

Pre Bid Technical Clarification No.2 dtd 17.03.2025 to NIB No.475 dated 21.01.2025

Sr. No.	Section	Clause No.	Bid Stipulation	Bidder Queries	NEEPCO Replies
Hydraulic					
1	Volume II Section II Sub Sect 01 – Turbines, Governors and Main Inlet Valve	1.1 Scope - Page No. 1 of 57	c) Three (3) numbers 2400 mm nominal diameter main inlet valves, of Butterfly type to suit above turbines	1. There are discrepancy of type of main inlet valve mentioned in different clauses of specification. We understand that main inlet valve shall be Butterfly type considering the design pressure of ~23 bar. Please confirm. 2. We understand that the 2400 mm nominal diameter of main inlet valve is the minimum size requirement for the project, however bidder may select the equal or higher size of main inlet valve based on the selected solution for the project. Kindly confirm.	1. The Main Inlet Valve shall be of Butterfly type, with a design pressure of ~23 Bar. 2. 2400 mm is the minimum nominal diameter of the MIV. If the bidder wishes to select MIV of higher size, the necessary provisions for matching with the penstock shall be in the bidder's scope.
2		1.6 Turbine Main Inlet Valves - Page No. 42 of 57	1.6.1.1 Each turbine shall be provided with an inlet butterfly valve of 2400 mm nominal size.....		
3		1.6 Turbine Main Inlet Valves - Page No. 42 of 57	1.6.1.5 The inlet spherical valve shall comprise of valve body and rotor..... 1.6.1.6 The spherical type inlet valves shall be designed to close against full discharge in emergency and to open under balanced conditions.		
4		1.2.1.2 Main Technical Parameters of Turbine - Page No. 3 of 57	e) Net Head with 1 (one) unit running : 161.40 m f) Maximum Net Head : 163.2 m i) Maximum Continuous Output at maximum net head of 164.0 m : not less than 74071 kw	The maximum net head defined in the mentioned sub clauses are different. Kindly request you to review and confirm the maximum net value and corresponding maximum power output requirement.	The Maximum Net head is 163.2 Metres. Clause no. (i) stands deleted. The maximum power output of turbine at rated net head shall be sufficient to give 10% COL at generator terminals.
5	Volume II Section II Sub Sect 01 – Turbines, Governors and Main Inlet Valve	1.2.1.2 Main Technical Parameters of Turbine - Page No. 3 of 57	i) Maximum Continuous Output at maximum net head of 164.0 m : not less than 74071 kw k) Continuous overload Capacity At all heads rising proportionally with heads to 10% at rated net head.	As per the turbine specification, Maximum continuous turbine output requirement is defined as 74071 kW at Hmax (164m) which is approximately 17% above rated output of 62000 kW. However in the generator specification, maximum continuous rating is defined as 80.24 MVA i.e. 68.204 MW (62 MW+ 10%COL) corresponding to 0.85PF. In view of the above different power requirement, kindly request you to review the same and reconfirm the maximum turbine output requirement (at maximum net head) and maximum power rating of generator/transformer.	Clause no. (i) stands deleted. The maximum power output of turbine at rated net head shall be sufficient to give 10% COL at generator terminals. Maximum power rating of Generator and Transformer shall be as given in the specifications.
6	Volume II Section II Sub-Section 02 Generator and Excitation System	2.3. Generator 2.3.4 Technical Parameters - Page No. 5 of 71	3 Rating : 72.94 MVA (62MW) 4 Maximum Continuous rating(110% of rated output plus upward tolerance for dip in generator voltage and for turbine design) :80.24 MVA		

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7	Volume II Section II Sub Sect 01 – Turbines, Governors and Main Inlet Valve	1.2.1.2 Main Technical Parameters of Turbine - Page No. 3 of 57	n) Maximum Speed Rise on maximum load rejection by all units simultaneously : 45% o) Maximum penstock Pressure Rise on maximum load rejection by all units simultaneously: 30%	In order to keep the optimized power unit solution, we kindly request to allow the speed rise limit as 55% and pressure rise limit as 35% (design pressure= $1.35 \times 170.78 \text{ mWC} = 230.55 \text{ mWC}$) inline with the maximum limit allowed in IS12837. Kindly confirm.	The maximum permissible Pressure rise and speed rise are 35% and 45% respectively.
8		1.2.2 Design Requirements - Page No. 4 of 57	The maximum momentary pressure at turbine inlet, considering the effect of water hammer due to water mass inertia, under worst conditions of load acceptances and rejection and governor closing and opening times, shall be indicated by the bidder. However, the pressure rise shall not be more than 30% of static head acting on the scroll case with the reservoir at maximum water level of 1189m. The maximum momentary speed rise after load rejection, under the most adverse combination of load and head, shall be indicated by the tenderer. The speed rise should not be more than 45% of the synchronous speed.		
9		1.3.2 Rigidity and Strength of Various Components - Page No. 14 of 57	1.3.2.4 The maximum static pressure acting on the turbine (inlet, scroll casing, guide vanes etc.) will be 170.78 m and the maximum coincidental dynamic pressure considering maximum transient pressure rise of 30% and surge effects etc. is estimated to be 222.02 m. 1.3.2.5 The spiral casing and other parts subjected to penstock pressure shall be designed for the max. pressure of 222.02 m to which it will be subjected under most severe conditions of operation.		
10		1.2.5.3 Limits on Speed Rise, Pressure Rise and Runaway Speed - Page No. 9 of 57	The maximum momentary speed rise of the generating units shall be limited to 45% of rated speed on sudden load rejection by the generating units under any permissible conditions of operation including overload and shall be guaranteed. The maximum momentary pressure rise at the turbine inlet shall be limited to 30% of the maximum static head on the generating unit.		

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11	Volume II Section II Sub Sect 01 – Turbines, Governors and Main Inlet Valve	1.2.2 Design Requirements - Page No. 4 of 57	The minimum required fly wheel effect (GD2) of generating units, on the basis of governor and net stability, has been worked out to minimum 2000 T m ² and generating units shall be provided on this basis. This aspect shall be coordinated with generator Contractor.....The flywheel effect of the turbine in conjunction with the generator shall be adequate to fulfil the requirement of specified speed rise & pressure rise criteria.	We understand that the inertia requirement of the generating unit shall be suitably defined based on hydraulic transient analysis considering the speed rise and pressure limit at any operating condition including maximum continuous overload condition. Kindly confirm.	Bid stipulations shall prevail.
12	Volume II Section II Sub-Section 02 Generator and Excitation System	2.3. Generator 2.3.4 Technical Parameters - Page No. 6 of 71	20 Generator WR2 H Constant (TG revolving parts) : Not less than 3.25 kW-SEC / kVA (exact value to be based on hydraulic transient and stability studies).		
13		2.3.5 Characteristics & Operational Requirements - Page No. 8 of 71	2.3.5.4 H Constant and Fly wheel effect (WR2) Inertia constant H shall not be less than 3.25 KW-sec. / kVA based on rating of 80.24 MVA The actual value shall be based on hydraulic transient and stability study, based on the requirements, of speed and pressure rise limits The flywheel effect of the generating unit and governor closing time shall be suitably adjusted so that the speed rise shall not exceed 45% of the rated speed at any operating condition including maximum continuous overload with single stage closing, and pressure rise shall not exceed 30% of the maximum static head.		

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14	Volume II Section II Sub Sect 01 – Turbines, Governors and Main Inlet Valve	1.2.3 Problem of Silt &Provisions to mitigate it: Page No. 5 of 57	The Suppliers shall critically examine the Silt Data and the Chemical Analysis of water.....	Kindly request you to share the petrographic analysis report of the water (recent 2 to 3 years) for further consideration.	Already furnished.
15	Volume II Section II Sub Sect 01 – Turbines, Governors and Main Inlet Valve	1.2.4 Guarantees for Turbine Output, Efficiency & Penalties for Shortfall - Page No. 6 of 57	The output and the efficiencies shall be guaranteed under penalty as given below. Efficiencies below 94.5% for Turbine.....	Considering the project parameters, weighted average efficiency formula and weighing of 0.25 at part load (50%) condition, the minimum requirement of weighted average efficiency (94.5%) is on very higher side and technically not feasible. Generally, Francis turbine designed for the operation near to the rated condition. So, propose to keep the requirement as follows: a) minimum required weighted average efficiency as 93.5% or b) keeping the minimum required weighted average efficiency as 94.5% and modify the weighing factor of weighted average efficiency formula as $K1= 0.20$, $K2= 0.60$, $K3 = 0.15$, $K4 = 0.05$ Kindly review the above proposal and confirm.	Efficiencies below 94.5% for Turbine, 98.5% for Generator and 93.08% for Overall TG, at rated conditions shall not be accepted. No weightage shall be given during evaluation for efficiencies better than above. The Guaranteed Weighted Average Efficiency of the Turbine and Generator as per formula given in the Bid Specifications shall not be less than 93.5% and 98% respectively. The formula for WAE as given in para (e) shall remain same.
16		1.2.4 Guarantees for Turbine Output, Efficiency & Penalties for Shortfall - Page No. 6 of 57	e) Weighted turbine efficiency The model and the prototype weighted turbine efficiency shall be guaranteed. The weighted average efficiency of the Turbine at rated net head for 110 %, 100 %, 75 % and 50 % rated output shall also be guaranteed as per the formula $EvT = K1*E110\% + K2*E100\% + K3*E75\% + K4*E50\%$ Where EvT is the weighted average efficiency of the Turbines, E110%, E100%, E75% and E50%are the guaranteed efficiency of the Turbine at the respective percentage of the operation with reference to the rated head and $K1= 0.20$, $K2= 0.40$, $K3 = 0.15$, $K4 = 0.25$ The prototype weighted average efficiency will be calculated from the model efficiency stepped-up to prototype efficiency according to IEC 60995, using the same grid of weights as above.		
17	Volume II Section II Sub Sect 01 – Turbines, Governors and Main Inlet Valve	1.2.4 Guarantees for Turbine Output, Efficiency & Penalties for Shortfall - Page No. 6 of 57	e) Weighted turbine efficiency The model and the prototype weighted turbine efficiency shall be guaranteed.....The prototype weighted average efficiency will be calculated from the model efficiency stepped-up to prototype efficiency according to IEC 60995, using the same grid of weights as above.	We understand that the prototype efficiencies/ weighted turbine efficiency shall be calculated/ dervied from model efficiencies using step up formula as per latest edition of IEC-60193. Kindly confirm.	Revised Clause 1.2.4 Attached herewith.
18		1.2.6.5 Step-up Formulae - Page No. 12 of 57	The prototype efficiencies shall be calculated and derived from the model efficiencies as per the latest edition of IEC-60193 Code.		

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19	Volume II Section II Sub Sect 01 – Turbines, Governors and Main Inlet Valve	1.2.4 Guarantees for Turbine Output, Efficiency & Penalties for Shortfall - Page No. 6 of 57	The turbine OUTPUT and EFFICIENCY shall be guaranteed by the Contractor. The following requirements and rules for the guarantees apply: d) Turbine efficiencies at following net heads in the specified working head range: 153.3 m & 164.0 m e) Weighted turbine efficiency The model and the prototype weighted turbine efficiency shall be guaranteed. The weighted average efficiency of the Turbine at rated net head for 110 %, 100 %, 75 % and 50 % rated output shall also be guaranteed as per the formula.....	We understand that the only Weighted average efficiency shall be subjected to guarantee purpose. The efficiency/ discharge/ guide vane opening values at single operating points shall not be subjected to guarantee. Kindly accept.	The sentence may be read as: Efficiencies below 94.5% for Turbine, 98.5% for Generator and 93.08% for overall TG , at rated conditions shall not be accepted. No weightage shall be given during evaluation for efficiencies better than above. The Guarantee Weighted Average Efficiency of the Turbine and Generator as per Formula given in the Bid Specification shall be not be less than 93.5% and 98% respectively. The formula for WAE as given in Para (e) shall remain same.
20	Volume II Section II Sub Sect 01 – Turbines, Governors and Main Inlet Valve	1.2.4 Guarantees for Turbine Output, Efficiency & Penalties for Shortfall - Page No. 7 of 57	g) Capacity and efficiency tests The turbine efficiency and capacity tests shall be conducted in accordance with the provisions of IEC Publication 600 41, International Code for Field Acceptance Tests of Hydraulic Turbines, under the supervision of a qualified independent expert, unless otherwise mutually agreed upon by the Contractor and the Employer		Revised Clause No. 1.2.4 may be referred
21	Volume II Section II Sub Sect 01 – Turbines, Governors and Main Inlet Valve	1.14 Index and Field Acceptance (Efficiency) Tests - Page No. 57 of 57	The turbine efficiency and capacity tests shall be conducted in accordance with the provisions of IEC Publication 60041, International Code for Field Acceptance Tests of Hydraulic Turbines, under the supervision of a qualified independent expert, unless otherwise mutually agreed upon by the Contractor and the Employer.	Field testing by E&M supplier shall also be acceptable. Please review and confirm.	The referred paragrpah may be read as; <i>"The turbine efficiency and capacity tests shall be conducted in accordance with the provisions of IEC Publication 60041, International Code for Field Acceptance Tests of Hydraulic Turbines."</i>

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22	Volume II Section II Sub Sect 01 – Turbines, Governors and Main Inlet Valve	1.2.4.1 Cavitation guarantee - Page No. 8 of 57	If excessive cavitation pitting occurs, the Contractor shall repair the resulting damage during the turbine guarantee period. All areas where the depth of pitting exceeds 1 mm shall be restored to their original contours by welding with stainless steel and grinding to a smooth surface equal in finish to the adjacent undamaged areas. The Turbine after such modifications, repairs and replacements shall be subject to same cavitation guarantees as per the original equipment.	Any revolving cavitation guarantee shall not be offered. In case of excessive cavitation pitting and after modification/ repair/ replacement, cavitation guarantee shall be extended by 12 months from the time such replacement/repair subject to maximum time period of thirty-six (36) months from the date of putting plant and equipment into operation. Kindly accept.	Bid stipulations shall prevail.
23	Volume II Section II Sub Sect 01 – Turbines, Governors and Main Inlet Valve	1.2.5.1 Smooth, Stable & Quiet Operation and Noise Limit - Page No. 9 of 57	The peak to peak pressure pulsations at any of the taps to be provided below the runner shall not exceed 3% of the rated net head.	Considering the project parameters and project specific speed range, the pressure pulsation requirement is stringent. We propose to modify the pressure pulsation requirement as follows: "The peak pressure pulsations at any of the 4 taps located below the runner shall not exceed 3 % (6% peak to peak) of the rated net head at rated Power." Kindly accept.	Bid stipulations shall prevail.
24	Volume II Section II Sub Sect 01 – Turbines, Governors and Main Inlet Valve	1.5.3 Governor Operating Parameters - Page No. 38 of 57	1.5.3.2 g) Wicket gate closing time Adjustable 8 to 12 secs, having dual fast and slow action. 1.5.3.3 For the closing operation a dual rate of closure has been considered to be required to restrict transient speed rise of the turbine to within 45%. The governors shall therefore provide a dual rate of closure for the wicket gates faster in the first half of the closing period and slower in the second half. The governor closing and opening times as also the dual rates of closure shall be adjustable within the specified range. The maximum dynamic pressure at the turbine inlet level has been specified to be restricted to 691.5 m.	We understand that the bidder is open to select/ define the wicket gate operating law (linear or dual) and opening/ closing time based on transient analysis keeping the pressure rise and speed rise within defined limit. Kindly confirm.	The wicket gate operating law shall be dual. The bidder may finalize the opening/ closing time based on transient analysis keeping the pressure rise and speed rise within defined limits.
25	Volume II Section II Sub-Section 02 Generator and Excitation System	2.3. Generator 2.3.4 Technical Parameters - Page No. 6 of 71	15 Runaway speed : Not more than 180% of rated speed	Runaway speed is outcome of hydraulic solution and transient analysis. Hence, we kindly request to allow to bidders to define the maximum runaway speed based on the selected solution. Accordingly E&M equipment shall be designed. Kindly accept.	Bid stipulations shall prevail.

