

NRSS XXIX Transmission Limited (NRSS-XXIX)

Amendment No. - 12 (Clarifications / Replies to the Additional Pre-bid Queries)

10/01/2024

Subject: Additional Clarifications on NIT Dated 21/07/2023 for selection of Bidder for Augmentation of transformation capacity at Amargarh (GIS) S/s by 1x315MVA, 400/220 kV ICT (3rd) (three single phase units of 105MVA) along with associated transformer bays along with GIB (420 kV & 245 kV 1-ph indoor and outdoor GIB) on LSTK basis.

Sr. No.	Description (Specification Requirement in Brief)/ Existing Provision	Bidder's Query / Suggested texts for amendments	NRSS Response
1	Expected life span of about 35 years.	<p>We note this clause requires a service life span 35 years. Ultimately the service life depends on many factors many of which are outside of the control of the transformer manufacturer. IEC 60076-7 Loading guide for oil-immersed transformers, covers these issues. The actual life duration of a transformer depends to a high degree on extraordinary events, such as over-voltages, short-circuits in the system, and emergency overloading." To that should be added the quality of routine maintenance. Thirty-five years is not an unreasonable expectation of the life of the transformer, but we cannot guarantee this.</p> <p>Manufacturer obligation shall be till warranty period.</p>	Requirement of the Bidding Documents shall prevail.
2	Manufacturer shall be penalized if losses measured during Factory Acceptance Test (FAT)/Routine tests are within +2% tolerance on maximum specified values, beyond which transformer/reactor would be liable for rejection.	<p>During FAT if losses exceed from the GTP values, Penalties shall be applicable up to the tolerance limit specified in the IEC 60076, i.e +10% on the total losses and +15% in the component losses. Kindly accept.</p>	Requirement of the Bidding Documents shall prevail.

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3	The Guaranteed and other technical particulars submitted by the manufacturer to the purchaser/ utility, would be used for technical evaluation, design review and verification of similarity criteria with reference to the Short Circuit tested transformer.	We have neither envisaged carrying Short circuit test on the offered transformer nor any similarity with short circuit tested transformer Kindly accept.	EPC/OEM shall submit the type tested design of 3X105MVA 420/245kV transformer with the type test reports and the dynamic shot circuit test report.
4	The requirement of SC testing has been emphasized in line with the provision of CEA (Technical Standards for Construction of Electric Plants and Electric lines) Regulations and repetition of SC test within validity period is not required provided the similarity can be established with reference to the SC tested transformer.	We have neither envisaged carrying Short circuit test on the offered transformer nor any similarity with short circuit tested transformer. Kindly accept.	EPC/OEM shall submit the type tested design of 3X105MVA 420/245kV transformer with the type test reports and the dynamic shot circuit test report.
5	Customer/Purchaser always wishes that transformer/reactor manufactured and delivered must perform trouble free service for its "Specified Design Life".	Refer Sl. No. 1.	Requirement of the Bidding Documents shall prevail.
6	Though the document prescribes uninhibited or inhibited (preferable) mineral insulating oil, utilities may use Ester (synthetic/natural) fluid for Transformer/Reactor as per their requirement.	We will consider mineral oil in our offer. Ester oil is not offered. Kindly confirm.	Confirmed.
7	The transformers shall be capable of operating continuously at the rated MVA without danger, at any tapping with voltage variation of $\pm 10\%$ corresponding to the voltage of that tapping.	Voltage variation shall be $+10\%$ with respect to normal voltage tap i.e. at kV. At Maximum Voltage Tap i.e. $(400 \times 1.1) = 440$ kV, further voltage variation of $+10\%$ will be $440 \times 1.1 = 484$ kV. Hence, voltage variation with respect to rated voltage will be $484/400 = 121\%$, which we presume not the requirement as per this clause. Rated MVA at minimum tap position with -10% voltage i.e. transformer operating at 105 MVA @ 324 kV voltage is	The transformers shall be capable of operating continuously at the rated MVA at any tapping of Tap Changer.

