



ii) *LP Heaters*

- a) The basic need of level control in heater is to maintain NWL (Normal water level) for the safe and smooth working of turbine.
- b) The normal level in LP heater is maintained by normal level controller by cascading the drain to lower heaters through control valve.
- c) In case level reaches low level set point, an alarm is initiated in the control room.
- d) If the level reaches high-level set point due to minor heater tube leakage or due to some other malfunction, an alarm is initiated in the control room.
- e) The level is controlled by taking drain directly to condenser through emergency level control valve. When the high level control comes into operation to open emergency drain to condenser, the normal drain control valve will also remain open.
- f) If the level reaches high high-level set point, heater isolation starts and command is given simultaneously for the following interlock actions.
 - 1) Close command to extraction steam motorised isolating valve for affected heater
 - 2) Alternate drain Control valve of affected heater to open fully.
 - 3) Forced closure of power assisted NRV in extraction line through ATRS.
 - 4) An Alarm will be initiated in control room.
 - 5) To open motorised condensate bypass valve of affected heater and once the bypass valve starts opening (not closed status sensed by limit switch), closing signal shall be given to motorised condensate isolating valves at inlet and outlet of affected heater.
 - 6) Close command to Normal drain control valve from higher LP heater.

6.02.11 OVERALL UNIT OPERATION:

- i) It is envisaged to start up the complete unit including offsite auxiliaries through single click/pushbutton operator action.
- ii) Unit Run without BRP in service and shall be demonstrated 3 times during commissioning.
- iii) SOFA YAW mechanism shall be supplied remote operation with necessary instrumentation and control for fine tuning of combustion

7.00.00 QUALITY ASSURANCE AND CONTROL

7.01.00 All materials, components, structures and equipments covered under this specification shall be tested/checked at all stages of procurement, manufacturing, construction, erection, commissioning as per a comprehensive quality assurance programme.

7.02.00 The bidder including his suppliers and sub-contractors shall prepare their quality plans in line with the requirements of the specification and standard practices



and implement it after approval by the owner and owner's consultant. This will include both Manufacturer's Quality Plans (MQPs) and Field Quality Plans (FQPs). MQPs and FQPs shall be submitted well in advance so that the same can be reviewed and approved by owner/owner's consultant well in advance before start of works.

- 7.03.00 Manufacturing quality plan shall detail out, for all the components, equipments & items various tests/inspection to be carried out as per the requirements of this specification and standards mentioned therein and quality practices and procedures followed by bidder's quality control organization, the relevant reference document and standards, acceptance norms and inspection documents raised etc. during all stages of material procurement, manufacture, assembly and final testing/performance testing.
- 7.04.00 Field quality plans shall be submitted and shall detail out for all the items, the quality practices and procedure etc. to be followed by the bidder's site quality control organization during various stages of site activities including receipt of materials/equipments at site, preservation and storage, pre-assembly, fabrication, construction, erection, pre-commissioning and commissioning. The bidder shall provide all necessary means for execution of inspection and testing, according to the requirements including specialised instruments if any.
- 7.05.00 The bidder has primary responsibility for ensuring the quality of items of equipment supplied under the contract and remains accountable when manufacture or erection is subcontracted.
- 7.06.00 It is therefore a requirement of the specification that work is only subcontracted to companies with effective quality control organizations and that the bidder monitors the performance of these by the attendance at tests of experienced inspectors employed by the bidder. The bidder shall, at the appropriate time, prove that his material and/or equipment comply with all the requirements of this specification, such proof being the successful completion of tests and inspections.
- 7.07.00 Routine test and type test certificates shall be submitted for each item of equipment, wherever applicable.
- 7.08.00 All materials, components and equipment supplied under the contract shall be subject to inspection by the owner, his authorised representative or any statutory authority like IBR inspector, should they so require during manufacture, construction, erection and after completion.
- 7.09.00 No materials/equipment shall be dispatched from the manufacturer's works before the same is either accepted subsequent to pre-dispatch final inspection including verification of records of all previous tests/inspections by the owner/owner's authorized representatives, or such pre-dispatch final inspection is waived by the Owner and dispatch is authorized after review of test reports.
- 7.10.00 All materials used or supplied shall be accompanied by valid and approved material certificates and test and inspection reports and dispatch clearance duly approved by the Owner. These certificates and reports shall indicate the acceptable identification number of the material they proposed to certify. The material certified shall also have the identification details stamped on it.