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26	Volume II Section IV Drawings	Power House Cross Section & Plan Dwg No. W.003159- 20716-EMD-7201_Rev A0 & W.003159-20716- EMD-7202_Rev A0 - Page No. pdf page 14 of 24	From Power house cross section and plan drawing (W.003159-20716-EMD-7201_Rev A0 & W.003159-20716- EMD-7202_Rev A0): Draft tube bottom point elevation: 1011.62 masl Draft tube exit height : 3000mm Draft tube exit width : 6400mm	We understand that the draft tube dimensions (bottom point elevation, exit height & exit width) defined in the power house cross section and plan drawing (W.003159-20716-EMD-7201_Rev A0 & W.003159- 20716-EMD-7202_Rev A0) are preliminary/ tentative. However, final dimensions of draft tube (bottom point elevation, exit height, exit width) shall be defined by bidder based on the selected hydraulic solution and shall be informed in bid. Kindly accept.	Agreed. However any major changes must be justified based on Model Test and informed well in advance for the required civil work modifications.
27	Volume II Section IV Drawings	General Layout Plan W.003159-20711-GEN- GAD-7003 - Page No.		In the available drawings in Vol II, Section IV, only project general layout plan drawing is available, Kindly request you to share the below details/ drawings (in AutoCAD) for transient analysis purpose: 1. Waterways L section with cross section details at different section. 2. Surge Tank detailed drawing (having orifice dia, height, maximum/ minimum water level) 3. Head loss coefficient in HRT/ penstock 4. Discharge coefficient (inflow/ outflow) of surge tank orifice.	The required Auto CAD drawings are attached herewith in Annexure-I and Annexure-II. However, due to bigger file size Annexure-II is attached as Google Drive link. https://drive.google.com/drive/folders/1p2JdhNzorkMt-xVoE2wJBKjUw3QDJsAQ?usp=sharing

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Turbine					
28	Volume II Section II Sub Sect 01 – Turbines, Governors and Main Inlet Valve	1.1 Scope - Page No. 1 of 57	d) Six (6) numbers pressure oil system for Governor and MIV etc	It shall be 3 sets/ number of pressure oil system for Governor and MIV etc. Please review the requirement and confirm the same.	3 sets/ number of pressure oil system for Turbine Governor and MIV each.
29	Volume II Section II Sub Sect 01 – Turbines, Governors and Main Inlet Valve	1.2.4.2 Limit on Erosion By Silt: - Page No. 8 of 57	Limit on Erosion By Silt: With the silt of the given characteristics & quantity suspended in the waters going to the turbines ,the abrasion resistance of the under water parts including runner of the turbine shall be such that interval between erosion maintenance shall not be less than 12000 hrs of operation.	The interval between erosion maintenance shall be decided during the detailed Engineering after study of the detailed water petrographic analysis report. Please review the requirement.	Bid stipulations shall prevail.
30		1.2.5.1 Smooth, Stable & Quiet Operation and Noise Limit - Page No. 9 of 57	The vibration amplitude at the shaft shall not exceed the recommended values specified in ISO-7919 (part 1), ISO-3945 and VDI- 2056	The vibrations amplitude shall be as per the values specified in ISO- 20816-5. The standards ISO-10816 and ISO 7919-5 shall be read as ISO-20816-5 now. Please review the requirement.	As per latest revision of applicable standards.
31		1.2.5.1 Smooth, Stable & Quiet Operation and Noise Limit - Page No. 9 of 57	The maximum noise level at any and including transient conditions (start, load rejection or surge) at any place 1.0 m distance from turbine shaft shall not exceed 90 db and the same shall be guaranteed and proved at site by actual measurement. Design provision made for achieving these guarantees shall be elaborated during design stage.	The maximum noise level at any operating conditions at any place 1.0 m distance from turbine shaft shall not exceed 90 db. It shall exclude the transient conditions (start, load rejection or surge). Please review the requirement.	The maximum noise level when operating near the rated output shall not be higher than 90 dB at 1.0 Metre distance. For transient conditions, maximum noise level of 95 dB is agreed.
32		1.2.5.4 Design Stress Limits - Page No. 10 of 57	Direct or combined steady stresses: (1) For materials used in the construction of the equipment, the maximum stress due to maximum normal rated load operating conditions shall not exceed one-third of the minimum yield point or one-fifth of the minimum ultimate strength of the material, which ever is lower.	The design stress limit shall be followed as for the conditions occurring in normal operation shall not exceed one-half (1/2) of the yield strength of the material. Please review the requirement and confirm the above mentioned stress criteria as followed for the hydro turbines world wide based on the advanced tool/ software's calculations.	Bid stipulations shall prevail.
33		1.3.5.2 Jointing - Page No. 15 of 57	The joints between the various sections and quadrants of the scroll casing and stay ring shall be of welded and bolted flanged type respectively.	The joints between the various sections and quadrants of the scroll casing and stay ring shall be as per the bidder standard design practice. Please review and accept.	Agreed. However any major changes must be justified based on Model Test and informed well in advance for the required civil work modifications.

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34	Volume II Section II Sub Sect 01 – Turbines, Governors and Main Inlet Valve	1.3.6 Manufacture & Materials of Components Page No. 17 of 57	9. Stay ring	Welded Plate Steel Fabricated Structure or Casting, Stainless Steel Plate	ASTM A537 or equivalent		<p>Material IS 2062 E250/ E350, IS S235 J2/ 355 J2/ Equivalent for stay ring & Stay Vanes, Spiral Casing, Draft Tube Cone, Discharge ring, Bearing Housing, Bottom Ring, Head Cover, Servomotor Body, Piston & Rings shall also be acceptable in addition to the mentioned in tender specification as these standard materials for the similar type of Turbines are accepted worldwide also and worked successfully.</p> <p>For Coupling Bolts 34CrNiMo6/ 42 CrMo 4/ Equivalent material shall also be acceptable. Please review and accept.</p> <p>Materials of different standards such as ASTM, DIN EN, EN, IS can be offered if they are better or at least equivalent in terms of chemical composition, properties etc. A side by side comparison of both the materials shall be carried out during detailed engineering.</p>
			10. Spiral casing	Welded Plate Steel Fabricated Structure, Stainless Steel Plate	ASTM A537 or equivalent		
			11. Top cover / bottom ring	Welded Plate Steel Fabricated Structure, Stainless Steel Plate	ASTM A537 or equivalent		
			12. G.V. servomotor cylinder	Carbon steel plates Boiler steel	DIN 17100, St 37-2 St 52-3, ASTM A 283 Grade B ASTM A 287, Grade B IS 2002 Gr.2A		
			13. Discharge ring	Welded Plate Steel	ASTM A537 or equivalent		
			18. Shaft Runner Fasteners	Stainless Steel	AISI420 or equivalent		
				Casting, Stainless Steel Plate			
			14. Draft tube Cone(Bottom)	- do -	- do -		
			15. Pit liner	- do -	- do -		

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35	Volume II Section II Sub Sect 01 – Turbines, Governors and Main Inlet Valve	1.3.10 General Physical Layout & Arrangement - Page No. 21 of 57	Easy access for repair and maintenance of removable/ renewable under water parts of turbine such as wearing rings, cheek plates, guide vanes sealing elements and turbine guide bearing and shaft seals shall be provided from the turbine pit without resorting to dismantling of turbine runner.	It shall be noted that for repair and maintenance of removable/ renewable under water parts of turbine such as wearing rings, cheek plates, guide vanes sealing elements and turbine guide bearing and shaft seals needs to dismantle the turbine runner after considering the turbine size and silt in the water. Please review and confirm	To be decided during Detail Engineering.
36	Volume II Section II Sub Sect 01 – Turbines, Governors and Main Inlet Valve	1.4.1 Runner - Page No. 22 of 57	1.4.1.1 Manufacture The runner shall be of cast stainless steel, in one piece and shall be designed to provide the best hydraulic profile so that it gives the maximum efficiency with minimum cavitation.	The runner shall be cast-fabricated type. However it shall be supplied at the site in one piece. Please review and confirm.	As per Manufacturer's standard practice.
37	Volume II Section II Sub Sect 01 – Turbines, Governors and Main Inlet Valve	1.4.2 Shaft, Coupling and Alignment - Page No. 24 of 57	The turbine shaft shall have integrally forged coupling flanges for bolting to the runner and to the generator shaft and shall conform to the American standard for shaft coupling (ANS- B.49.1-1967). 1.4.2.8 Before shipment of turbine and generator shafts, these shall have final reaming, corrections required for matching both shafts, match marking etc. The final coupling and alignment of both shafts are to be made in works before despatch.	IEEE 810 latest standard shall also be allowed for the shaft and coupling in addition to the American standard for shaft coupling (ANS-B.49.1-1967). Turbine and generator shafts final alignment shall be done at site. It is because as the delivery schedule of these parts and manufacturing place may be different. Please accept.	Agreed.
38	Volume II Section II Sub Sect 01 – Turbines, Governors and Main Inlet Valve	1.4.3.7 The turbine guide bearing shall be designed for the following conditions: - Page No. 26 of 57	d. Safely withstand turbine going to run away speed due to any fault for a period of 15 (fifteen) minutes with cooling water supply intact and subsequent closing down period without any damage to the guide bearing.	The requirement for 15 minutes on higher side. It shall be for the 10 minutes for the compact and efficient design of the turbine. Please review the requirement and confirm.	Bid stipulations shall prevail.

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39	Volume II Section II Sub Sect 01 – Turbines, Governors and Main Inlet Valve	1.4.5 Spiral Case and 1.13 Inspection and Testing at Site - Page No. 27 of 57 and 55 of 57	1.4.5.5 The spiral case, stay ring welds shall be 100 percent radiograph tested. 1.13 Inspection and Testing at Site All welding on pressure carrying parts, such as scroll case, MIV inlet and outlet pipe etc., done at site shall be subjected to 100% radiographic examination.	It shall be noted that the ultrasonic examination is sufficient to meet the design and quality requirements, for the weld examinations. Radio-graphic test is neither environmental friendly and hazardous. Hence radio-graphic testing shall be avoided. Please review and delete radiographic examination requirement.	100% Ultrasonic testing of weld joints of Spiral Case and Stay Ring shall be accepted.
40	Volume II Section II Sub Sect 01 – Turbines, Governors and Main Inlet Valve	1.4.6 Stay-Ring - Page No. 28 of 57	For fabricated stay ring designs, the stay vanes shall protrude through the upper and lower shroud plates and shall be shop-welded with full penetration welds. Fabrication of the stay ring in the field will not be allowed.	If stay ring would be provided in two pieces/ sections then its fabrication is required at site and fabrication of stay ring at site is standard practice where transport limitation forced the design of these parts in to the sections. Please review the requirement and confirm.	To be decided during Detail Engineering.
41	Volume II Section II Sub Sect 01 – Turbines, Governors and Main Inlet Valve	1.13 Inspection and Testing at Site - Page No. 56 of 57	g) The machine shall be designed to withstand the runaway speed test for 15 minutes. Runway speed test is envisaged to be carried out on completely assembled turbine generators at site by the Contractor , at the discretion of the Employer. In case of failure, the Contractor shall rectify the damage and inherent defects and make such modifications as well make the turbines capable of withstanding the designed "Runway Speed". The Contractor shall demonstrate the same by conducting this test again.	Runaway speed test shall not be performed as it requires the complete inspection of the Power Unit and may cause adverse impact on the foundation of the machine and civil structure. However Power Unit would be designed to withstand the runaway speed for the said duration.	Bid specification shall prevail.
MIV					
42	Volume II Section II Sub Sect 01 – Turbines, Governors and Main Inlet Valve	1.6.1.6 Turbine Main Inlet Valves - Page No. 42 of 57	The spherical type inlet valves shall be designed to close against full discharge in emergency and to open under balanced conditions.	For design of valve as per E&M standard procedure 2 times of maximum discharge will be considered as full discharge in emergency condition. Please review and confirm	Bid stipulations shall prevail.

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43	Volume II Section II Sub Sect 01 – Turbines, Governors and Main Inlet Valve	1.6.1.8 Turbine Main Inlet Valves - Page No. 42 of 57	Valve shall have two stainless steel working seals; one at downstream (service seal) for use during normal closure operations and other at the upstream (maintenance seal) for use during maintenance of service seal. Both seals shall be water operated with oil operated solenoid valves. The seals shall be of material having high resistance to silt erosion. Suitable protection against abrasion shall be provided to ensure high reliability of sealing and long life. Leakage, if any ,shall be stated and guaranteed.	Permissible leakage will be per DIN EN 12266 - 1 Rate F . Please review and confirm	Permissible leakage shall be guided by IS:7326 (Part-1).
44	Volume II Section II Sub Sect 01 – Turbines, Governors and Main Inlet Valve	1.6.2.2 i) Hard coating on working parts - Page No. 44 of 57	Hard coating on working parts i) If decided by the purchaser, hard abrasive resistant coatings on the working parts of the valves to enhance and prolong life against silt erosion may be used. In that case, the following items shall be considered for hard coatings. a) Working seals both moving and stationary. b) Maintenance seals both moving and stationary. c) Any other component considered appropriate for hard coating such as gland bodies, portion of trunions etc. d) The rotor edge against which the seals will rest. ii) When hard coatings is required, the base metal that shall be appropriate and requisite shall also be stated for each such component.	Considering type of valve as Butterfly valve & sealing design and its material, hard coating is not feasible kindly review and delete the requirement.	HVOF Coating is not envisaged at present. Based on the silt data, the requirement of HVOF or other coating maybe discussed during detail engineering.