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		overloading condition. Any loading beyond name plate rating shall be considered as per IEC 60076-7. Kindly Confirm our understanding is correct.																	
8	The hotspot temperature in any location of the tank shall not exceed 110 degree Celsius at rated MVA. This shall be measured during temperature rise test at manufacturer's works.	Tank surface temperature limit shall be 140 degree C as per the IEC 60076 Part 7, Table 2.	The requirement of hotspot temperature shall prevail as per the Bidding Documents.																
9	<p>5.1.8 The transformer and all its accessories including bushing/built in CTs etc. shall be designed to withstand the thermal and mechanical effects of any external short circuit to earth and of short circuits at the terminals of any winding without damage. The transformer shall be designed to withstand the thermal stress due to short circuit for a duration of 2 seconds and the same shall be verified during design review. However, generator transformer and associated auxiliary transformer shall be designed to withstand the thermal stress due to short circuit for a duration of 3 seconds.</p> <p>5.1.9 The following short circuit level shall be considered for the HV & IV System to which the transformers will be connected:</p> <p>765kV system - 63 kA for 1 sec (sym, rms, 3 phase fault) 400kV system - 63 kA for 1 sec (sym, rms, 3 phase fault) 220kV system - 50 kA for 1 sec (sym, rms, 3 phase fault)</p>	<p>'There is ambiguity in CEA specification for fault duration, however we have considered as per below specification "IGT/NRSS-XXIX/TS/SS/ELEC/01 Clause 3 page 7/26" as below:</p> <table border="1" data-bbox="842 911 1598 1101"> <thead> <tr> <th data-bbox="842 911 915 959">S. No.</th> <th data-bbox="915 911 1241 959">Description of parameters</th> <th colspan="2" data-bbox="1241 911 1598 959">AMARGARH (GIS) S/s</th> </tr> <tr> <td data-bbox="842 959 915 1008"></td> <td data-bbox="915 959 1241 1008"></td> <th data-bbox="1241 959 1423 1008">400 kV System</th> <th data-bbox="1423 959 1598 1008">220 kV System</th> </tr> </thead> <tbody> <tr> <td data-bbox="842 1008 915 1049">8.</td> <td data-bbox="915 1008 1241 1049">Max. fault current</td> <td data-bbox="1241 1008 1423 1049">63 kA</td> <td data-bbox="1423 1008 1598 1049">50 kA</td> </tr> <tr> <td data-bbox="842 1049 915 1101">9.</td> <td data-bbox="915 1049 1241 1101">Duration of fault</td> <td data-bbox="1241 1049 1423 1101">1 sec</td> <td data-bbox="1423 1049 1598 1101">1 sec</td> </tr> </tbody> </table> <p>For Tertiary we have considered 25 kA for 1 sec as specified in "Tentative Plan Layout".</p>	S. No.	Description of parameters	AMARGARH (GIS) S/s				400 kV System	220 kV System	8.	Max. fault current	63 kA	50 kA	9.	Duration of fault	1 sec	1 sec	<p>Refer Clause no. 3.A of "Technical Specification for Amargarh Substation - Electrical Works" of the Bidding Documents for rated short circuit current of 400 & 220kV System. For Tertiary, short circuit rating shall be considered 25kA/1sec.</p> <p>However, for transformer, thermal withstand for the short circuit condition shall be provided for 2 sec.</p>
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		400 kV System	220 kV System																
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	<p>132kV system - 40 kA for 1 sec (sym, rms, 3 phase fault) 66kV system - 31.5 kA for 1 sec (sym, rms, 3 phase fault)</p> <p>However, for transformer design purpose, the through fault current shall be considered limited by the transformer self-impedance only (i.e. $Z_s = 0$).</p>		
10	DYNAMIC SHORT CIRCUIT TEST REQUIREMENT AND VALIDITY.	Refer Sl. No. 4	EPC/OEM shall submit the type tested design of 3X105MVA 420/245kV transformer with the type test reports and the dynamic shot circuit test report.
11	SERVICE CONDITION.	Details not provided in specification shall be considered as per IEC 60076/IS 2026 /CBIP.	Site service condition shall be as per technical requirement of the Bidding Documents.

