Pre Bid Technical Clarification No.6 dated 04.05.2025 to NIB No.475 dtd 21.01.2025 for Pkg-III EM Works of Tato-I HEP

Sr. No.	Volume	Clause No.	Clause name	Page No.	Specification as per Bid Document	Bidders Queries	NEEPCO Replies
Turbine							
1	Particular Technical Specifications-Electrical Volume II Section IV TDS01 – Turbine and MIV	A.02 & A.03	A.02 Guaranteed output at generator terminal for the following heads: A.03 Guaranteed turbine output for the following heads:	TDS-01: 1 of 11	i. Guaranteed max. Output at 75% of rated head j. Guaranteed max. Output at 50% of rated head & e. Guaranteed max. Output at 75% of rated head f. Guaranteed max. Output at 50% of rated head	As project net head range is fixed (153.3m to 163.2m), so kindly delete the ouput guarantee requirement at 75% & 50% of rated head.	Agreed.
2	Techincal Data Sheet Volume II Section V Sub-Sec- 01 Turbines, Governers and Main Inlet Valve	A.04 & A.05 AND D.1	A.04 Turbine efficiency A.05 Weighted Average Efficiency of Turbine Generator Unit AND D.1 Turbine Technical Data	TDS-01: 1 of 11 AND TDS-01: 6 of 11	A.04 Turbine efficiency: Guaranteed efficiency of Turbine at rated head for the following outputs: a 110% % b 100% % c 75% % d 50% % e Weighted Average Efficiency of Turbine % AND b Discharge i) Max. Discharge at max. head m3/s ii) Min. Discharge at min. head m3/s c Efficiency i) Efficiency at max. head & max. discharge % ii) Efficiency at min, head & min. discharge %	We understand that the only weighted average efficiency and rated point (100%) efficiency values are subjected to guarantee/ LD/ penality purpose as per PTS requirement. Efficiency/ discharge/ guide vane opening values at other individual points are for information purpose only. Kindly confirm.	Agreed. However, the bidder may note that the efficiency of the turbine at other individual points i.e. 110%, 75% and 50% contribute to the calculation of the WAE (which is a guaranteed technical particular).

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3	Techincal Data Sheet Volume II Section V Sub-Sec- 01 Turbines, Governers and Main Inlet Valve	A.06	A.06 Turbine Discharge for the following outputs	TDS-01: 1 of 11	A.06 Turbine Discharge for the following outputs: a Guaranteed max. Output at rated head (153.3 m) m3/sec b Guaranteed rated Output at rated head (153.3m) m3/sec c Guaranteed max. Output at max. head m3/sec d Guaranteed max. Output at min. head m3/sec e Guaranteed max. Output at 75% of rated head m3/sec f Guaranteed max. Output at 50%of rated head m3/sec	We understand that the requested discharge values are only for information purpose. Kindly confirm. Also, As project net head range is fixed (153.3m to 163.2m), so kindly delete the guarantee requirement at 75% & 50% of rated head.	Requested discharge values for sl. no. a & b are to be guaranteed.
4	Techincal Data Sheet Volume II Section V Sub-Sec- 01 Turbines, Governers and Main Inlet Valve	A.14	A.14 Guide Vane Apparatus:	TDS-01: 2 of 11	g Guide vane opening (%) for maximum output at rated head ≤90%	The maximum output (110%) shall be achieved within full guide vane opening inline PTS. So kindly request you to delete the requirement to maintain the guide vane opening ≤90%.	Agreed. However, bidder is requested to note that as per TS "*The Turbine shall be capable of generating the rated capacity kW at the Generator terminals at rated head with guide vane opening of about 85% such that the over load capacity 10% is satisfied.*"
Main Inlet Valve							

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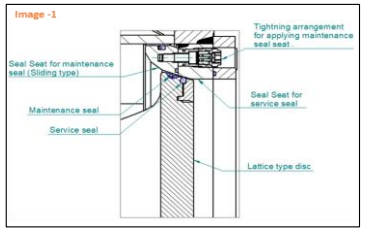
5	Volume II, Sec-II, Sub-Sec-01, Turbines, Governors and Main Inlet Valve	1.6 - Turbine Main Inlet Valves 1.6.1.8	1.6.1.8 Description and Operation Requirements	42 of 57	Valve shall have two stainless steel working seals; one at downstream (service seal) for use during normal closure operations and other 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.	Stainless steel working seals as specified in this clause are only applicable for spherical valve and not for butterfly valve. For butterfly valve only Rubber (NBR) seals are applicable. We will offer Rubber seals for both service and maintenance seal for Main Inlet valve, arrangement is as shown in the below image: 	To be decided during detail engineering. The bidder shall submit a Technical Note along with justifications for approval by NEEPCO. This supercedes our earlier comment on query no. 111 of Prebid Technical Clarifications no.1.
Pressure Shaft Valve							
6	Volume II, Sec- II, Sub-Sec-09, Pressure Shaft Valve	9.4	9.4 Performance Requirements	5 of 26	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.	Kindly specify the maximum discharge value for penstock rupture condition which is to be considered for the design of Pressure Shaft Valve. This is critical information for design. Please provide.	The penstock butterfly valve must be designed to withstand rupture velocity conditions and the corresponding discharge.