Sr. No.	Section	Clause No.	Bid Stipulation	Bidder Queries	NEEPCO Replies
45	Volume II Section II Sub Sect 01 – Turbines, Governors and Main Inlet Valve	1.6.2.3, ii) Maintenance and Replacement of Worn out Working Parts - Page No. 44 of 57	Replacement of worn out maintenance seal on the upstream end of valve shall be possible without dismantling of the spherical valve, but after dewatering of the upstream pressure shaft.	Practically it will be impossible to replace worn out maintenance seal on upstream end of valve without dismantling of valve, because upstream extension pipe will be bolted with valve on its downstream side and on its upstream side it will be welded . Please review and accept.	To be decided during Detail Engineering.
46	Volume II Section II Sub Sect 01 – Turbines, Governors and Main Inlet Valve	1.6.3.1, i)Valve Body - Page No. 44 of 57	The valve body shall be made of high strength steel plates equivalent. The valve body shall be suitably split for assembly and transport and shall have integral support feet.	Manufacturing of Valve Body by Steel Casting and steel plates shall also be allowed. Please accept.	As per standard manufacturing practice of the bidder. Comparative of study of both options shall be carried out during detail engineering.
47	Volume II Section II Sub Sect 01 – Turbines, Governors and Main Inlet Valve	1.6.3.1, ii), b)Valve Body - Page No. 45 of 57	Bearing bushes of bronze or Ni-Pb gun-metal, for rotor trunnions, grease lubricated type.	E&M will offer self lubricating type bearing bushes. Please accept.	Agreed. Comparative of study of both options shall be carried out during detail engineering.
48	Volume II Section II Sub Sect 01 – Turbines, Governors and Main Inlet Valve	1.6.3.3, iii),Service And Maintenance Seals - Page No. 45 of 57	When closed, the sealing systems shall provide a drip tight seal both on the downstream and upstream. The movable seals shall be pressed hydraulically against the fixed seals.	Considering the sealing arrangement it is not feasible to achieve drop tight seal. Permissible leakage shall be as per DIN EN 12266 - 1 Rate F . Please review and confirm	Permissible leakage shall be guided by IS:7326 (Part-1).
49		1.6.3.4, i),Servomotors and Operating Gear - Page No. 46 of 57	Two hydraulic servomotors, one on each side of the valve shall be provided. Servomotor(s) shall be of cast steel or of fabricated design with steel piston and rods, upper and lower covers, cast iron-bronze piston rings, sealing glands, pipe connections, plugged holes for air and oil discharge from the cavities in the upper and lower servomotors.	Actual material and make of different parts of servomotor shall be shared during Detail Engineering phase. Please accept.	Any alternative material offered must be equivalent or better than the material specified in the Tender specification both in terms of chemical composition and material properties. However, the detailed comparison of Chemical composition and material properties must be submitted to the Purchaser for approval during detail engineering stage.

Sr. No.	Section	Clause No.	Bid Stipulation	Bidder Queries	NEEPCO Replies
50	Volume II Section II Sub Sect 01 – Turbines, Governors and Main Inlet Valve	1.6.3.5, i),By-pass Valves and Air Valves - Page No. 46 of 57	Two by-pass valves of at least 200 mm size for filling of the scroll casing etc. for balancing of pressure on two sides of the valves shall be provided. The valves shall be needle type , operated automatically by oil pressure from governor oil system to achieve equalization of pressure within reasonable time. A manually operated guard valve, sluice/gate or globe type, shall also be provided interposed between the spherical valve and the by-pass valve. The by-pass valve connection shall have suitable dismantling joint.	It is request to accept hydrualic operated slide valve also for bypass assembly . We propose to accept bypass system without dismantling joint. Technicall it leads to excessive vibrations and leakge. Please review and accept the Proposal .	To be decided during Detail Engineering.
51		1.6.3.6, i),Inlet Pipe - Page No. 46 of 57	The inlet pipe shall be fabricated high strength steel plats ASTM-537, class-2 modified steel. It shall have provision for bolted flanged and connection to the butterfly valve inlet and welding end for connection to the penstock of 2400mm dia. The flare angle shall not exceed 7.50 and length of the inlet pipe provided shall be fixed accordingly with sufficient extra length as trim allowance for errors in installation. Welding of the inlet pipe to the penstock shall be the responsibility of the supplier.	For Inlet pipe bidder wish to consider S355 J2 +N/ equivalent Material. Kindly accept bidder proposal.	Any alternative material offered must be equivalent or better than the material specified in the Tender specification both in terms of chemical composition and material properties. However, the detailed comparision of Chemical composition and material properties much be submitted to the Purchaser for approval during detail engineering stage.
52	Volume II Section II Sub Sect 01 – Turbines, Governors and Main Inlet Valve	1.6.3.7, i),Outlet Pipe with Compensator (Dismantling Pipe) - Page No. 46 of 57	Outlet pipe shall be of fabricated steel of high strength steel plates ASTM-537, class-2 modified. It shall comprise of pipes, compensating ring, packing and fasteners. One side shall be connected to the spherical valve and other end shall remain free over the scroll casing with packings for sealing.	For outlet pipe we wish to consider S355 J2 +N/ equivalentMaterial. Kindly accept bidder proposal.	Any alternative material offered must be equivalent or better than the material specified in the Tender specification both in terms of chemical composition and material properties. However, the detailed comparision of Chemical composition and material properties much be submitted to the Purchaser for approval during detail engineering stage.

Sr. No.	Section	Clause No.	Bid Stipulation	Bidder Queries	NEEPCO Replies
53	Volume II Section II Sub Sect 01 – Turbines, Governors and Main Inlet Valve	1.6.3.9, ii), Safety Arrangements - Page No. 47 of 57	It will be possible to invert the opening and closing movement of the valve in any position by activating the corresponding control circuit.	Hydraulic features/shape of main inlet valve internal components are designed for full open & full close condition only. Its not possible to invert the opening and closing movement of the valve in any position by activating control unit this may lead to uncontrolled pressure rise. Please review and delete this clause from Tender Specification.	Bid stipulations shall prevail. However, may be discussed during Detail engineering.
54	Volume II Section II Sub Sect 01 – Turbines, Governors and Main Inlet Valve	1.13 Inspection and Testing at Site - Page No. 55 of 57	The inlet valves shall be completely assembled and pressure tested in the shop a pressure equal to 150% of design pressure for 120 minutes to check the valves bodies strength. Leakage tightness of the repair seals shall be carried out at design pressure for 30 minutes. Servomotors and oil piping shall also be pressure tested at 1.5 times working oil pressure. Butterfly valves shall be thoroughly inspected, assembled and dimensionally checked. Their operation shall be demonstrated comprehensively covering all main working parts, accessories, attachments.	Pressure test duration will be as per clauses mentioned in IS 7332. Please accept.	Bid stipulations shall prevail.
PPV					
55	Volume II Sec- II Sub-Sec- 09 Pressure Shaft Valve	9.4 Performance Requirements - Page No. 5	b) Emergency Condition: It includes total rupture of the penstock resulting in 100% pressure difference on the two sides of the valve as well as Slam Shut, Malfunctioning of Control Equipment in the most adverse manner resulting in odd situation of extreme loading.	For design of valve as per our standard procedure 2 times of maximum discharge will be considered as total discharge for penstock rupture condition . Please accept bidder consideration .	Bid stipulations shall prevail.

Sr. No.	Section	Clause No.	Bid Stipulation	Bidder Queries	NEEPCO Replies
56	Volume II Sec- II Sub-Sec- 09 Pressure Shaft Valve	9.6.1 Valve Body - Page No. 6	The construction of valve body shall be made in a single/two piece flanged together, reinforced with ribs, brackets and sole plate for anchoring to the foundation. The features of construction shall be as per IS: 7326 (Part I&II)/AWWA C-504. The material for the valve body shall be of carbon steel conforming to ASTM A537 Gr.2 or A516 Grade 70 . The fabrication work shall be done so as to fully meet the provisions of ASME Section VIII Division I or equivalent. The interior of the valve body shall be smoothly finished so as to have low resistance and a free & full flow is ensured through the system.	We propose for following materials: (S355 J2+N) + (ASTM A216 Gr. WCC or IS 1030) i.e Cast +Fabricated design . Kindly accept bidder proposal.	Any alternative material offered must be equivalent or better than the material specified in the Tender specification both in terms of chemical composition and material properties. However, the detailed comparison of Chemical composition and material properties must be submitted to the Purchaser for approval during detail engineering stage.
57	Volume II Sec- II Sub-Sec- 09 Pressure Shaft Valve	9.6.2 Valve Disc - Page No. 6The disc shall be cast-fabricated/fabricated in single piece. The material shall be of carbon steel confirming to ASTM A537 class II or A516 Gr. 70 , in case of fabricated steel. The disc shall be stress relieved before machining. The centerline of the valve disc shall be slightly off center to the valve body center line to provide a hydro-dynamic closing to the valve.....	We propose for following materials: (S355 J2+N) + (ASTM A216 Gr. WCC or IS 1030) i.e Cast +Fabricated design . Kindly accept our proposal.	Any alternative material offered must be equivalent or better than the material specified in the Tender specification both in terms of chemical composition and material properties. However, the detailed comparison of Chemical composition and material properties must be submitted to the Purchaser for approval during detail engineering stage.
58	Volume II Sec- II Sub-Sec- 09 Pressure Shaft Valve	9.6.3 Valve Shaft, Bearings and Shaft Seal - Page No. 7 The shaft seal at each end shall preferably be of the gland and stuffing box type. The stuffing box shall be easily accessible for adjustment and replacement of packing without disturbing any other part of the valve	As per our design two special seals are provided at each trunnion shaft location with self lubricating bearing. This is our proven design. We will offer same design of trunnion shaft for this project . Exact detail will be shared during detail Engineering. Kindly accept our proposal.	To be decided during Detail Engineering.

Sr. No.	Section	Clause No.	Bid Stipulation	Bidder Queries	NEEPCO Replies
59	Volume II Sec- II Sub-Sec- 09 Pressure Shaft Valve	9.6.4 Valve Seals - Page No. 6	<p>The valve shall be provided with two seals –</p> <ul style="list-style-type: none"> • one as service seal located downstream of the valve disc and • the other as reserve or maintenance seal located upstream of the valve disc. <p>It should be possible to adjust service seal from downstream side of the valve by applying upstream seal and without dewatering upstream side of the valve. A provision shall also be made for rotation of valve disc by 180 degrees to facilitate repair / adjustment of upstream maintenance seal without dewatering upstream of the valve.</p> <p>Both seals shall be mounted on the periphery of the valve disc and be secured in position by means of clamping rings and screws.</p> <p>The sealing arrangement shall be Stainless Steel seat ring in body and synthetic nitrile rubber seal with retaining ring on the disc. The leakage at the seals shall be zero to achieve water tight enclosure when the valve is pressurized.</p> <p>The maintenance seal shall be inflatable hose seal type and shall held in position by clamping ring.....</p>	<p>We proposes single disc double seal design. Please accept.</p> <p>Service seal will be self-engagement type while maintenance seal will be applied by giving sliding movement to seal seat of maintance seal by manuall operation . Kindly accept our proposal.</p> <p>Permissible leakage shall be as per DIN EN 12266 - 1 Rate F</p>	Bid stipulations shall prevail.

Sr. No.	Section	Clause No.	Bid Stipulation	Bidder Queries	NEEPCO Replies
60	Volume II Sec- II Sub-Sec- 09 Pressure Shaft Valve	9.6.7 By-Pass Valve Assembly And Drainage System - Page No. 8	The Butterfly valve shall be provided with a by-pass arrangement of suitable design for balanced opening of the valve. The same shall be suitable for automatic operation in sequential order. The bypass line shall be of minimum 250 mm diameter which shall connect the upstream and downstream companion pipes. The bypass valve shall be sized in such a way that it shall take care of leakages from GUIDE VANES and equalizes the pressure in the preset time. Incase this time exceeds, we shall get alarm. The bypass line shall be provided with a manually operated isolating gate valve on upstream side, which shall normally be fully opened all times, and a hydraulic cylinder operated needle valve with auxiliaries on downstream side. The needle of the valve shall be of stainless steel and all piping and valve shall be carbon steel/cast steel construction. The Contractor shall provide one flexible coupling in the by-pass line.....	We propose to offer hydraulic operated slide valve in place of Needle Valve in bypass system . Kindly accept our proposal.	To be decided during Detail Engineering.
61	Volume II Sec- II Sub-Sec- 09 Pressure Shaft Valve	9.6.9.2 'Downstream Pipe piece, Dismantling section-cum- expansion joint - Page No. 10The upstream and downstream pipe pieces shall be of fabricated steel construction of ASTM A537 class II/ A516 Gr. 70 and shall be supplied with a trim allowance of minimum 200 mm for edge preparation and welding. The edge preparation & welding of upstream & downstream pipes to steel liner and penstock shall be in the Contractor's scope. All the piping shall be tested to required pressure before installation.....	We propose to offer S355 J2+N for shell and flanges and in case flange thickness is more than flange will be of cast materail ASTM A216 Gr. WCC or IS 1030. Kindly accept our proposal.	Any alternative material offered must be equivalent or better than the material specified in the Tender specification both in terms of chemical composition and material properties. However, the detailed comparision of Chemical composition and material properties much be submitted to the Purchaser for approval during detail engineering stage.