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12	<p>In addition to the above, utilities may specify additional site conditions separately in tender documents [example: restricted ventilation (tunnels, enclosed area etc.), presence of fumes, vapors, steams, dripping of waters, salt spray and corrosive environment, excessive & abrasive dust, superimposed DC current in neutral of the transformer/reactor, high frequency switching transients, frequent energization (>24 times a year), high solar radiation, frequent Short Circuits etc.</p>	<p>Please inform if any other specific site condition to be considered. We have considered below details for site conditions.</p> <p>4.3. Meteorological data - For design purposes, meteorological data are as below:</p> <table border="1" data-bbox="877 493 1598 719"> <tr> <td>Altitude</td> <td>1710 meters above mean sea level (MSL)</td> </tr> <tr> <td>Snow Fall</td> <td>Yes (As per Technical Specification)</td> </tr> <tr> <td>Seismic Zone</td> <td>As per IS 1893</td> </tr> <tr> <td>Wind Zone</td> <td>Wind map as per National Building Code - 2016 (Volume-I)</td> </tr> <tr> <td>Min/Max. Design Ambient Temperature</td> <td>-15°C to 45°C</td> </tr> <tr> <td>Creepage Requirement</td> <td>As per Technical Specification</td> </tr> </table> <p>IGT/NRSS-XXIX/TS/SS/ELEC/01 (Page 7 of 26): The altitude at the Amargarh (GIS) S/s shall be considered 1710 meters above MSL. Accordingly, the specified standard insulation level and clearances shall be corrected considering the higher altitude for outdoor equipment. Further for design purposes, loading of 15 mm of snow shall be considered.</p>	Altitude	1710 meters above mean sea level (MSL)	Snow Fall	Yes (As per Technical Specification)	Seismic Zone	As per IS 1893	Wind Zone	Wind map as per National Building Code - 2016 (Volume-I)	Min/Max. Design Ambient Temperature	-15°C to 45°C	Creepage Requirement	As per Technical Specification	<p>Site service condition shall be as per technical requirement of the Bidding Documents.</p>
Altitude	1710 meters above mean sea level (MSL)														
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Creepage Requirement	As per Technical Specification														
13	<p>The requirement of post weld heat treatment of tank/stress relieving shall be based on recommendation of IS 10801.</p>	<p>There will be no post weld heat treatment process/stress relieving in transformer tanks. Kindly Accept.</p>	<p>Accepted. However, if applicable the requirement of post weld heat treatment of tank/stress relieving shall be based on recommendation of IS 10801.</p>												
14	<p>Tank MS plates of thickness >12 mm should undergo Ultrasonic Test (UT) to check lamination defect, internal</p>	<p>We have not considered the test specified in clause. Kindly accept.</p>	<p>Test requirement of Tank MS plates of thickness >12 mm shall be as per clause</p>												

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	impurities in line with ASTM 435 & ASTM 577.		11.1.9 of CEA's Standard specification and technical parameter.
15	No metal corrugated bellow (Flexible metal system) should be used in the feed pipe connecting main tank to conservator.	Kindly provide the concession for separate cooler bank and conservator mounted on Cooler bank. Kindly accept.	The specification of bellow in the feed pipe connecting main tank to conservator shall be as per clause 11.5.3 of CEA's Standard specification and technical parameter of Transformer & Reactor.
16	The hot spot temperature and surface temperatures in the core shall be calculated for over voltage conditions specified in the document and it shall not exceed 125 deg C and 120 deg C respectively.	The hot spot temperature and surface temperatures in the core shall be as per IEC. Kindly Accept.	The hot spot temperature and surface temperatures in the core shall be as per clause 11.13.3 of CEA's Standard specification and technical parameter of Transformer & Reactor.
17	The coils would be made up, shaped and braced to provide for expansion and contraction due to temperature changes.	The windings are processed, and isostatic pressing applied to avoided any expansion and contraction due to change in temperature, hence this clause is not applicable.	Provision for expansion and contraction due to temperature changes in winding shall be taken care by manufacturer.