GUJARAT STATE ELECTRICITY CORPORATION LIMITED

VOLUME - II

**1x800 MW ULTRA SUPERCRITICAL UNIT NO. #7ON ASH DYKE
AREA AT UKAI TPS**

SECTION - 2

BID SPECIFICATION NO.: ETG106-EPC-UKAI/UNIT# 7-TS-01

LEAD TECHNICAL SPECIFICATION

REV. - A

- 7.11.00 All material used for equipment construction including castings and forgings etc. shall be of tested quality as per relevant codes/standards. Details of results of the test conducted to determine the mechanical properties, chemical analysis and details of heat treatment procedures recommended and actually followed shall be recorded on certificates and time temperature chart. Tests shall be carried out as per applicable material standards and/or agreed details.
- 7.12.00 All the sub-vendors proposed by the bidder for procurement of major bought out items including castings, forgings, pumps, heat exchangers, semi finished and finished components/equipment - (list of which shall be drawn up by the bidder and finalized with the owner) shall be subject to owner's approval.
- 7.13.00 All welding shall be carried out as per welding procedure drawn and qualified in accordance with requirements of ASME Section IX. Welding procedures shall be submitted to the Owner for approval prior to carrying out qualification test in the presence of Owner's representative.
- 7.14.00 All welders/welding operators employed on any part of the contract either in the Supplier's works or at site or elsewhere shall be qualified as per ASME Section-IX.
- 7.15.00 Test results of qualification tests and specimen testing shall be furnished to the Owner/owner's authorized representative for approval. However, wherever required by the Owner, tests shall be conducted in presence of Owner's/owner's authorized representative.
- 7.16.00 All the heat treatment results shall be recorded on time temperature charts and verified with recommended regimes.
- 7.17.00 The type and extent of inspection of items shall be in accordance with the relevant International/Indian Standards/Indian Boiler Regulations and other standards approved by the owner/owner's representative, supplemented or amended by the requirements of this section of the specification or as specified elsewhere in the Specification.
- 7.18.00 Wherever owner's/owner's representative's (inspector) witness is required as per approved quality plans or inspection categorisation plans, the owner and owner's representative shall be notified (inspection call) along with all required details including details of item to be inspected, approved MQPs, address/place of inspection, inspection date etc, at least 21 days in advance, prior to the planned inspection date at manufacturer's works. All test reports and supporting documents shall be made available to owner's inspector at the time of inspection; irrespective of whether it has been furnished earlier.
- 7.19.00 All site inspections as per approved FQP shall be notified along with all details including details of item to be inspected, location, inspection protocols etc., at least 5 working days in advance.
- 7.20.00 The owner/owner's representative, within fifteen days from the date of receipt of such notice/inspection call, shall intimate the bidder, the probable date of visit for the inspection. All efforts shall be taken by the owner to ensure that such date shall not be later than eight days from the date of inspection as intimated by the bidder.