Sr. No.	Section	Clause No.	Bid Stipulation	Bidder Queries	NEEPCO Replies
62	Volume II Sec- II Sub-Sec- 09 Pressure Shaft Valve	9.8.2 Actuating Mechanism And Counterweights - Page No. 14	<p>The actuating mechanism is a series of levers and rods that transmit the forces between the servomotors, the counterweights and the rotor trunnions.</p> <p>The actuating mechanism articulations shall be equipped with self-lubricating bushings and hardened martensitic stainless steel trunnions.</p>	<p>We will offer forged steel material for trunnions with stainless steel sleeve.</p> <p>Kindly accept our proposal.</p>	Bid stipulations shall prevail.
63	Volume II Sec- II Sub-Sec- 09 Pressure Shaft Valve	9.11.1 Performance Test - Page No. 16	<p>The valve shall be tested in a fully assembled condition along with hydraulic power pack and control panel. The valve shall be shop operated a minimum of ten (10) times from fully closed to fully open position and ten (10) times vice versa under a no flow condition to demonstrate that the complete assembly is workable. However, if the Employer is not satisfied or would like to test the functioning of the valve even after this, the decision to open and close the valve for more than ten (10) times shall be the Employer's.</p>	<p>Considering the project timeline and project execution methodology it is not feasible to test the valve with hydraulic power pack at works, however required test shall be performed at site.</p> <p>Kindly review and delete the testing requirement at shop.</p>	Bid stipulations shall prevail.
64	Volume II Sec- II Sub-Sec- 09 Pressure Shaft Valve	9.11.2, 9.11.3 Body Hydrostatic Test, Disc Strength Test - Page No. 17	<p>Both ends of the valve shall be blanked off (including upstream & downstream sections) so that the valve is subjected to the full pressure stress in all directions induced by the test pressure. With the valve disc in a slightly open position, the entire valve shall be subjected to at least 1.5 times the specified design pressure including pressure rise or twice the maximum operating pressure whichever is higher for at least 30 minutes. Under this pressure there shall be no leakage through the body or any trunnion seals and no parts shall be plastically deformed.</p>	<p>We wish to perform Body Hydrostatic Test & Disc Strength Test jointly by welding test dome on upstream extension pipe and applying service seal on downstream side and than applying test pressure. Test dome cannot be welded on downstream pipe as there will slip type dismantling joint in downstream pipe. UT will be performed on downstream pipe .</p> <p>Kindly accept our proposal.</p>	Bid stipulations shall prevail.
65	Volume II Sec- II Sub-Sec- 09 Pressure Shaft Valve	9.11.4 Seal Test - Page No. 17	<p>With one end of the valve open to atmosphere and disc in the closed position and valve shall be subject to maximum design pressure for a period of 30 minutes. The leakage from the seals shall be zero. Low pressure leak test at working pressure shall also be carried out.</p>	<p>Permissible leakage will be per DIN EN 12266 - 1 Rate F .</p>	Bid stipulations shall prevail.

Sr. No.	Section	Clause No.	Bid Stipulation		Bidder Queries	NEEPCO Replies
66	Volume II Sec- II Sub-Sec- 09 Pressure Shaft Valve	9.12 Material of Construction Standards & Codes - Page No. 20	Valve Component	Material	We propose to offer following material : Valve Body - Cast Fabricated Design : S355 J2+N (Plate material) + ASTM A216 GR WCC (Cast material) Valve Disc - Cast Fabricated Design : S355 J2+N (Plate material) + ASTM A216 GR WCC (Cast material) Valve Shaft - Forged + SS Sleeve : 34CrNiMo6+QT / DIN EN ISO 683-2 (Shaft) + ASTM A240 Type 41500 / Equivalent (Trunnion Sleeve) Seal Retaining ring : ASTM A240 Type 415 / Equivalent Body Seat ring : Stainless steel overlay E309 material U/s. & D/s. Pipe Piece - Fabricated : bidder propose for offer S355 J2+N for shell and flanges and in case flange thickness is more than flange will be of cast materail ASTM A216 Gr. WCC or IS 1030. Flange Nuts & Bolts for Valve (Body) : 34CrNiMo6+QT / DIN EN ISO 683-2 / Equivalent Apart from above exact details all part will be shared during detail Engineering. Kindly accept bidder proposal.	Any alternative material offered must be equivalent or better than the material specified in the Tender specification both in terms of chemical composition and material properties. However, the detailed comparision of Chemical composition and material properties much be submitted to the Purchaser for approval during detail engineering stage.
			Valve Body	Carbon Steel confirming to ASTM A537 class II or A516 Gr. 70		
			Valve Disc	Carbon Steel confirming to ASTM A537 class II or A516 Gr. 70		
			Valve Shaft	Forged Steel BS 29/EN9		
			Sleeves for Shaft(as per manufacturer std)	Hardened Stainless Steel ASTM A 743 Gr. 6 NM or CA15		
			Seal Retaining ring	SS 410		
			Retaining Ring (Segments are not permissible)	AISI 316		
			Body Seat ring	SS 410		
			Companion Flanges	Carbon Steel confirming to ASTM A537 class II or A516 Gr. 70		
			U/s. & D/s. Pipe Piece	Carbon Steel confirming to ASTM A537 class II or A516 Gr. 70		
			Flange Nuts & Bolts for Valve (Body)	High Tensile Steel SS IS: 1367 CL 12/BS:970 817		
			Nuts & Bolts for	A 193 Grade B7 / 194 Gr 2H		

Sr. No.	Section	Clause No.	Bid Stipulation	Bidder Queries	NEEPCO Replies
Generator					
67	Volume II Sec-II Sub-Sec-02 Generator and Excitation System	2.3 Generator 2.3.2 Mode of operation - Page No. 4 of 74	-One (1) maximum runaway speed condition per year -About 104 tripping per year -A useful life of 50 years.	As per IEC60034-33:2022 clause no. 9.7: -Three (3) maximum design speed for the complete life time. -500 full-load rejections for the complete life time -useful life of 40 years shall be considered. Kindly accept the criteria stated in IEC standard above.	Bid stipulations shall prevail.
68	Volume II Sec-II Sub-Sec-02 Generator and Excitation System	2.3.5.2 Insulation and Temperature Rise - Page No. 7 of 74	The maximum temperature rises in condition of one cooler out of service and unit operating at specified overload shall be guaranteed as the following while operating at maximum continuous overload rating of 80.24 MVA. Stator winding by embedded temperature detectors = 75°C Rotor winding by resistance = 80°C Collector rings by thermometer = 75°C Guide bearing Babbitt temperature = 65°C Thrust bearing Babbitt temperature (if applicable) = 65°C Oil sump temperature = 55°C	As per IEC60034-33:2022 clause no. 6.1 Temperature rise up to class B (Thermal class-130) shall be: For Stator= 85°C For Rotor= 90°C Based on reference of recent executed projects: Absolute temperature will be following: Guide bearing metal temp : 70°C Thrust bearing metal temp : 80°C Kindly accept.	Bid stipulations shall prevail.
69	Volume II Sec-II Sub-Sec-02 Generator and Excitation System	2.3.5.6 Wave form & Telephone influence Factor (TIF) - Page No. 8 of 74	The total harmonic distortion shall not exceed 1.5 percent according to IS.	As per IEC60034-33:2022 clause no. 5.1 Telephonic Harmonic Distortion (THD) ≤3% is applicable. Kindly accept.	Bid stipulations shall prevail.
70	Volume II Sec-II Sub-Sec-02 Generator and Excitation System	2.3.5.8 Runaway speed withstand capability. 2.3.7.8 Generator Shaft - Page No. 9 of 74 20 of 74	-The first critical speed of the combined turbine and Generator rotating parts shall be at least 30% higher than the maximum runaway speed. -The critical speed of the shaft at balanced condition shall be sufficient (not less than 25%)	As per IEC60034-33:2022 clause no. 9.4, the first critical speed is 10%, Also as per CEA standard, it is 25%, Kindly accept on CEA guidelines i.e. 25%.	The critical speed of the shaft at balanced condition shall be 25% over the runaway speed.
71	Volume II Sec-II Sub-Sec-02 Generator and Excitation System	2.3.6 Efficiency and output Guarantees of the Generator and TG unit - Page No. 10 of 74	The weighted average efficiency of the Generator at rated voltage, rated power factor and rated frequency shall not be less than 98.5%.	Considering the weighing factors, the expected WAE is high. We propose to make the requirement of WAE = 98.2%. kindly accept.	The weighted average efficiency of the Generator at rated voltage, rated power factor and rated frequency shall not be less than 98%.

Sr. No.	Section	Clause No.	Bid Stipulation	Bidder Queries	NEEPCO Replies
72	Volume II Sec-II Sub-Sec-02 Generator and Excitation System	2.3.7 Design and construction 2.3.7.1 General - Page No. 12 of 74	The unit maximum stresses in the equipment and embedded parts under the combination of all loads during continuous operation shall not exceed 30% of the yield point strength or 20% of the ultimate strength of the material whichever is lower. For other rotating parts of the Generator, the maximum stresses due to sever operating conditions (such as runaway speed, short circuit etc.) shall not exceed 60% of the material's yield point.	Based on reference of recent executed projects: The generator components are mainly made of Structural steel material which is ductile in nature. In this case only yield criteria (1/3)YP is recommended. Kindly accept.	Bid stipulations shall prevail.
73	Volume II Sec-II Sub-Sec-02 Generator and Excitation System	2.3.7 Design and construction 2.3.7.1 General - Page No. 12 of 74	In addition to the above, Contractor may also consider other severe conditions as applicable for the equipment. In pre-tensioning bolts, the pre stressed level shall be between 33% and 60% of the yield point strength.	In pre-tensioning bolts, the pre stressed level shall be 80% of the yield point strength. Kindly accept.	Bid stipulations shall prevail.
74	Volume II Sec-II Sub-Sec-02 Generator and Excitation System	2.3.7.9 Thrust & Guide Bearings - Page No. 22 of 74	Operation for a period of at least 30 minutes under maximum runaway condition with cooling water on;	Based on reference of recent executed projects, duration for runaway with cooling water supply will be 10 minutes. Kindly accept.	The clause shall be read as <i>"Operation for a period of at least 15 minutes under maximum runaway condition with cooling water on".</i>
75	Volume II Sec-II Sub-Sec-02 Generator and Excitation System	2.3.7.10 High pressure lubrication oil system - Page No. 23 of 74	For bearing lubrication, machine or turbine oil of viscosity class VG100 shall be used.	Oil with viscosity VG46 will be used. This is industry practice and request to accept.	Bid stipulations shall prevail.
BOPE					
76	Volume-II Section-IV Tender Drawings	Power house & substation Main single line diagram Drawing no:-W.003159-20719-ED-7001 - Page No. 1 of 1	SST rating 220/33kV, 5MVA, 50Hz.	This size of transformer is non-standard to manufacture please consider 10MVA transformer keeping all requirment same. Corresponding CT rating of MV & HV side of transformer shall be selected.	Bid stipulations shall prevail.

Sr. No.	Section	Clause No.	Bid Stipulation	Bidder Queries	NEEPCO Replies
77	Volume-II Section-IV Tender Drawings	Protection & metering Single line diagram Drawing no:-W.003159-20719-ED-7002 - Page No. 1 of 2	UAT & ET are in overall differential protection	Please note that as these two transformers are very small in size w.r.t GT hence adding these in overall differential protection is difficult during relay setting. Hence requested to remove these two transformer from O/A differential protection scheme. As these two transformer has its own 50/51 protection hence these transformers are protected.	Bid stipulations shall prevail.
78	Volume-II Sec-II Sub-Sec- 11 Medium & Low Voltage Switchgear and Auxiliary Power Supply System	Clause no 11.13 415V Switchgear - Page No. 13	Required no. of draw out type ACBs and MCCB / MPCB;	Requested to consider All ACBs- draw out type All MCCB/ MPCB - fixed type All MCBs- fixed type There will be no impact on design aspects.	Agreed.
79	Volume-II- Section-II Sub-Sec- 10 Transformers	Clause no 10.53 Oil Type Distribution Transformers - Page No. 75	Two (2) No., 1500 KVA; 33 kV / 0.433 kV, Dyn11, 3 phase, 50 Hz., Oil Type Station Auxiliary Transformer (SAT) with "off-circuit" taps in steps of 2.5% from +5% to -5% of the rated voltage on H.V. side, complete with accessories and fittings, as specified and suitable for indoor installation	Requested to consider dry type transformers as it is indoor type. To avoid from fire hazard.	Agreed. The SAT shall be dry type.

Sr. No.	Section	Clause No.	Bid Stipulation	Bidder Queries	NEEPCO Replies
BOPM					
80	Volume II Section II Sub Sect 01 – Turbines, Governors and Main Inlet Valve	1.5.4.12 Working Oil Pressure - Page No. 41 of 57	The normal working pressure for the governor oil shall be 100 kg/cm ² (max). The OPU shall have high pressure compressed air system or piston type accumulator with nitrogen bottles battery.	As per latest industry practice, we propose to use working pressure of governor in the range of 110 - 160 bar. Please confirm	To be decided during Detail Engineering.
81	Volume II Section II Sub Sect 01 – Turbines, Governors and Main Inlet Valve	1.6 /1.6.1.10 Turbine Main Inlet Valves Page No. 42 of 57	The pressure oil will be supplied from its independent pressure oil system or the governor oil pressure system.	Please confirm if separate independent OPU's shall be used for Turbine & MIV or common OPU.	separate independent OPU's shall be used for Turbine & MIV
82	Volume II Sec-II Sub Sect 01 – Turbines, Governors and Main Inlet Valve	1.6 /1.6.1.13 Turbine Main Inlet Valves Page No. 43 of 57	One emergency D.C. pump, for black start, complete with motor shall be supplied.	It is proposed to use Hand pump, instead of D.C. pump, Please confirm	Bid stipulations shall prevail.
83	Volume II Sec-II Sub Sect 01 – Turbines, Governors and Main Inlet Valve	1.7/ (4) Oil Pumps - Page No. 50 of 57	The pumps shall operate intermittently to replenish the accumulator volume.	Contractor propose to select the pump as per IEEE125 standard, please confirm. Also please confirm the requirement of continuous running jockey pump for leakage compensnation in the system.	Bid stipulations shall prevail. If required as per bidder's design, continuous running jockey pump in addition to the oil pumps shall be provided.
84	Volume II Sec- II Sub-Sec- 03 Cooling Water System	3.1 Scope of work - Page No. 1	As well as, supply of sufficient quantity of water for Air Handling Units of the HVAC System and Fire Water Storage Tank.	As the pressure requirement of cooling water system & AHU's shall be different, it is proposed to have a dedicated filtration & pump arrangement for HVAC system. Also please confirm that the common header for cooling water system shall be at the suction side of the pumps, so that for fire fighting system can be operated without operating cooling water pumps.	At present, no water requirement for AHU in envisaged and the same may be reviewed if required during detail engineering. The fire water tank shall be filled up from Cooling Water header from time to time, by running the cooling water pumps.
85	Volume II Sec- II Sub-Sec- 03 Cooling Water System	3.1.1 Design and Layout Conditions - Page No. 1	As an open circuit, it shall draw the raw water from the Tail Pool and shall be discharged back into the tail race at a suitable elevation & location.	Please confirm that the open loop cooling water	Open loop cooling water system shall be provided. The description talks about heat