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18	<p>420 kV and 800 kV bushings for 765 kV Class transformer; 800 kV bushings in 765 kV Class reactor Bushings of other ratings</p> <p style="text-align: center;">} OIP/RIP /RIS</p> <p>145 kV, 245 kV and 420 kV bushings for 400 kV and below voltage class transformers and reactors</p> <p style="text-align: center;">} RIP/RIS</p>	52kV and above rating bushing shall be OIP type (Condensor type bushings), Hence we have not considered RIP Bushings. Kindly Accept.	<p>Refer clause no. 15.1 of CEA's Standard specification and Technical parameter of Transformer & Reactor which is reproduced below:</p> <ol style="list-style-type: none"> 1. 245 kV and 420 kV bushings for 400 kV voltage class transformers: RIP/RIS 2. Bushings of 36 kV and below: Solid porcelain or oil communicating type 3. Bushings of other rating: OIP/RIP/RIS
19	(g) Thermometer pockets fitted with captive screw caps at cooler inlet and outlet.	Thermometer Pocket on 80 NB pipe restrict the oil flow, Hence, requesting the same on Common Header, & Not for all radiator. Kindly confirm.	Thermometer pockets shall be provided at cooler inlet and outlet as per clause no. 19.1.3(g)
20	All 25mm valve are of Gate Type.	Kindly accept globe valve also for 25 mm valve.	Type of valve shall be as per Clause no. 20.1 of CEA's Standard specification and technical parameter of Transformer & Reactor.

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21	After testing, inside surface of all cast iron valves coming in contact with oil shall be applied with one coat of oil resisting paint/varnish with two coats of red oxide zinc chromate primer followed by two coats of fully glossy finishing paint conforming to IS: 2932 and of a shade (Preferably red or yellow) distinct and different from that of main tank surface.	Inside surface painting is not applicable for all valves.	Coating of inside and outside surface of cast iron valve shall be as per Clause no. 20.8 of CEA's Standard specification and technical parameter of Transformer & Reactor.
22	As an alternative to conventional OLTC with traditional diverter switch immersed in oil (where arcing takes place in oil), vacuum type OLTC (where arcing takes place in a hermetically sealed vacuum interrupter) may also be provided. However, provisions as specified above shall be followed as far as applicable.	Our offer is with Easun-MR make conventional type OLTC as supplied in previously executed order.	The requirement of OLTC in bidding document is amply clear.
23	Bushing (Type test as per IS/IEC:60137) (Seismic withstand test for 400 kV and above voltage class).	Seismic withstand test for 400 kV and above voltage class shall not be conducted.	Seismic withstand test report for 400kV class bushing shall be submitted in line with technical requirement of the Bidding Documents.
24	Annexure-A: Clause 5	Please refer the offered technical details attached in Annexure A("CEA Annexure-A Clause 5 R00.pdf"). Technical parameters & losses may vary based on the route survey report (Report awaited).	Maximum Permissible Losses of Transformers shall be as per Annexure-A of CEA's Standard specification and technical parameter of Transformer & Reactor.