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- 7.21.00 If the owner or his representative does not attend on the notified date or in the event the owner grants waiver for such inspection, the test may be proceed as per approved quality plan, unless an alternative date has been requested by the Owner.
- 7.22.00 Participation by owner/owner's representative in or their absence from or failure to participate in any Tests (other than the Performance Tests) shall not relieve or absolve the Bidder from any Guarantee or Warranty or obligations of services under or in pursuance of the contract.
- 7.23.00 In the event, the inspector could not witness the inspection on the scheduled date for the reasons attributable to the bidder/subcontractor; all the costs of deputing the inspector shall be borne by the bidder.
- 7.24.00 With respect to site inspections, the bidder shall, wherever required, give due notice to the owner/owner's representative whenever work is ready before covering up or putting out of view. The inspector shall then either carry out the inspection, examination, measurement or testing or notify the bidder that it is waived.
- 7.25.00 If the inspector is not satisfied with any test and requires a re-test, the tests shall be repeated under the same terms and conditions. If such retesting demonstrate that the work, equipment or material being so tested conforms to the requirements of Contract, then the owner shall bear the cost of such additional Test and the cost of any required uncovering and covering the goods and shall grant the extension of time for completion, if necessary. If however such retesting confirms inspector's conclusion and cause the owner to incur additional costs, such costs shall be recoverable from the bidder.
- 7.26.00 If, as a result of inspection, examination or testing, the inspector decides that any equipment, system, materials, design or workmanship has failed in such inspection, examination or tests or is defective or otherwise not in accordance with the contract, the inspector may reject such equipment, system, materials, design or workmanship and shall notify the bidder promptly, stating his reasons. The bidder shall then promptly correct or replace, such item or portion so as to pass retesting and otherwise meet and conform to such requirements. No changes to project schedule or increase in the price shall be granted with respect to such additional testing. Bidder shall bear any cost resulting due to such rejections.
- 7.27.00 Notwithstanding anything contained hereinabove, the pressure parts of the boiler coming under the ambit of statutory inspection (IBR), shall be carried out by the owner's personnel only.
- 7.28.00 Reference to special codes and standards, where designated either directly or as "relevant", is intended to provide a measure of performance, safety, in-shop and on-site testing, and methods of construction and/or installation which must be equal or superior in order to be considered acceptable for use under this specification. If more than a single degree of quality or accuracy is permitted within the scope of particular code or standard, the highest quality shall be applicable and the degree of accuracy commensurate with the intended function shall be selected, but with the understanding that the final decision will be made by the Owner.



7.29.00 The bidder shall include in its proposal a comprehensive Quality Assurance Programme containing the overall quality management and procedures which it proposes to follow in the performance of the works to maintain the quality of product during various phases.

7.30.00 At the time of award of Contract, the detailed Quality Assurance Programme to be followed for the execution of the Contract will be mutually discussed and agreed to and such agreed programme should form a part of the Contract.

7.31.00 Test Certificate and Documentation

7.31.01 The results of all tests shall be certified by the manufacturer, bidder or independent agency as appropriate.

7.31.02 On completion of the inspection/tests, the bidder shall furnish the inspection report and test certificates as per the approved quality plans to the owner for approval and despatch clearance. The test reports shall invariably indicate identification data, including Model No., S. No., Billing Break-up reference etc. of the equipment, method of application and duration of test along with test results.

7.31.03 Document files containing material certificates, welding procedures, test report etc. shall be compiled for each item of plant and shall be suitably identified (including equipment classification reference) and bound.

7.31.04 Four copies of each document file containing inspection reports and certificates of site erection testing activities of a particular item of plant or system shall be supplied to the Owner prior to commissioning.

7.31.05 Copies of the performance and acceptance test reports shall be prepared and distributed as specified in Clause 'Performance and acceptance test data and reports' of this Section. All documentation as required by IBR shall also be prepared and submitted.

7.31.06 Soft copies of above shall also be submitted.

8.00.00 PROJECT MANAGEMENT

8.01.00 The bidder shall be responsible for the overall management of the project.

8.02.00 The bidder shall submit a project management plan, within 30 days from the date of award.

8.02.01 The main objective of the document is to indicate how the various elements of the project like engineering, procurement, sub-contracting, transportation, site execution, quality control, commissioning and performance testing are planned and integrated.

8.02.02 The plan shall be in line with the project milestone schedule.

8.02.03 This plan shall contain the following:

- i) Project Management Organisation Structure – Indicating the responsibility centres at both home office and site office, for engineering, procurement, sub-contracting and transportation. System/area wise and discipline wise responsibilities.