Sr. No.	Section	Clause No.	Bid Stipulation	Bidder Queries	NEEPCO Replies
86	Volume II Sec- II Sub-Sec- 03 Cooling Water System	3.2.1 Cooling System - Page No. 3	The velocity of water in the Heat Exchangers shall be selected so as to prevent sedimentation of silt inside the Heat Exchangers.	system shall be provided without heat exchanger.	exchanger for OPU Oil water heat exchanger (if required).
87	Volume II Sec- II Sub-Sec- 03 Cooling Water System	3.2.1 Cooling System - Page No. 3	Keeping in view the condition of the water in the river, which is silt laden, the maintenance and operational flexibility, it has been decided to provide Cyclone Separators as well as Motorized Automatic Online Self Cleaning Strainers for each unit .	Please provide the water analysis report.	Already furnished.
88	Volume II Sec- II Sub-Sec- 05 HP & LP Compressed Air System	5.2 General Requirements - Page No. 2	Three AC motor driven air cooled reciprocating air Compressors, one acting as a main for HP & LP system, second as a standby and third for the synchronous condenser mode	The operating pressure of HP compressure & LP compressor are different, so one main & one stand-by Compressor for both type of systems should be used. Please confirm.	Agreed.
General					
89	Volume-II Sec-I General Tech. Specification	0.3 Standards - Page No. 2 of 111	Although Indian or IEC standards for workmanship material and plant have been selected generally in these specifications as a basis of reference, other standards and recommendations of standard international organisations will be acceptable provided they ensure equal or higher quality than those specified, and provided, furthermore, that the Contractor submits for approval, detailed standards which he proposes to use	Paragraph to be modified as "Although Indian or IEC standards for workmanship material and plant have been selected generally in these specifications as a basis of reference, other standards and recommendations of standard international organisations will be acceptable provided they ensure equal or higher quality than those specified, and provided, furthermore, that the Contractor submits for approval, detailed-standards extracts of the standard which he proposes to use, as Standards are copyright products and cannot be shared". Please accept the change.	Agreed.
90	Volume-II Sec-I General Tech. Specification	3.4 Quality of Materials and Plant - Page No. 34 of 111	Any steel castings which have been repaired by welding with the Engineer's consent shall be subjected (after the final heat treatment) to whatever crack detection, dye-penetration, ultra-sonic, X-ray (radiography) or any other tests which the Engineer may require.	Any steel castings which have been repaired by welding with the Engineer's consent shall be subjected (after the final heat treatment) to whatever crack detection, dye-penetration, ultra-sonic, X-ray (radiography) or any other tests which the Engineer may require. Please accept the change.	Agreed.

Sr. No.	Section	Clause No.	Bid Stipulation			Bidder Queries	NEEPCO Replies
91	Volume-II Sec-I General Tech. Specification	3.11.3.2 Non-Destructive Examinations - Page No. 42 of 111	Type of weld	Type of Inspection	Extent of Inspection	Radiographic testing of weld joints is not recommended as radiography poses health issues of the persons, so in the view bidder proposes to have ultrasonic testing of all type of weld joints which fulfils all the design and quality requiremnts.. Please accept.	Agreed.
			Groove weld on tension butt joint	Radiographic	100 %		
			Groove weld on compression butt joint	Radiographic	10 %		
			Groove weld on joints not suitable for radiographic inspection	Ultrasonic	100 %		
92	Volume-II Sec-I General Tech. Specification	4.1 General - Page No. 51 of 111	Revolving parts shall be truly balanced both statically and dynamically that when running at normal speed and at any load p to the maximum, there will be no vibration due to lack of such balance.			Please note that the rotating parts shall be balanced as per design application and applicable standards Please accept.	Bid stipulations shall prevail.
93	Volume-II Sec-I General Tech. Specification	6.1.2 Standards - Page No. 81 of 111	If the Contractor intends to apply Standards and Regulations other than those specified, he shall provide the Engineer with two (2) sets of such documents, which shall be complete, unabridged and written in the Contract Language.			If the Contractor intends to apply Standards and Regulations other than those specified, he shall provide the Engineer with two (2) sets of such documents, which shall be complete, unabridged and written in the Contract Language. He shall provide the extract of the applicable standard written in contract language. Please accept.	Agreed.
94	Volume-II Sec-II Sub-Sec- 01 Turbines, Governors and Main Inlet Valve	1.2.5.1 Smooth, Stable & Quiet Operation and Noise Limit - Page No. 9 of 57	The vibration amplitude at the shaft shall not exceed the recommended values specified in ISO-7919 (part 1), ISO-3945 and VDI- 2056.			The vibration amplitude at the shaft shall not exceed the recommended values specified in ISO-20816-5. Please accept.	Agreed.
95	Volume-II Sec-II Sub-Sec- 01 Turbines, Governors and Main Inlet Valve	1.2.6.2 Model Details, Drawings and Homology - Page No. 11 of 57	Before taking up the manufacture of the model turbine, the Contractor shall submit to the purchaser in a sequential manner, within 90 days after award of contract, drawings and description covering details of the proposed model, testing equipment to be used, instrumentation, testing procedure, method of interpretation and computation of test results for the approval of the Employer.			Before taking up the manufacture of the model turbine, the Contractor shall submit to the purchaser in a sequential manner, within 90 days after award of contract, drawings and description covering details of the proposed model, testing equipment to be used, instrumentation, testing procedure, method of interpretation and computation of test results for the approval of the Employer. Please accept the change.	The clause may be read as...."Before taking up the manufacture of the model turbine, the Contractor shall submit to the purchaser in a sequential manner, within 90 days after award of contract, drawings and description covering details of the proposed model, testing equipment to be used, instrumentation, testing procedure, <i>method of interpretation as well as method of computation of test results</i> for the approval of the Employer."

Sr. No.	Section	Clause No.	Bid Stipulation	Bidder Queries	NEEPCO Replies
96	Volume-II Sec-II Sub-Sec- 01 Turbines, Governors and Main Inlet Valve	1.2.6.3 Conducting of Model Test, Test Code, Submission of Report - Page No. 11 of 57	The test shall be completed and comprehensive test reports submitted for approval of the Corporation within six (6) months after the award of contract.	The test shall be completed and comprehensive test reports submitted for approval of the Corporation within nine (9) months after the award of contract. Please accept the change.	Relaxation of time period for model testing is agreed as per the requirement of bidder, subject to maximum of 10 months AND strict adherence to overall project commissioning schedule.
97	Volume-II Sec-II Sub-Sec- 01 Turbines, Governors and Main Inlet Valve	1.2.6.6 Presentation of Model Test Report - Page No. 12 of 57	k) Curves showing relationship between wicket gate angle and also wicket gate opening in mm vs servomotor stroke related to maximum opening of guide vane and clear opening between two adjacent wicket gates	Curves showing relationship between wicket gate angle and also wicket gate opening in mm can be provided during model testing however, the relationship between wicket gate opening in mm and servomotor stroke shall be provided in project execution stage for prototype . Please accept.	As per Tender, Model test report should be as per IEC 60193.
98	Volume-II Sec-II Sub-Sec- 01 Turbines, Governors and Main Inlet Valve	1.3.7 Provision of Abrasion Resistant Hard Coating on Critical Components - Page No. 18 of 57	Hard coating applicable at site and repairable at site shall be proposed	Hard coating is a very specialized job requiring special machines and expert persons, hard coating repairing at site is not recommended. Request you to please delete the clause.	Agreed.
99	Vol-II, Sec -II, PART-II, Sub-Sec- 02 Generator and Excitation System	2.3.7.8	The critical speed of the shaft at balanced condition shall be sufficiently (not less than 25%) higher than the runaway speed	We submit that the mentioned requirement is very much on higher side .We recommend that first critical speed of combined rotating parts of turbine and generator shall be at least 20% higher than the maximum turbine runaway speed. NEEPCO is requested to kindly review and confirm the acceptance of above.	The critical speed of the shaft at balanced condition shall be 25% over the runaway speed.
100	Vol-II, Sec -II, PART-II, Sub-Sec- 02 Generator and Excitation System	2.3.7.8	The generator shafts shall be made of the best quality forged carbon steel confirming to ASTM A668 class E, properly heat-treated. A single shaft shall be offered with the condition that there is no change in the height of the power house and no pit shall be allowed in the service bay.	For generator Shaft, we propose two shaft system because of following advantages, i) Lower lifting weight by power house crane ii) Required lower lifting clearances iii) Ease of handling top & bottom shaft and generator rotor iv) Suitable in maintenance purpose. NEEPCO is requested to kindly review and confirm the acceptance of above.	Bid stipulations shall prevail. However, the requirement may be reviewed during detailed engineering.

Sr. No.	Section	Clause No.	Bid Stipulation	Bidder Queries	NEEPCO Replies
101	Vol-II, Sec -II, PART-II, Sub-Sec- 02 Generator and Excitation System	2.3.7.8	The generator shafts shall be made of the best quality forged carbon steel confirming to ASTM A668 class E, properly heat-treated. A single shaft shall be offered with the condition that there is no change in the height of the power house and no pit shall	In this clause, standard for generator shaft is specified as ASTM A668 Class E As per our present Standard practice, we use material standard HG-10035 for generator shaft and it has been used in more than 500 generators. NEEPCO is requested to kindly confirm the acceptance of above material.	Any alternative material offered must be equivalent or better than the material specified in the Tender specification both in terms of chemical composition and material properties. However, the detailed comparison of Chemical composition and material properties must be submitted to the Purchaser for approval during detail engineering stage.
102	Vol-II, Sec -II, PART-II, Sub-Sec- 02 Generator and Excitation System	2.3.11.4 & 2.3.11.5	Sudden short circuit test from not less than 0.50 rated terminal voltage to determine reactance and time constants. Impulse short-circuit test at reduced voltage acc. to IEC 60034-1, Para. 24; • Determination of the values for Xd, X'd, X''d, and Xq; • Determination of the following constants: T'do, T'd, T''d and Ta in accordance with IEC 60034-4;	M/s NEEPCO is requested to note that for determination of reactance & time constants we need to conduct Sudden short-circuit test. Being an invasive test, bidder do not recommend to conduct this test. However, we will furnish the calculated values of transient and sub transient reactance's and time constants during detail design. Hence, bidder proposes that these tests may be deleted. M/s NEEPCO is requested to kindly confirm the acceptance.	Bid stipulations shall prevail. However, the requirement may be reviewed during detailed engineering.
103	Vol. II Sec I (PTS) 5: General technical Specification	0.3.4	Material standards	In this Clause for materials, ASTM Standards are Specified. We understand that the use of equivalent IS (Indian Standard) in addition to ASTM standard is also acceptable. Please note that the material for generator component shall be selected so as to satisfy functional requirement with desired factor of safety (as stipulated in tender specification). NEEPCO is requested to kindly confirm the above.	Any alternative material offered must be equivalent or better than the material specified in the Tender specification both in terms of chemical composition and material properties. However, the detailed comparison of Chemical composition and material properties must be submitted to the Purchaser for approval during detail engineering stage.

Sr. No.	Section	Clause No.	Bid Stipulation	Bidder Queries	NEEPCO Replies
104	Vol-II, Sec -II, PART-II, Sub-Sec-02 Generator and Excitation System	2.3.7.7. III	The rim shall be shrunk on the rotor spider and shall remain shrunk on the hot rotor when unit is rotating up to 110% of synchronous speed. The	NEEPCO is requested to note that floating type of rim for rotor is a proven design as it is used in more than 500 generators supplied by bidder . In view of this, NEEPCO is requested to kindly also accept the floating type design of rim.	The manufacturer may use their standard design by providing reasons and advantages, subject to prior approval, during detailed engineering.
105	Vol-II, Sec -II, PART-II, Sub-Sec-02 Generator and Excitation System	2.3.7.7. III	Cooling fan blades shall be cast aluminum and constructed to preclude vibration.	bidder proposes fabricated type of aerofoil Fan blades.	The manufacturer may use their standard design by providing reasons and advantages, subject to prior approval, during detailed engineering.
		2.3.7.13	The Axial Fans will consist of a large number of specially shaped aerofoil aluminum blades assembled to the fabricated support segments.	NEEPCO is requested to kindly confirm the acceptance.	
106	Vol-II, Sec -II, PART-II, Sub-Sec-02 Generator and Excitation System	2.3.7.10	For bearing lubrication, machine or turbine oil of viscosity class VG100 shall be used. The recommended types of lubricating oil are SHELL Vitrea 100 or LOTOS L-AN 100	Please note that Oil of viscosity class ISO VG, 46,57 & 68 are sufficient for performance of the bearings. In view of above, NEEPCO is requested to confirm the use of the above grades of the oil.	Bid stipulations shall prevail.
107	Vol-II Sec-II (Sub-Sec-06 Isolated Phase Bus duct & Associated Equipments)	6.5.1	Main run (5000A) length	NEEPCO is requested to kindly provide the Length of Main run per Unit is required.	The bidder shall consider the lengths as per tender drawings for estimation purpose. In the event of minor changes in length of IPBD during execution, the same shall be absorbed by the contractor.
108	Vol-II Sec-II (Sub-Sec-06 Isolated Phase Bus duct & Associated Equipments)	6.5.6.1	Tap-Off run (200A) length	NEEPCO is requested to kindly provide the Length of Tap off run per Unit is required. Further NEEPCO is requested to kindly clarify, if, Delta run persists in this project/tender.	The bidder shall consider the lengths as per tender drawings for estimation purpose. In the event of minor changes in length of IPBD during execution, the same shall be absorbed by the contractor. Delta run is required. However, Design & Engineering being in the scope of the bidder/contractor, requirement of delta run is to be finalized by the bidder.
109	Vol-II Sec-II (Sub-Sec-06 Isolated Phase Bus duct & Associated Equipments)	6.5.4	Porcelain Insulators	NEEPCO is requested to note that Epoxy Insulator have been proven in many bidder projects. In view of above, NEEPCO is requested to kindly confirm the use of Epoxy Insulator .	Bid stipulations shall prevail.