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25	Temperature measurements as per special probes or sensors (fibre optic) placed at various locations shall also be recorded.	Temperature rise test shall be done through conventional hot winding resistance method only. Readings of temperature measurement with Fiber Optic Sensors are recorded only as a reference. Kindly confirm.	Confirmed. However, Manufacturer shall place the FO sensor at most appropriate location to know the actual temperature.
26	Measurement of transferred surge on LV or Tertiary due to HV & IV Lightning impulse	External lightning arrestors shall be provided (if required) during testing to limit transfer surge value below 250 kV peak.	Measurement of transferred surge on LV or Tertiary due to HV & IV Lightning/switching impulse and corrective action thereof, if transferred surge > 250KVp, in the scope of bidder.
27	STANDARD GA DRAWINGS AND LIMITS OF SUPPLY BETWEEN SUPPLIERS OF TRANSFORMER AND DRY-TYPE CABLE/GIS TERMINATION FOR HYDRO PLANTS.	We understand that this Annexure is not applicable.	Bidder's understanding is correct.
28	Scope related to control scheme.	Our offer is with Same Control scheme as old Existing Amargarh ICT supply Considering Digital RTCC & Parallel Operation.	The offered Bay control unit or digital RTCC relay (IEC 61850 compliant) is compatible with existing control for parallel operation.
29	iii. Fiber Optic Sensor (FOS) for temperature.	Details is not provided for FO sensor. However we have considered Total 4 Numbers fiber optics (1 No for HV, 1 No for IV, 1 No for Oil, 1 No for Core), Kindly confirm.	The quantity of FO sensor shall be finalized during detailed engineering.