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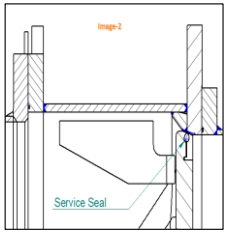
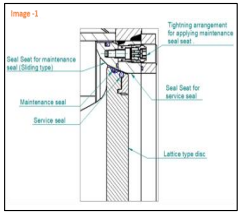
7	Volume II, Sec- II, Sub-Sec-09, Pressure Shaft Valve	9.6.4	9.6.4 Valve Seals	6 of 26	The valve shall be provided with two seals – • one as service seal located downstream of the valve disc and • the other as reserve or maintenance seal located upstream of the valve disc. It should be possible to adjust 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. Both seals shall be mounted on the periphery of the valve disc and be secured in position by means of clamping rings and screws. 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. The maintenance seal shall be inflatable hose seal type and shall held in position by clamping ring.....	Due to very big size of Valve (5.75 m dia), Valve body to be split in two part due to very heavy weight and dimension. Since split body concept is adopted due to larger size of valve, the valve seal design as specified in the tender is very challenging from design, manufacturing, operation and transporation point of view. Hence we propose to offer either single seal design of Pressure Shaft Valve **(Single Seal design design has been asked in your tender NIB no. 477 for EM works of Heo HEP)** as per below Image-2 or double seal design with maintenance and service seal on biplane lattice type discs as shown in the below image-1. Service seal will be of self-engagement type while maintenance seal will be applied by giving sliding movement to seal seat of maintenance seal by manual operation. Kindly review the above proposal and accept.  	To be decided during detail engineering. The bidder shall submit a Technical Note along with justifications for approval by NEEPCO.
8	Volume II, Sec- II, Sub-Sec-09, Pressure Shaft Valve	9.6.4	9.6.4 Valve Seals	6 of 26	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.	The permissible leakge at the seals will be as per leakage clause mentioned in IS 7326. Kindly accept.	Bid stipulations shall prevail. The valve shall achieve zero leakage as per ISO 5208 Leakage Class VI (bubble-tight) when tested at 1.1x max operating pressure

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9	Volume II, Sec- II, Sub-Sec-09, Pressure Shaft Valve	9.11.1	9.11.1 Performance Test	16 of 26	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.	Due to large size of valve, we propose to perform Funtional test of valve i.e. full opening & full closing of valve with the help of crane in workshop and not in a fully assembed condition along with hydraulic power pack and control panel. Hydraulic power pack and control panel will be tested at manufacturer separately due to different manufacturing schedule. However Functional test along with hydraulic power pack and control panel will be performed at site. Kindly review the above proposal and delete the testing requirement at shop.	Bid stipulations shall prevail.
10	Volume II, Sec- II, Sub-Sec-09, Pressure Shaft Valve	9.11.2, 9.11.3	9.11.2 Body Hydrostatic Test, 9.11.3 Disc Strength Test	17 of 26	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.	Due to large size of valve, we propose to perform the below: Body Hydrostatic Test & Disc Strength Test jointly by welding test dome on upstream extension pipe and applying service seal on downstream side and then applying test pressure. Test dome cannot be welded on downstream pipe as there will slip type dismantling joint in downstream pipe. UT will be perfomed on downstream pipe . Kindly accept our proposal and confirm.	Bid stipulations shall prevail. Proposed alternative may be discussed and justifications placed before NEEPCO for acceptance/approval duting detail engineering.
Quality							
11	**Volume II Sec II Sub-Sec 06 Isolated Phase Bus Duct & Associated Equipment**	6.5.12.1		18	Test for radio interference according to the procedure of measurement set forth in NEMA publication No. 107 " Method of measurement of Radio influence voltage (RIV) of high voltage apparatus" unless such measurement has been made on metal clad bus including at least one flexible or expansion connector and one "L" of substantial design; The maximum radio influence voltage shall not exceed 100 micro volts at 1000kHz;	kindly note that Radio Interference Test is generally applicable for Voltage class above 33 kV. Since our Bus duct is designed for 11kV Voltage Class, Therefore, this test is not applicable.Moreover, IS:8084 (Standard for Bus Duct), doesn't calls for any Radio Interference test. Kindly accept.	Bid stipulations shall prevail.