Sr. No.	Section	Clause No.	Bid Stipulation	Bidder Queries	NEEPCO Replies
110	Vol-II Sec- II (Sub-Sec- 01 Turbines, Governors and Main Inlet Valve)	1.3.7	<p>Provision of Abrasion Resistant Hard Coating on Critical Components</p> <p>The Supplier may propose to provide hard coatings /facings on the silt affected under water components in an alternative offer for consideration of the purchaser. The supplier in that case shall furnish all the technical details of such coating with relative merits along with the bid. Also increase in interval between two repairs due to hard coating vis-a -vis basic material shall be given for all the critical components likely to be affected by the silt. The coatings shall be subject to following conditions:</p> <p>a. Hard coating applicable at site and repairable at site shall be proposed</p>	<p>NEEPCO is requested to please confirm whether HVOF coating is required on Turbine components due to presence of silt in water.</p> <p>If Yes, Kindly clearly specify the Turbine parts on which HVOF is required i.e. runner, Guide Vanes, Labyrinth etc., as well as its extent.</p> <p>Further, please note that the HVOF coating shall not be repairable at site.</p> <p>NEEPCO is requested to kindly confirm the acceptance.</p>	<p>HVOF Coating is not envisaged at present. Based on the silt data, the requirement of HVOF or other coating maybe discussed during detail engineering.</p>
111	Vol-II Sec- II (Sub-Sec- 01 Turbines, Governors and Main Inlet Valve)	1.2.1.2	<p>Main Technical Parameters of Turbine</p> <p>Max. net head is given as 164 m and 163.2 m</p>	<p>NEEPCO is requested to please clarify Max. net head value.</p>	<p>Maximum Net Head - 163.2 m</p>
112	Vol-II Sec- II (Sub-Sec- 01 Turbines, Governors and Main Inlet Valve)	1.2.1.2	<p>Main Technical Parameters of Turbine</p> <p>Capability to give minimum output at any head without any adverse effect.</p> <p>50% of rated output or lower.</p>	<p>We submit that minimum load upto 50 % of rated output on all heads as specified in particular clause shall be offered.</p> <p>NEEPCO is requested to kindly accept & confirm.</p>	<p>Accepted.</p>
113	Vol-II Sec- II (Sub-Sec- 01 Turbines, Governors and Main Inlet Valve)	1.2.4.1	<p>Cavitation guarantee</p> <p>Erosion or damage caused by solid particles in the water and corrosion caused by aggressive chemical substances in water are not intended to be covered by the pitting guarantee. If excessive cavitation pitting occurs, the Contractor shall repair the resulting damage during the turbine guarantee period. All areas where the depth of pitting exceeds 1 mm shall be restored to their original contours by welding with stainless steel and grinding to a smooth surface equal in finish to the adjacent undamaged areas. The Turbine after such modifications, repairs and replacements shall be subject to same cavitation guarantees as per the original equipment.</p>	<p>NEEPCO is requested to kindly allow bidders to offer all the cavitation guarantees as per IEC 60609.</p> <p>Also, we offer to undertake maximum 2 number of repair/replacement within guarantee period, as restoration to original guarantee conditions after repair/replacement will lead to an unending process.</p> <p>NEEPCO is requested to kindly accept & confirm.</p>	<p>Bid stipulations shall prevail.</p>

Sr. No.	Section	Clause No.	Bid Stipulation	Bidder Queries	NEEPCO Replies
114	Vol-II Sec- II (Sub-Sec- 01 Turbines, Governors and Main Inlet Valve)	1.2.4	Guarantees for Turbine Output, Efficiency & Penalties for Shortfall Efficiencies below 94.5% for Turbine, 98.5% for Generator and 93.08% Overall TG, shall not be accepted. No weightage shall be given during evaluation for efficiencies better than above.	Please note that the Weighted average efficiency for Turbine as calculated , completely depends upon the weights on different loads in the WAE formula. Since in this case the weights on lower outputs are very high, as a result the value of WAE is liable to be calculated much lesser, when compared to as required in tender spec . NEEPCO is requested to kindly modify the formula suitably in order to achieve required WAE OR reduce the required WAE.	Efficiencies below 94.5% for Turbine, 98.5% for Generator and 93.08% for Overall TG, at rated conditions shall not be accepted. No weightage shall be given during evaluation for efficiencies better than above. The Guaranteed Weighted Average Efficiency of the Turbine and Generator as per formula given in the Bid Specifications shall not be less than 93.5% and 98% respectively.
115	Vol-II Sec- II (Sub-Sec- 01 Turbines, Governors and Main Inlet Valve)	1.2.4	Guarantees for Turbine Output, Efficiency & Penalties for Shortfall The weighted average efficiency of the Turbine at rated net head for 110 %, 100 %, 75 % and 50 % rated output shall also be guaranteed as per the formula $EvT = K1 \cdot E110\% + K2 \cdot E100\% + K3 \cdot E75\% + K4 \cdot E50\%$ Where EvT is the weighted average efficiency of the Turbines, E110%, E100%, E75% and E50%are the guaranteed efficiency of the Turbine at the respective percentage of the operation with reference to the rated head and K1= 0.20 , K2= 0.40 , K3 = 0.15, K4 = 0.25	We want to clarify that only weighted average efficiency of prototype Turbine at rated net head shall be guaranteed. All other efficiencies as specified at other specified heads shall be for information purpose only. NEEPCO is requested to kindly confirm the acceptance.	The formula for WAE as given in para (e) shall remain same.

Sr. No.	Section	Clause No.	Bid Stipulation	Bidder Queries	NEEPCO Replies
116	Vol-II Sec- II (Sub-Sec- 01 Turbines, Governors and Main Inlet Valve)	1.2.2	Design Requirements The turbine shall be so designed and constructed as to enable assembly of components at works and at the same time to permit easy transportation. The weights and sizes of the components/packages shall be within the permissible transport limits.	NEEPCO is requested to kindly furnish the transport limitation of road in terms of allowable weight & dimension i.e. L X W X H.	The project road from Kamba-Mechuka road to Tato-I Power House is being built as per the following specifications: i) Single lane carriage way width: 3.75M (ii) Minimum Formation width: 7.75M (iii) Maximum vertical gradient: 1 in 15 (iv) Vertical Ruling gradient: 1 in 20 (v) Minimum Radius of curvature: 20.0M Detail Geometric design shall be done as per IRC manual for hills road. The bailey bridge over yarjep river shall be of 40R specifications, having a clear width of 4.25 Metres (from truss to truss). Therefore, the maximum width of the largest consignment shall be computed accordingly. The maximum weight of the consignment shall also be finalized as per the bailey bridge specifications. The bidder is requested to visit site and carryout detail survey to ascertain transportation constraints, if any, in the Kamba Mechuka Road as well as the project roads to Power House and Valve House.
117	Vol-II Sec- I ANNEXURES: General Technical Specifications	4.4	Specific Documents for Mechanical Plant and Installations Documents for all Mechanical Plants as Applicable	The list of drawings / documents as required in tender specification which need to be submitted to customer for approval, shall be finalized mutually during detailed design stage. This is the regular practice which has been followed in almost all the tenders. NEEPCO is requested to kindly confirm the acceptance.	Accepted.
118	Vol-II Sec- II Sub-Sec- 03 Cooling Water System	3.4.1.4	Cyclone Separators Filtration efficiency 85% down to 100 microns of particles with specific gravity 2.6 & above.	We submit that the requirement of filtration of 100 micron for cyclone separator is very high, which may result in drastic increase in overall cost of equipment and unavailability in market. Since this cyclone separator is fulfilling the requirement of complete unit, so its filtration rating should be in range of 500 to 1000 microns. NEEPCO is requested to kindly confirm the acceptance.	Bid stipulations shall prevail.

Sr. No.	Section	Clause No.	Bid Stipulation	Bidder Queries	NEEPCO Replies
119	Vol-II Sec- II Sub-Sec- 03 Cooling Water System	3.4.1.1	Motorized Automatic Online Self Cleaning Strainers a) For each of Cooling Water Circuit for TG Units :Filtration efficiency 98% down to 100 microns. B) For cooling water circuit of HVAC Cooling Coils: Filtration efficiency 98% down to 200 microns.	We submit that the requirement of filtration of 100 micron for duplex strainer is very high, which may result in drastic increase in overall cost of equipment and it may be unavailable in market. Since this duplex strainer is fulfilling the requirement of complete unit, so its filtration rating should be around 500 microns.	Bid stipulations shall prevail.
120	Vol-II Sec- II Sub-Sec- 01 Turbines, Governors and Main Inlet Valve	1.12.5	Tests on Steel Plates The inlet valves shall be completely assembled and pressure tested in the shop a pressure equal to 150% of design pressure for 120 minutes to check the valves bodies strength.	We submit that the standard duration of hydro test for completely assembled and pressure tested in the shop at pressure equal to 150% of design pressure is 30 minutes. NEEPCO is requested to kindly confirm the acceptance.	Bid stipulations shall prevail.
121	Drawings	Power House Cross-section Drg. No.- W.003159-20716-EMD-7201	Draft Tube Dimensions	We submit that the Draft tube dimensions are completely governed by the model selected for the subject project to achieve required WAE and performance guarantees. Therefore , bidder should be allowed to offer most optimum dimensions of Draft Tube. Considering this fact the bottom most depth of Draft tube wrt turbine centreline should be lowered upto EL. 1010.12 m approx. NEEPCO is requested to kindly confirm the acceptance.	Any major changes must be justified based on Model Test and informed well in advance for the required civil work modifications.
122	Vol-II Sec- II Sub-Sec- 01 Turbines, Governors and Main Inlet Valve	1.2.1.2 clause i) and k)	i) Maximum Continuous Output at maximum net head of 164.0 m. k) Continuous overload Capacity	17.6 % overload is required at maximum net head, whereas 10 % overload is required at rated net head as per tender spec. NEEPCO is requested to kindly review the requirements.	Clause no. (i) of 1.2.1.2 stands deleted. The maximum power output of turbine at rated net head shall be sufficient to give 10% COL at generator terminals. Maximum power rating of Generator and Transformer shall be as given in the specifications.
123	Vol-II Sec- II Sub-Sec- 05 HP & LP Compressed Air System	5.2	General Requirements Three AC motor driven air cooled reciprocating air Compressors, one acting as a main for HP & LP system, second as a standby and third for the synchronous condenser mode; each of adequate capacity to cater above needs for the Powerhouse.	We recommend to opt for separate HP compressors & receivers for individual units to fulfill the requirement of synchronous condenser operation. NEEPCO is requested to kindly confirm the acceptance.	As per Tender, can be reviewed on providing detailed technical justification during detail engg stage

Sr. No.	Section	Clause No.	Bid Stipulation	Bidder Queries	NEEPCO Replies
124	Vol-II Sec- II Sub-Sec- 01 Turbines, Governors and Main Inlet Valve	TABLE 2	MATERIALS SPECIFICATIONS FOR MAJOR COMPONENTS ASTM A537 or equivalent	NEEPCO is requested to Kindly allow bidder to offer ASTM A 516 GR. 60 or 70 also, in place of ASTM A537 for all the fabricated items of Turbine and MIV.	Any alternative material offered must be equivalent or better than the material specified in the Tender specification both in terms of chemical composition and material properties. However, the detailed comparison of Chemical composition and material properties must be submitted to the Purchaser for approval during detail engineering stage.
125	Vol-II Sec- II Sub-Sec- 01 Turbines, Governors and Main Inlet Valve	1.2.4	Guarantees for Turbine Output, Efficiency & Penalties for Shortfall The prototype weighted average efficiency will be calculated from the model efficiency stepped-up to prototype efficiency according to IEC 60995, using the same grid of weights as above	We submit that the prototype weighted average efficiency will be calculated from the model efficiency stepped-up to prototype efficiency according to IEC 60193, as this has superseded IEC 60995. NEEPCO is requested to kindly update the clause and confirm the acceptance.	
126	Vol-II Sec- II Sub-Sec- 01 Turbines, Governors and Main Inlet Valve	1.2.4	Guarantees for Turbine Output, Efficiency & Penalties for Shortfall f) Efficiency guarantee and penalties If the model weighted average efficiency on testing is less than the guaranteed weighted average efficiency the Contract Price for payment purposes, be decreased at the rate of Rs 17,00,000 for each one hundredth of one percent drop in efficiency for each unit.	We submit that the guaranteed weighted average efficiency on testing shall be applicable for prototype only, and not on model. NEEPCO is requested to kindly confirm the acceptance.	Revised Clause 1.2.4 Attached herewith.
127	Vol-II Sec- II Sub-Sec- 05 HP & LP Compressed Air System & Vol-II Sec- III Schedule of Requirements (SOR)	5.2 General Requirements & 1. INTRODUCTION clause C & D	1) Three AC motor driven air cooled reciprocating air Compressors, one acting as a main for HP & LP system, second as a standby and third for the synchronous condenser mode; each of adequate capacity to cater above needs for the Powerhouse; the standby Compressor shall start automatically on failure of the main Compressor. 2) Oil Pressure system for Governor complete with Pumps, Motors, Valves, Oil Pressure Accumulators (N2 accumulators), Piping, Instruments etc. for actuating guide vanes for Governor. Oil Pressure system for MIV complete with Pumps, Motors, Valves, Oil Pressure Accumulators (N2 accumulators), Piping, Instruments etc. for actuating guide vanes for MIV.	NEEPCO is requested to kindly clarify whether HP compressed air system or N2 bottle bank is required to operate OPU of Turbine and MIV.	Nitrogen Bottle Bank shall be preferred for OPUs for Turbine and MIV.