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30	<p>TABLE-1: SYSTEM PARAMETERS</p> <table border="1" data-bbox="310 386 814 927"> <thead> <tr> <th data-bbox="310 386 338 451">Sl.No.</th> <th data-bbox="338 386 604 451">DESCRIPTION OF PARAMETER</th> <th data-bbox="604 386 667 451">400kV SYSTEM</th> <th data-bbox="667 386 730 451">220kV SYSTEM</th> <th data-bbox="730 386 814 451">33kV SYSTEM (FOR TERTIARY)</th> </tr> </thead> <tbody> <tr> <td data-bbox="310 451 338 475">1</td> <td data-bbox="338 451 604 475">SYSTEM OPERATING VOLTAGE</td> <td data-bbox="604 451 667 475">400kV</td> <td data-bbox="667 451 730 475">220kV</td> <td data-bbox="730 451 814 475">66kV</td> </tr> <tr> <td data-bbox="310 475 338 500">2</td> <td data-bbox="338 475 604 500">MAX. OPERATING VOLTAGE OF THE SYSTEM (rms)</td> <td data-bbox="604 475 667 500">420kV</td> <td data-bbox="667 475 730 500">245kV</td> <td data-bbox="730 475 814 500">72.5kV</td> </tr> <tr> <td data-bbox="310 500 338 524">3</td> <td data-bbox="338 500 604 524">RATED FREQUENCY</td> <td colspan="3" data-bbox="604 500 814 524">50 Hz</td> </tr> <tr> <td data-bbox="310 524 338 548">4</td> <td data-bbox="338 524 604 548">NO. OF PHASES</td> <td colspan="3" data-bbox="604 524 814 548">3</td> </tr> <tr> <td data-bbox="310 548 338 573">5</td> <td data-bbox="338 548 604 573">ALTITUDE</td> <td colspan="3" data-bbox="604 548 814 573">1710mtr. FROM MSL</td> </tr> <tr> <td data-bbox="310 573 338 597">6</td> <td data-bbox="338 573 604 597">ALTITUDE CORRECTION FACTOR AT 1710mtr.</td> <td colspan="3" data-bbox="604 573 814 597">SIL-1.09 BIL-1.09 PFOV-1.09</td> </tr> <tr> <td data-bbox="310 597 338 621">7</td> <td data-bbox="338 597 604 621">RATED INSULATION LEVELS AT 1710mtr.</td> <td colspan="3" data-bbox="604 597 814 621"></td> </tr> <tr> <td data-bbox="310 621 338 686">i)</td> <td data-bbox="338 621 604 686">FULL WAVE LIGHTNING IMPULSE WITHSTAND VOLTAGE (1.2/50microsec.)</td> <td data-bbox="604 621 667 686">1550kVp</td> <td data-bbox="667 621 730 686">1145kVp</td> <td data-bbox="730 621 814 686">325kVp</td> </tr> <tr> <td data-bbox="310 686 338 751">ii)</td> <td data-bbox="338 686 604 751">SWITCHING IMPULSE WITHSTAND VOLTAGE (250/2500microsec.) (LINE TERMINAL TO EARTH)</td> <td data-bbox="604 686 667 751">1145kVp</td> <td data-bbox="667 686 730 751">--</td> <td data-bbox="730 686 814 751">--</td> </tr> <tr> <td data-bbox="310 751 338 816">iii)</td> <td data-bbox="338 751 604 816">ONE MINUTE POWER FREQUENCY DRY AND WET WITHSTAND VOLTAGE (kVrms)</td> <td data-bbox="604 751 667 816">687kVrms</td> <td data-bbox="667 751 730 816">502kVrms</td> <td data-bbox="730 751 814 816">104kVrms</td> </tr> <tr> <td data-bbox="310 816 338 841">8</td> <td data-bbox="338 816 604 841">RATED SHORT CIRCUIT CURRENT/TIME</td> <td data-bbox="604 816 667 841">40kA/1sec.</td> <td data-bbox="667 816 730 841">40kA/1sec.</td> <td data-bbox="730 816 814 841">25kA/1sec.</td> </tr> <tr> <td data-bbox="310 841 338 865">9</td> <td data-bbox="338 841 604 865">SYSTEM NEUTRAL EARTHING</td> <td data-bbox="604 841 667 865">SOLIDLY EARTHED</td> <td data-bbox="667 841 730 865">SOLIDLY EARTHED</td> <td data-bbox="730 841 814 865">UNEARTHED</td> </tr> <tr> <td data-bbox="310 865 338 889">10</td> <td data-bbox="338 865 604 889">MINIMUM CREEPAGE DISTANCE</td> <td colspan="3" data-bbox="604 865 814 889">25mm/kV</td> </tr> </tbody> </table>	Sl.No.	DESCRIPTION OF PARAMETER	400kV SYSTEM	220kV SYSTEM	33kV SYSTEM (FOR TERTIARY)	1	SYSTEM OPERATING VOLTAGE	400kV	220kV	66kV	2	MAX. OPERATING VOLTAGE OF THE SYSTEM (rms)	420kV	245kV	72.5kV	3	RATED FREQUENCY	50 Hz			4	NO. OF PHASES	3			5	ALTITUDE	1710mtr. FROM MSL			6	ALTITUDE CORRECTION FACTOR AT 1710mtr.	SIL-1.09 BIL-1.09 PFOV-1.09			7	RATED INSULATION LEVELS AT 1710mtr.				i)	FULL WAVE LIGHTNING IMPULSE WITHSTAND VOLTAGE (1.2/50microsec.)	1550kVp	1145kVp	325kVp	ii)	SWITCHING IMPULSE WITHSTAND VOLTAGE (250/2500microsec.) (LINE TERMINAL TO EARTH)	1145kVp	--	--	iii)	ONE MINUTE POWER FREQUENCY DRY AND WET WITHSTAND VOLTAGE (kVrms)	687kVrms	502kVrms	104kVrms	8	RATED SHORT CIRCUIT CURRENT/TIME	40kA/1sec.	40kA/1sec.	25kA/1sec.	9	SYSTEM NEUTRAL EARTHING	SOLIDLY EARTHED	SOLIDLY EARTHED	UNEARTHED	10	MINIMUM CREEPAGE DISTANCE	25mm/kV			<p>1. We understand that system parameters specified in tentative layout is not applicable for transformer winding Design, Bushing selection shall be as per Table 1 point serial no 7. Kindly Confirm.</p> <p>2. There is a ambiguity in two different documents for fault current, we have considered HV 63 kA for 1 sec, IV 50 kA for 1 sec as per "Technical Specification for Amargarh Substation - Electrical Works" and for Tertiary 25 kA for 1 sec as specified in left column. Kindly confirm.</p> <p>3. There is a ambiguity in between CEA and Table 1 for creepage distance, we have considered 31 mm/kV.</p>	<p>Refer Clause no. 3.A of "Technical Specification for Amargarh Substation Electrical Works" of the Bidding Documents for rated insulation level, rated short circuit current and creepage requirement. For Tertiary, short circuit rating shall be considered 25kA/1sec.</p> <p>Further the specified standard insulation level shall be corrected considering the higher altitude for outdoor equipment as specified.</p>
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8	RATED SHORT CIRCUIT CURRENT/TIME	40kA/1sec.	40kA/1sec.	25kA/1sec.																																																																					
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31	<p>A sufficient working horizontal clearance of 3m shall be maintained b/w the GIB duct and the wall of the GIS Hall/ building.</p>	<p>As the existing GIBs are already installed & GIB under this scope of work shall be routed in the available space (as per the layout provided). Hence horizontal clearance of 3 m could not be maintained b/w the GIB & GIS hall wall/ building for the current scope of GIB.</p> <p>Pl refer our offered layouts drawing for more details. Pl confirm.</p>	<p>A sufficient working horizontal clearance of 3m shall be maintained between the GIB duct and the wall of the GIS Hall/building, however any specific constraint shall be discussed during detailed engineering.</p>																																																																						

