clause stands deleted
15.	7.3.3.14	<ul style="list-style-type: none"> <li>Position of bypass valve</li> </ul>	Stands deleted
16.	8.3.7.1 (iii)	Open surface rectangular brick drains having minimum 400mm width and 300mm depth with plaster on inner face and top of brick walls shall be provided.	Open surface rectangular drains shall be provided as per drawing C/ENGG/STD/DRAIN/01 Rev 0 (copy enclosed)
17.	8.3.8 d)	Cross section of the road shall be as per drawings C/ENGG/STD/ROAD/410 & 411 enclosed with the tender documents.	The width of the roads around the converter island and the main approach road from station entrance gate shall be at least 7 meters and the roads within the AC & DC switchyards shall be at

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			least 3.75 meters. The rail cum road track provided shall be of 10 meter width. The drawings for the 3.75 road are attached with the specification whereas the cross section of the 7meter road shall be furnished by the contractor for approval by the Employer.
18.	8.10.3	These buildings shall be located at suitable locations but away from converter building.	These buildings shall be located at suitable locations considering aesthetics and the layout of the converter station.
19.	8.6	The rail cum road track shall be provided all along the length of the transformer area covering both Pole I and Pole II so that any failed unit can be moved from its foundation to the nearest road. If trench/drain crossingsí í	The rail cum road track with a width of 10 meters shall be provided all along the length of the transformer area covering all the poles so that any failed unit can be moved from its foundation to the nearest road. If trench/drain crossingsí í
20.	8.6	The pipes shall be placed in such a way so that oil can flow from one pit to the main collection sump pit. Only one main collection sump pit per station shall be made. The volume of main oil collection pit shall beí í	The pipes shall be placed in such a way so that oil can flow from one pit to the main collection sump pit. One main collection sump pit per station shall be provided at Biswanath Chariali and Siliguri (New) converter stations whereas two pits shall be provided at Agra. The volume of main oil collection pit shall beí í

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21.	1.3, STI	Bipole Power	Biswanath Chariali-Agra	Siliguri (New)-Agra	Bipole Power	Biswanath Chariali-Agra	Siliguri (New)-Agra
		1000 MW	40% of time	40% of time	1000 MW	40% of time	40% of time
		15000 MW	16% of time	16% of time	1500 MW	16% of time	16% of time
		2500 MW	16% of time	16% of time	2500 MW	16% of time	16% of time
		3000 MW	28% of time	28% of time	3000 MW	28% of time	28% of time
22.	2.5.2, STI	a listing of the proposed FWWL, FIWL and SIWL of each item of equipment, í ..			a listing of the proposed FWWL, LIWL and SIWL of each item of equipment, í .		
23.	2.7.4, STI	The performance of the ac filter, calculated in accordance with Section 4 of TS, at each harmonic up to the 61st and the total performance values calculated from the individual harmonic values, in accordance with Section 4 of TS, shall be furnished.			The performance of the ac filter, calculated in accordance with Section 4 of TS.		
24.	Section 2 and 5	<ul style="list-style-type: none"> <li>General Arrangement Drawings</li> <li>Single Line Diagram</li> <li>System Data</li> </ul>			<ul style="list-style-type: none"> <li>Revised General Arrangement is enclosed(in CD)</li> <li>Revised Single Line Diagram is enclosed(in CD)</li> <li>Revised System Data is enclosed (in CD)</li> </ul>		
25.	General	Siliguri (New)			<ul style="list-style-type: none"> <li>Siliguri(New), appearing anywhere in the tender documents shall henceforth be considered as Alipurduar.</li> </ul>		