Sr. No.	Volume	Clause No.	Clause name	Page No.	Specification as per Bid Document	Bidders Queries	NEEPCO Replies
12	**Volume II Sec II Sub-Sec 06 Isolated Phase Bus Duct & Associated Equipment**	6.5.12.2		19	Milli volt drop test on samples;	Kindly note that as per IS:8084, Milli-Volt drop test is not a part of routine Test. Hence we prpose to accept calculation for the same.	Bid stipulations shall prevail.
13	**Volume II Sec II Sub-Sec 08 Protection and Metering**	8.3		162-163	**c. Pre-FAT & FAT Activities:** A Pre-FAT shall be performed by the Contractor to verify that the system, as fully integrated, complies with all of the required functional details and that the system satisfies the response and resource utilization requirements. The Pre-FAT shall follow completely the test procedures of the FAT Plan reviewed by the Employer. The Contractor shall notify the Employer for the start date of the Pre-FAT at least four (4) weeks before the test. The Employer personnel will have an option to witness the pre-FAT activities;	We request that manufactur's will internally perform all the required routine test as per their firm standard before inviting customer to partcipate in Factory acceptance Test. Contractor will notify the customer to partcipate in FAT before 15 Days. Kindly accept.	Bid stipulations shall prevail.
14	**Volume II Sec II Sub-Sub-Sec- 10 Transformers (Generator Transformers)**	10.46.3		66	**Type Tests on fittings: (1)-(10)**	Type test report for all these boughtout items is not feasible. Routine test certificates (Except HV Bushings, for which we shall provide type test report) shall be provided for review. Kindly accept.	Bid stipulations shall prevail.
15	**Volume II Sec II Sub-Sub-Sec- 10 Transformers (DISTRIBUTION TRANSFORMERS)**	10.61		114	b) Measurement of exciting current at 120% of rated voltage;	As per IEC60076-11, This test is applicable for 110% of rated voltage. Kindly accept.	Agreed.
16	**Volume II Sec II Sub-Sub-Sec- 12- DC System and UPS System**	12.6.6		15	Tests • Burn –In Test for Printed Circuit Boards (PCB); •Audible Noise (Type test)	We request to accept equivalent type test report for review. Kindly accept.	Bid stipulations shall prevail.

Sr. No.	Volume	Clause No.	Clause name	Page No.	Specification as per Bid Document	Bidders Queries	NEEPCO Replies
17	**Volume II Sec II Sub-Sub-Sec- 12- DC System and UPS System**	12.14		32	**UPS Power distribution board** **B. Tests** ii. Bum – In Test for Printed Circuit Boards (PCB); iii. Heat Run Test;	We request to accept type test report for review. Kindly accept.	Bid stipulations shall prevail.
18	**Volume II Section II Sub-Sec- 26 Gas Insulated Switchgear & Gas Insulated Bus Duct**	26.30.1		34	**Factory Tests** **Continuous current carrying and temperature rise test**	Please note that this is a part of type test. Therefore, equivalent rating temperature rise test report shall be furnished for review. Kindly accept.	Bid stipulations shall prevail.
19	**Volume II Section II Sub-Sec- 26 Gas Insulated Switchgear & Gas Insulated Bus Duct**	26.30.2		35-36	**Acceptance Tests** > Enclosures pressure tests; ➢ SF6 bushing tests as per IEC 62271-203; ➢ Current transformer tests as per IEC 6044-1; ➢ Voltage transformer tests as per IEC 6044-2; ➢ Surge arrester tests as per IEC 6099-4	We request to accept type test report for review. Kindly accept.	Bid stipulations shall prevail.
20	**Volume II Section II Sub-Section 27 Pothead Yard Equipment**	27.3.7		17-18	Type Tests -Disconnector Special Type Test-Disconnector	We request to accept equivalent type test report for review. Kindly accept as applicable.	Bid stipulations shall prevail.
21	**Volume II Section II Sub-Section 27 Pothead Yard Equipment**	27.4.10.1		24	Type Test: Each Capacitor Voltage transformers shall be subjected to the following type tests as specified in the latest edition of IEC-358 and 186 / IS: 3156 in presence of Employer's representatives, if so desired by the Employer. The equipment shall be tested as per IEC / IS and shall be subjected to routine testes in accordance with IEC 44-1 / IS : 2705 and IEC 186 / IS : 3156 respectively.	We request to accept equivalent type test report for review. Kindly accept as applicable.	Bid stipulations shall prevail.
22	**Volume II Section II Sub-Section 27 Pothead Yard Equipment**	27.4.10.2		25	Routine Tests • Sealing test. • Oil leakage test.	Please appreciate that these tests are not part of Routine test. Therefore, same are not feasible.	Bid stipulations shall prevail.