Sr. No.	Section	Clause No.	Bid Stipulation	Bidder Queries	NEEPCO Replies
128	General			NEEPCO is requested to kindly furnish spares list pertaining to Turbine, MIV and cooling water system.	Attached As Annexure - I-A
129	General			NEEPCO is requested to kindly furnish GTP in editable version.	Already furnished.
130	Vol-II Sec- II Sub-Sec- 10 Transformers	10.52	Reference Standards: IS 2026	IS 2026 is Applicable for Power Transformers. IS 1180 is applicable for Outdoor type oil immersed distribution transformers up to and including 2500 kVA, 33 kV. Hence, applicability of IS 1180 may please be incorporated in technical specification, as this is prevalent IS among Indian manufacturer. NEEPCO is requested to kindly confirm the acceptance.	Agreed.
	Vol-II Sec- II Sub-Sec- 10 Transformers	10.61	Each distribution transformer shall be completely assembled and tested at the factory. Tests shall be performed in the presence of Purchaser's representative. Tests shall be performed in compliance with latest edition of IS: 2026 / IEC 76.		
131	Vol-II Sec- II Sub-Sec- 10 Transformers	--	Energy Efficiency Level of Auxilliary Dist. Transformer.	Energy Efficiency Level for Auxilliary Dist. Transformers (i.e. SAT, IAT & VAT) has not been mentioned in tender. We are considering Energy Efficiency Level-1 (as per IS 1180). NEEPCO is requested to kindly confirm the acceptance.	Please consider Energy Efficiency Level-3
132	Vol-II Sec- II Sub-Sec- 10 Transformers	10.62	Performance Guarantees : "The penalties shall be separately evaluated for:" a.the excess of test figures of the no load losses in kilowatts over the corresponding guaranteed figures; b. The excess of the difference between the test values of the load losses in kilowatts over the corresponding guaranteed values. No tolerance shall be permitted over the test figures of the losses."	We understand that the penalties are applicable for larger rating GENERATOR STEP-UP TRANSFORMERS (GTSU) and not for smaller rating Dist. Transformers (i.e. 1500KVA SAT, 160KVA IAT & 160KVA VAT). NEEPCO is requested to kindly confirm the acceptance. Please also note that Dist. Transformers (i.e. 1500KVA SAT, 160KVA IAT & 160KVA VAT) shall be with Energy Efficiency Level-1 (as per IS 1180).	Penalties shall also be applicable to distribution transformers.
133	Vol-II Sec- II Sub-Sec- 10 Transformers	10.53	One No. 160 kVA; 33 kV / 0.433 kV, Dyn11, 3 phase, 50 Hz., Oil type, HRT Intake Auxiliary Transformer (IAT) One No. 160 kVA; 33 kV / 0.433 kV, Dyn11, 3 phase, 50 Hz., Oil type, Valve House Auxiliary Transformer (VAT).	NEEPCO is requested to provide the Single Line Diagram (SLD) showing the 160 kVA; 33 kV / 0.433 kV, Oil type, HRT Intake Auxiliary Transformer (IAT) & Valve House Auxiliary Transformer (vAT) its protection, Metering, Breaker associated to downstream 415V Dist. Boards.	As detail design is in the scope of the bidder, the required details shall be finalized during detail engineering.

Sr. No.	Section	Clause No.	Bid Stipulation	Bidder Queries	NEEPCO Replies
134	Vol-II Sec- II Sub-Sec- 10 Transformers	10.53.2	Indoor door installation (plinth mounted) is mentioned for SAT.	NEEPCO is requested to clarify Indoor/ Outdoor installation.	The 1500 kVA 33/0.415 kV SAT 2 nos. shall be dry type.
135	Vol-II Sec- II Sub-Sec- 10 Transformers	10.53.2	Outdoor installation is mentioned for SAT.		
136	Vol-II Sec- II Sub-Sec- 10 Transformers	5.2	Outdoor installation is mentioned for SAT.		
137	Vol-II Sec- II Sub-Sec- 11 Medium & Low Voltage Switchgear and Auxiliary Power Supply System	11.13	Current transformer for protection and all outgoing feeder of motor loads and load more than 25 A;	Standalone starter panel shall be provided for Unit & Common auxiliaries of Generator and Turbine near the loads. CTs shall be provided in the starter panels. NEEPCO is requested to kindly confirm the acceptance.	Accepted.
138		11.13	Two (2) sets of Main distribution boards (MDBs);	Details of MDBs (Location/ SLD/ incoming & outgoing feeder etc.) is not found in the PTS. NEEPCO is requested to kindly provide the details.	As detail design is in the scope of the bidder, the required details shall be finalized during detail engineering.
139			General	Direct on-line starter shall be used for Pump/Motor ratings below 50kW and Star-delta starter shall be used for Pump/Motor having rating more than 50kW. Any soft starters shall not be in the scope of bidder. NEEPCO is requested to kindly confirm the acceptance.	Accepted.
140	Vol-II Sec- II Sub-Sec- 13 Emergency Diesel Generator Sets	13.1.1	200 kVA, 50 Hz alternator with exciter, automatic voltage regulator etc. for installation at intake location.	NEEPCO is requested to kindly provide the Single Line Diagram (SLD) showing the DG set & its protection, Metering, Breaker associated to downstream 415V Dist. Board (Intake area).	DG set shall be provided with a standard metering and protection system. However, the loads connected to the associated board are not detailed at this stage of engineering. The bidder may propose the rating of outgoing feeders to accommodate the maximum load.

Sr. No.	Section	Clause No.	Bid Stipulation	Bidder Queries	NEEPCO Replies
141	Vol-II Sec- II Sub-Sec- 13 Emergency Diesel Generator Sets	13.1.1	Auto and manual synchronizing Panel	<p>i) Only One (01)No. 630KVA DG set is required at Power House area & so no Synchronization/ paralleling with other DG set is applicable. As such only AMF panel is adequate & shall be supplied. NEEPCO is requested to kindly confirm the acceptance.</p> <p>ii) Only One (01)No. 200KVA DG set is required at Intake area & so no Synchronization/ paralleling with other DG set is applicable. As such only AMF panel is adequate & shall be supplied. NEEPCO is requested to kindly confirm the acceptance.</p>	Accepted.

Sr. No.	Section	Clause No.	Bid Stipulation	Bidder Queries	NEEPCO Replies
142	Vol-II Sec- II Sub-Sec- 13 Emergency Diesel Generator Sets	13.1.1	Fuel tank (Weekly storage)) and fuel system including fuel transferring pump, piping, valves, and fuel level indication / alarm / trip etc. (at each location) External fuel storage tank of 999 litre fuel capacity including fuel transferring pump, piping, valves, and fuel level indication / alarm / trip etc.	As no underground/ Overground BULK Oil Tank (BOT) is mentioned in Technical Specification, We understand no BOT is required for this tender. NEEPCO is requested to kindly confirm the acceptance.	Bid stipulations shall prevail. Capacity of weekly storage tank shall be decided during detail engineering.
143	Vol-II Sec- II Sub-Sec- 13 Emergency Diesel Generator Sets	13.6.1.2	Individual diesel oil day storage tank (day tank) of capacity sufficient to house fuel required for 8 hours of continuous running of DG set at 100% load	The day fuel Tank shall be 990 Liter for 630KVA DG set & 490 Liter for 200KVA DG Set as per standard norms and the same shall be supplied. NEEPCO is requested to kindly confirm the acceptance.	Accepted.
144	Vol-II Sec- II Sub-Sec- 13 Emergency Diesel Generator Sets	13.6.	The governor shall be electronic with adjustable speed droop 0-10%, suitable for unattended operation.	Feasibility of provision for Speed droop (% range) in the Electronic Governor shall be strictly as per manufacturer standard. NEEPCO is requested to kindly confirm the acceptance.	Accepted.
145	Vol-II Sec- II Sub-Sec- 13 Emergency Diesel Generator Sets	13.6.1.1	The engine shall be capable of satisfactorily driving the alternator at 10% overload at the rated speed for one hour in any period of 12 hours of continuous running.	Feasibility of provision for overload for a period of an hour in any 12 hours shall be strictly as per standard design of manufacturer. NEEPCO is requested to kindly confirm the acceptance.	Bid stipulations shall prevail.
146	Vol-II Sec- II Sub-Sec- 13 Emergency Diesel Generator Sets	13.6.1.6	Starting battery shall not be less than 300 AH rating for DG set.	The Type of Battery & Capacity of Battery shall be strictly as per standard design of manufacturer. NEEPCO is requested to kindly confirm the acceptance.	Bid stipulations shall prevail.
147	Vol-II Sec- II Sub-Sec- 13 Emergency Diesel Generator Sets	13.6.4	Alarms / Automatic shut-down	Feasibility of provision for specific arrangement of Alarms System shall be strictly as per standard design of manufacturer. NEEPCO is requested to kindly confirm the acceptance.	Bid stipulations shall prevail.
148	Vol-II Sec- II Sub-Sec- 13 Emergency Diesel Generator Sets	13.6.5	All protection equipment i.e. reverse power relay & reverse kVAR relays with suitable ranges, frequency relay, under voltage relay, frequency relay, instantaneous and IDMT over current relay, generator differential / REF protection, earth fault relay etc. and any other relays to satisfy the clause "Automatic Shutdown" of this section	Feasibility of provision for Earth fault protection shall be strictly as per standard design of manufacturer. NEEPCO is requested to kindly confirm the acceptance.	Bid stipulations shall prevail.

Sr. No.	Section	Clause No.	Bid Stipulation	Bidder Queries	NEEPCO Replies
149	Vol-II Sec- II Sub-Sec- 14 Power and Control Cables	14.1	HT Cable 11 kV, of required size, stranded Aluminium Conductor, XLPE insulated, armoured, FRLS cables,	NEEPCO is requested to note that since, 11KV cable is not mentioned in SLD, same is not considered in our scope. NEEPCO is requested to kindly confirm the acceptance.	Bid stipulations shall prevail. The contract being EPC in nature, the contractor shall design and accordingly prepare the relevant drawings and supply, erect and commission all required materials/equipments.
150	Vol-II Sec- II Sub-Sec- 14 Power and Control Cables	14.3.2	Control & Instrumentation Cables All cables used for electronic circuit shall be of 1.5 mm ² copper screened cables. The screening shall be of copper foil with drain wire. The 1.5 mm ² conductor shall be stranded	We understand that Instrumentation cable (pair cables) shall be of 0.5 sq. mm and RTDs cable shall be of 1.5 sq. mm. Kindly confirm acceptance. NEEPCO is requested to kindly confirm the understanding.	Bid stipulations shall prevail.
151	Vol-II Sec- II Sub-Sec- 14 Power and Control Cables	14.3.3	Power cables for 11 kV/ 33 kV system shall be with Aluminum Conductor, XLPE insulated, screened, sheathed, armored and overall PVC sheathed & FRLS type as detailed below. Insulation level of the medium voltage cables shall be 11/33 kV suitable for a high resistance grounding system and continuous ground fault condition.	NEEPCO is requested to note that since, 11KV cable is not mentioned in SLD, same is not considered in our scope. NEEPCO is requested to kindly confirm the acceptance. Kindly also inform us the route distance for 33KV cable.	Bid stipulations shall prevail. The contract being EPC in nature, the contractor shall design and accordingly prepare the relevant drawings and supply, erect and commission all required materials/equipments.
152	Vol-II Sec- II Sub-Sec- 15 Cable Trays	15.3.1	Cable trays shall have standard width of 300 mm, 600 mm & 750 mm and standard lengths of 3.0 meter. Minimum thickness of mild steel sheets used for fabrication of cable trays and fittings shall be 2 mm.	Please note that, Cable tray of size 50mm, 150mm, 300mm, 450mm and 600mm with standard length of 2.5 Metres shall be provided. NEEPCO is requested to kindly confirm the acceptance.	Shall be finalized during detail engineering.
153	Vol-II Sec- II Sub-Sec- 15 Cable Trays	15.3.1	Ladder type trays shall have a rung spacing of 300 mm for power cable application and 150 mm for control and communication cables.	Control & Instrumentation cable shall run on perforated type Cable tray. NEEPCO is requested to kindly confirm the acceptance.	Accepted.

Sr. No.	Section	Clause No.	Bid Stipulation	Bidder Queries	NEEPCO Replies
154	Vol-II Sec- II Sub-Sec- 16 Cable Trays	16.1.1	Field handset stations & Loudspeaker	<p>Plant Communication System:</p> <ul style="list-style-type: none"> • Customer may please provide the following details: <ul style="list-style-type: none"> i. Number of field handsets in different locations. ii. Location, type and number of loudspeakers required iii. Number of subscriber ports for power house and head works <p>Exact Quantity of Field Handsets & Loud Speakers shall be restricted to quantities offered during tender stage, as specified during tender stage. Only locations of Field Handsets & Loud Speakers in the layout drawings shall be finalized during detailed engineering.</p> <p>Any further addition in the quantity shall not be admissible.</p> <p>NEEPCO is requested to kindly confirm the acceptance.</p>	The major areas covered are specified in the T.S. The bidder may propose the appropriate number of field handsets, loudspeakers, etc., at different locations to ensure complete area coverage
155	Vol-II Sec- II Sub-Sec- 16 Cable Trays	16.1.2	Microprocessor based (digital) EPABX system	<p>NEEPCO is requested to provide following in EPABX</p> <ul style="list-style-type: none"> - Number of extensions needed. - Scalability options for future expansion. - Security features for call managemnet. 	<p>16.4.3.2 may be referred to for the number of extensions needed.</p> <p>Standard features, including scalability options for future expansion and security features for call management, may be proposed.</p>
156	Vol-II Sec- II Sub-Sec- 16 Cable Trays	16.5.3	No. and type of cameras required has not been mentioned.	NEEPCO is requested to kindly mention the type and minimum no. of cameras required	The major areas covered are specified in the T.S. The bidder may propose the appropriate number of CCTV.
157	Vol-II Sec- II Sub-Sec- 19 Electrical Workshop	19.4.1.1 (IV)	Digital Multimeter for AC & DC	<p>Standard Current range for multimeter is up to 20 Amp and available with various reputed makes. We request to accept the maximum up to 20 Amp instead of 30A.</p> <p>NEEPCO is requested to kindly confirm the acceptance.</p>	Bid stipulations shall prevail.