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32	The height of the indoor and outdoor GIB duct shall be decided after considering the difference in FGLs at the site and roads.	Pl provide the overall section Drawings in order to understand the differences in FGL. Presently we are not considering any differences in FGLs as the section drawings are not shared with us.	Bidders have been advised to conduct a site survey for site related details. No deviation or exemption shall be accepted during the project stage. However, Section drawing is attached.
33	End Piece (Interface) modules with the isolating test link for Future extension of the Bus bar module on one side	For 420kV, as the Dia in current scope of work, will be the last Dia that can be installed inside the building considering the space available in the GIS hall, hence we do not consider any additional equipment /provision for further GIS extension. End Piece (Interface) module with isolating test link is not required under this scope of work.	The requirement of End Piece (Interface) modules shall prevail as per technical requirement of the Bidding Documents.
34	The bushing shall be polymeric type and the maximum mechanical load shall be 10kN for a 1 ratings of bushings.	220 KV bushing insulator and maximum mechanical load shall be 8kN only which is also in line with already installed bushings.	The maximum mechanical loading for 220kV for SF6 to Air Bushing shall be 8kN. For other voltage class, it will remain unchanged as per technical specification.
35	Meteorological data (altitude - 1710) Note: The altitude at the Amargarh (GIS) S/s shall be considered 1710 meters above MSL. Accordingly, the specified standard insulation level and clearances shall be corrected considering the higher altitude for outdoor equipment. Further for design purposes, loading of 15 mm of snow shall be considered.	We confirm that GIS equipment design shall be based on same parameters as that of already installed GIS at Amargarh..	The altitude correction factor shall be applicable for outdoor equipment in line with Technical specification.

Sr. No.	Description (Specification Requirement in Brief)/ Existing Provision	Bidder's Query / Suggested texts for amendments	NRSS Response
36	Technical Specification for Amargarh Substation-Electrical Works Annexure-A: List of Approved Make/OEM & Their Inspection Category (Page-24 to 25).		For Power/ Auto Transformer (listed at Sr. No-16) following Make/ OEM will be considered: - 1.Toshiba 2.Siemens 3.Hitachi 4.GE 5. CGL
37	Section-III " Bid Data Sheets (BDS) Sr.No1, 8, Annexure-B (BDS), Mailing address (on behalf of Employer)/ Address for submission of Hard copy of Documents/ Address for Bid Opening.		The revised address is as under: - 10th Floor, Berger Tower Delhi One Complex, Sector 16B NOIDA-201301, Uttar Pradesh. (Other details will remain unchanged)

NRSS XXIX Transmission Limited