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23	**Volume II Section II Sub-Section 27 Pothead Yard Equipment**	27.5.6.1		31	**Special Acceptance Test** • Thermal stability test on three sections (IEC 7.2.2) • Aging & Energy Capability test on block (procedure to be mutually agreed). • Watt loss test.	Please note that these tests are not part of Routine test. Therefore, internal report carried out by the supplier shall be shared for review. Kindly accept.	Bid stipulations shall prevail.
24	**Volume II Section II Sub-Section 27 Pothead Yard Equipment**	27.6.6.1		35	Type Tests -Line Traps	We request to accept equivalent type test report for review. Kindly accept as applicable.	Bid stipulations shall prevail.
25	**Volume II Section II Sub-Section 29 Shunt Reactor**	29.26.4		51	**Type tests on shunt reactor** Measurement of zero-sequence reactance-As per IS: 2026 for 3-phase shunt reactor only. • Measurement of acoustic noise level - As per IS: 2026/ IEC 60076. • Lightning impulse test on neutral — as per IS: 2026/ IEC 60076	We request to accept review of equivalent rating of Type test report.	Bid stipulations shall prevail.
26	**Volume II Section II Sub-Section 1 Turbines, Governers and Main Inlet Valve**	1.4.1.2 1.12.5		23 53	**Materials** The minimum Charpy V-notch impact strength at -10°C shall be 30 J, to be fulfilled by each of 3 specimens. **Tests on Steel Plates** ii) Three ISO, V-notch toughness tests at 0 deg.C. in the "thickness direction".	Please note that applicable material test as per approved material standard during detailed Engg shall be followed. Kindly accept.	Bid stipulations shall prevail.
27	**Volume II Section II Sub-Section 1 Turbines, Governers and Main Inlet Valve**	1.4.5.5 1.13		27 55	The spiral case, stay ring welds shall be 100 percent radiograph tested. 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.	Please note that UT & RT both are suitable to detect internal discontinuities. UT is preferred over RT due to health hazards. UT in lieu of RT is acceptable by all customer as a standard practice. So kindly accept the same.	100% Ultrasonic testing of weld joints of spiral case and stay ring shall be accepted.
28	**Volume II Section II Sub-Section 2 Generator and Excitation System**	2.3.11.2		41	**Shop Tests** Thrust and guide bearings white metal- physical and mechanical properties;	Please note that only chemical test is applicable on white metal. Physical and Mechnaical tests are not applicable. Kindly accept	Bis stipulations shall prevail. The same can be examined during detail engineering. The bidder shall be required to submit detail technical justifications.

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29	**Volume II Section II Sub-Section 2 Generator and Excitation System**	2.3.11.4		43	**Wet Commissioning Tests** Sudden short circuit test from not less than 0.50 rated terminal voltage to determine reactance and time constants;	Please note that this test is not recommended to be performed as it effects the total life span of the machine.	Bid stipulations shall prevail.
30	**Volume II Section II Sub-Section 9 Pressure Shaft Valve**	9.11.1		16	**Performance Test** The valve shall be tested in a fully assembled condition along with hydraulic power pack and control panel.	Please note that final performance test of the Valve is performed using shop arrangements. However, hydraulic power pack and control panel will be tested at manufacturer separately due to different manufacturing schedule..	Bid stipulations shall prevail.
31	**Volume II Section II Sub-Section 9 Pressure Shaft Valve**	9.11.5		19	**Operational Test At Site** **III) Tests – Common for all the equipment:** e) 100% Radiography on welds for flanges fabricated from segments f) 100% Radiography on all Longitudinal joints as well as all Tee joints of butt welding for Main Valve Body, Disc, Upstream & Downstream Pipes (both for Shop & Site)	Please note that UT & RT both are suitable to detect internal discontinuities. UT is preferred over RT due to health hazards. UT in lieu of RT is acceptable by all customer as a standard practice. So kindly accept the same.	Agreed.
32	**Volume II Section II Sub-Sec- 22 Fire Fighting System**	22.1		15	**Shop Tests** The Contractor is required to submit type test certificates and routine test reports of equipment	Please note that type test certificate is not applicable for pump, pipes, valves, etc. Kindly accept.	Agreed.