Sr. No.	Section	Clause No.	Bid Stipulation	Bidder Queries	NEEPCO Replies
158	Vol-II Sec- II Sub-Sec- 19 Electrical Workshop	19.4.1.1 (IX)	Portable Digital Frequency meter	Standard input Voltage Range for Digital Frequency meter is :110/230/440V. NEEPCO is requested to kindly confirm the acceptance.	Accepted.
159	Vol-II Sec- II Sub-Sec- 19 Electrical Workshop	19.4.1.1 (XIII)	Clamp-on volt-ammeters with: ii) Ranges: 1.2...60A and 60....600V in several steps iii)For round conductor up to 30mm diameter, iv) For flat conductors up to 30x45mm	NEEPCO is requested to kindly confirm that the measurement range is only for AC, or is it applicable for both AC & DC.	For AC only.
160	Vol-II Sec- II Sub-Sec- 19 Electrical Workshop	19.4.1.1 (XVI)	Decade resistors with rotary switches for DC and AC current	NEEPCO is requested to kindly provide the resistance range.	The bidder may offer the same with a suitable rating to ensure coverage of all equipment considered by the bidder.
161	Vol-II Sec- II Sub-Sec- 19 Electrical Workshop	19.4.1.1 (XVII)	Precision multiple resistors with rotary switches for DC and AC current	NEEPCO is requested to kindly provide the resistance range.	The bidder may offer the same with a suitable rating to ensure coverage of all equipment considered by the bidder.
162	Vol-II Sec- II Sub-Sec- 19 Electrical Workshop	19.4.1.2	Automatic turns ratio tester	NEEPCO is requested to kindly provide the turn ratio.	The bidder may offer the same with a suitable rating to ensure coverage of all equipment considered by the bidder.
163	Vol-II Sec- II Sub-Sec- 19 Electrical Workshop	19.4.1.3 (II)	Resistivity measurement kit	NEEPCO is requested to kindly provide details specification / technical particulars.	The bidder may offer the same with a standard rating suitable for the project.
164	Vol-II Sec- II Sub-Sec- 19 Electrical Workshop	19.4.1.3 (III)	Karl Fischer type moisture measurement kit.	NEEPCO is requested to kindly provide details specification / technical particulars.	The bidder may offer the same with a standard rating suitable for the project.
165	Vol-II, Sec- II,Sub- Sec- 01 Turbines, Governors and Main Inlet Valve	1.2.4	Guarantees for Turbine Output, Efficiency & Penalties for Shortfall The Clauses states "The prototype weighted average efficiency will be calculated from the model efficiency stepped-up to prototype efficiency according to IEC 60995, using the same grid of weights as above"	The Prototype performance from model (step-up of the model efficiency to the prototype efficiency) shall be in accordance with IEC 60193-2019, as IEC 60995 (IEC Publication 995) has been replaced by IEC 60193-2019. Refer IEC 60193-2019 for further details if any NEEPCO is requested to kindly confirm & modify the clause accordingly.	Revised Clause 1.2.4 Attached herewith.
166	Vol-II, Sec- II,Sub- Sec- 01 Turbines, Governors and Main Inlet Valve	1.2.6.2,	Model Details, Drawings and Homology The Clauses states "The model scale, minimum size and homology/ similarity to the prototype turbine shall be in conformity with the IEC code 60193. The model size shall not be less than 300 mm, and the test head shall not be less than 40 m"	Net head during model testing would be more than 10 m as per the IEC 60193-2019. NEEPCO is requested to kindly confirm & modify the clause accordingly	Detail technical justification to be provided during detail engineering.

Sr. No.	Section	Clause No.	Bid Stipulation	Bidder Queries	NEEPCO Replies
167	Vol-II, Sec- II,Sub-Sec- 01 Turbines, Governors and Main Inlet Valve	1.2.6.3,	Conducting of Model Test, Test Code, Submission of Report The Clauses states The test shall be conducted in accordance with the IEC publications 60193. The test shall be completed and comprehensive test reports submitted for approval of the Corporation within six (6) months after the award of contract."	Model witness test shall be completed within 9 months and report will be submitted within one month after the witness model test i.e. total 10 months after award of contract. However it will not affect the overall commissioning schedule of the project. NEEPCO is requested to kindly confirm & modify the clause accordingly	Relaxation of time period for model testing is agreed as per the requirement of bidder, subject to maximum of 10 months AND strict adherence to overall project commissioning schedule.
168	Vol-II, Sec- II,Sub-Sec- 01 Turbines, Governors and Main Inlet Valve	1.2.6.4	Tests on Turbine Model "g) Air admission test for the full sigma range."	Air admission test will be done if pressure pulsation in draft tube cone exceeds permissible limits for the whole sigma range operation. NEEPCO is requested to kindly confirm & modify the clause accordingly	Bid stipulations shall prevail.
169	Vol-II, Sec- II,Sub-Sec- 01 Turbines, Governors and Main Inlet Valve	1.2.6.6	Presentation of Model Test Report "k)Curves showing relationship between wicket gate angle and also wicket gate opening in mm vs servomotor stroke related to maximum opening of guide vane and clear opening between two adjacent wicket gates."	It may be noted that Servo Motor Design is not finalized till the time of Model Witness test, therefore "wicket gate angle/opening in mm vs servomotor stroke" can not be part of Model Test Report. However this information will be given after final design of Servo Motor System. Therefore this point-k) may please be deleted from model test report. NEEPCO is requested to kindly confirm & modify the clause accordingly	As per Tender, Model test report should be as per IEC 60193.

Sr. No.	Section	Clause No.	Bid Stipulation	Bidder Queries	NEEPCO Replies
170	Vol-II, Sec- II, Sub-Sec- 01 Turbines, Governors and Main Inlet Valve	1.2.6.7	Witness of Model Turbine Test by Employer's/ Consultants Representatives & Model "The Corporation reserves the right to get the model turbine tested in an independent laboratory"	Our Model Test Laboratory is a NABL accredited and Department of Science & Industrial Research (DSIR), Govt. Of India recognised laboratory and has conducted many successful Francis, Pelton, Kaplan turbine model tests. Turbine design is proprietary of nature and cannot be shared with external agencies. Therefore Model test will have to be done at our Laboratory only. Successful operation of various hydro projects for which model testing has been conducted at this very facility is testimony to the reliability of our laboratory. Hence we wish to submit that model test or repetition of model test at any other laboratory is not at all required. NEEPCO is requested to kindly confirm & modify the clause accordingly.	Bid stipulations shall prevail.
171	Vol-II Sec- II Sub-Sec- 26	26.3	Incoming line bay from Heo HEP Line-2	NEEPCO is requested to kindly provide the Power capacity of the Incoming line bay.	Power capacity of 220 kV Line from Heo HEP is (240+145) MW + 10% Overload.
172	Volume II Sec- II Sub-Sec- 26	26.25	Online Portable Monitoring System for Partial Discharge Detection. Qualitrol or equivalent make PD monitoring system preferred.	Bidder understand any make of online PD monitoring system fulfilling the technical specification and relevant standard are acceptable. NEEPCO is requested to kindly confirm the understanding.	Confirmed.
173	Volume II Sec- II Sub-Sec- 26	26.27	SF6 Measuring Device (DILO)	Bidder understand other makes of SF6 Measuring Device fulfilling the technical specification are also acceptable. NEEPCO is requested to kindly confirm the understanding.	Confirmed.
174	Volume II Sec- II Sub-Sec- 26	26.28	SF6 Handling Device (DILO)	Bidder understand other makes of SF6 Handling Device fulfilling the technical specification are also acceptable. NEEPCO is requested to kindly confirm the understanding.	Confirmed.
175	Volume II Sec- II Sub-Sec- 26	26.29	The 220 kV Gas Insulated Switchgear (GIS) shall be completely assembled and tested at the factory and at site.	It is practically not feasible to completely assemble the GIS at factory for testing. The GIS will be tested for transport units as mentioned in clause 26.30.2. Same practice is being followed in all NTPC, Powergrid and State utilities projects.	Each individual bay of the 220 kV Gas Insulated Switchgear (GIS) shall be completely assembled and tested both at the factory and on-site.

Sr. No.	Section	Clause No.	Bid Stipulation	Bidder Queries	NEEPCO Replies
176	Volume II Sec- II Sub-Sec- 26	26.30.2	Acceptance test: Production constraints linked to the size of transport units must be taken into consideration when preparing these programmes	NEEPCO is requested to kindly confirm the acceptance.	
177	Volume II Sec- II Sub-Sec- 26	26.30.2	Two types of participation are offered to the Employer or their representatives: • The Employer is present throughout testing which takes place according to the Manufacturer schedule; • The Employer is only present for the repetition of certain tests.	As per the general practice in all THDC & NTPC projects, one sample bay consist of Circuit breaker, Disconnecter, Earth Switch will be offered for customer witness. Complete routine test of all other equipments will be made available for customer review. Please confirm.	Bid stipulations shall prevail.
178	Volume II Sec- II Sub-Sec- 27	27.7.1	Disc Insulator	NEEPCO is requested to kindly allow bidders to use Polymer Long rod insulators also.	To be finalized during detail engineering.
179	Volume II Sec- II Sub-Sec- 28	28.2.1	The Line traps, Coupling devices and PLCC equipment shall be installed at the Tato-1 HEP Pothead yard end of the transmission line. The Bidder shall be responsible for co-ordinating the equipment supplied by him with the already existing carrier equipment at Receiving end / Pooling sub-station	A) Bidder understand there is no scope of Supply erection & commissioning of PLCC equipments , Line Traps, Coupling devices at the receiving end. NEEPCO is requested to kindly confirm the understanding. B)NEEPCO is requested to kindly provide distance of the receiving end. C) NEEPCO is requested to kindly provide make of the PLCC equipment at the receiving end.	A) The bidder shall supply, erect, and commission PLCC equipment for the receiving end as well. However, no Line Traps or Coupling Devices are envisaged at the receiving end. B) Distance of the receiving end at Heo HEP = 6 km approx Distance of receiving end at Naying Pooling Station = 26 km approx. C) PLCC equipments at both ends shall be provided by bidder/contractor.
180	Volume II Sec- II Sub-Sec- 29		Shunt Reactor	NEEPCO is requested to kindly provide the capacity rating of the shunt reactor.	25 MVAR, 220 kV, 3 Phase
181	Volume II Sec- II Sub-Sec- 11	11.17.4	The material for bus bars shall be copper (preferable). Auxiliary bus bars each of copper shall be provided in switchboard	Bidder understand Aluminium Bus Bars are also acceptable. NEEPCO is requested to kindly confirm the understanding.	The material for bus bars shall be copper.
182	Volume II Sec- II Sub-Sec- 15	15.3.1	Cable trays shall have standard width of 300 mm, 600 mm & 750 mm and standard lengths of 3.0 meter	We understand that Cable Trays of 2.5 Meter standard length are also acceptable. NEEPCO is requested to kindly confirm the understanding.	Shall be finalized during detail engineering.
			The cable trays shall have the following design characteristics:750 mm(Width)- 112 kg/m(Design Load)	Bidder understand that the design load shall be same as that of 300mm/600mm i.e 67KG/ Meter. NEEPCO is requested to kindly confirm the understanding.	Shall be finalized during detail engineering.

Sr. No.	Section	Clause No.	Bid Stipulation	Bidder Queries	NEEPCO Replies
183	Volume II Sec- IV		Drg No. W.003159-20716-EMD-7207 Pothead Yard	POT Head yard area requirement for outdoor equipments such as wave trap, LA, CVT, SF6 to Air bushing, Isolator seems to be insufficient, NEEPCO is requested to review the same as per actual requirement keeping in view of clearances and ACF for altitude more tha 1000mtr for 220kv Voltage level.	The bidder shall propose the equipment according to the actual requirements, considering the clearances and altitude correction factor (ACF) for altitudes above 1000 meters at the 220 kV voltage level.
184	Sec-III A: General Conditions of Contract	29	Training of personnel:	A) NEEPCO is requested to kindly provide the number of man days training requirement for 220kV GIS at OEM's works. B) Bidder understand training at OEM's Works for the Pothead Yard equipments is not envisaged in the current scope. NEEPCO is requested to kindly confirm the understanding.	These shall be finalized as per the requirement during execution of the contract, as already indicated in the bid specifications.
185	Volume II Sec- IV		Drg no. W.003159-20719-ED-7001 Main Single Line Diagram	Bidder understand provision for future bay extention is envisaged at one side only for 220kV Transmission Line 3 & 4. NEEPCO is requested to kindly confirm the understanding.	Future bay extention is envisaged at one side for 220kV Transmission Line and GIS.
186	Volume I Sec - I	16	6.2.2 The bidder or his sub-contractor or a Partner in the Partnership Firm / Joint Venture / Consortium shall have successfully completed the Design, Engineering, Manufacture, Erection & Commissioning of at least one Gas Insulated Substation of Voltage level 220 kV or higher, in India during the last 20 (Twenty) years and which has been in successful operation for at least 3 (Three) years during the last 7 (Seven) years;	EPC copanies are having experience of Design, Engineering, erection & commissioning of GIS and the product is being supplied from OEMs having Design, Engineering and Manufacturing experience. You are requested to amend the QR as below: The Bidder/Sub-contractor should have designed, constructed/erected, tested and commissioned one (1) Gas Insulated Substation/ Switchyard of 220 kV or above voltage class in India during the last 20 (Twenty) years and which has been in successful operation for at least 3 (Three) years during the last 7 (Seven) years. GIS will be sourced from the OEM meeting the design, engineering and manufacturing experience as per above.	Bid stipulations shall prevail.

Sr. No.	Section	Clause No.	Bid Stipulation	Bidder Queries	NEEPCO Replies
187	Vol-I, Sec-II(a)	4	Storage and preservation of all equipment at site or any other intermediate locations till installation and commissioning	NEEPCO is requested to kindly reimburse the Expenses for preservation with 10% overhead to the contractor if there is any.	Bid stipulations shall prevail.
188	Vol-I, Sec-II(a)	16.2	POWER SUPPLY: It is not binding on NEEPCO for supply of power from Grid or otherwise. At present Grid supply is not available and therefore the Contractor is required to make DG arrangement and in future if the grid supply is arranged, NEEPCO shall provide grid power to the Contractor on recoverable basis @ Rs. 30.00 per Unit.	The grid power charges @ Rs 30 are too high. NEEPCO is requested to provide grid power free of cost for construction and commissioning purpose. The actual cost for arrangement of Diesel Generator to be reimbursed by NEEPCO.	Bid stipulations shall prevail.
189	Vol-I, Sec-II(a)	16.5	WATER SUPPLY: Water for construction purposes and potable water of suitable quality shall have to be arranged by the Contractor at his own cost.	NEEPCO is requested to provide Construction and commissioning water, free of cost.	Bid stipulations shall prevail.
190	Vol-II, Sec-II	20	EOT crane	If EOT crane is shared with other subcontractors of NEEPCO and there is delay due its unavailability for subject tender's scope of work by the contractor, NEEPCO shall grant additional time for completion of the project. NEEPCO is requested to kindly confirm.	Bid stipulations shall prevail.