

NTPC LTD
CORPORATE OPERATION SERVICES, EOC, NOIDA
VENDOR ENLISTMENT FOR O&M WORKS PACKAGE ON PAN NTPC
BASIS

1	CEG No.	BMD-24
2	Brief description of CEG	Residual Life Assessment Study of Boiler & Auxiliaries of One Unit of 200 MW or above
3	Responsibility Centre	CPC
4	Brief scope of work	<p>Residual Life Assessment Study of Boiler & Auxiliaries of One Unit Of 200 MW or above</p> <ol style="list-style-type: none"> 1. The necessary condition assessment/component damage assessment & studies to evaluate the remaining life of different components of <ol style="list-style-type: none"> 1.1 Boiler Namely - Boiler Drum, Water Walls & Extended Water Walls, Platen Water Walls, Economizer, Low Temperature SH, Platen SH, Final SH, Re-Heater, Steam Cooled Walls, Extended Steam Cooled Walls, Steam Cooled Spacer Tubes, Screen Tubes, Ceiling SH, Water Wall Ring Header / Mud Drum, & Water-Wall Outlet Headers, Economizer - Inlet, Intermediate & Outlet Headers, Economizer Link Pipes To Boiler Drum, Water Platen Inlet Headers & Outlet Headers, Steam Cooled Wall Headers, LTSH Inlet & Outlet Header, Platen SH Inlet & Outlet Headers, Final SH Inlet & Outlet Headers, De-SH, Link Headers From LTSH Outlet Header To Platen SH Inlet Header and Platen SH Outlet Header to Final SH Inlet Header, De-SH In Cold Reheat Pipe Line Critical Piping (From Boiler End to Turbine End)-Main Steam (Left and Right), Hot Reheat (Left & Right), Cold Reheat (Left & Right), Feed Water Piping from BFP to Economizer Inlet and Aux.PRDS. 1.2 Oxide scale thickness measurement of all tubes of all Super-heater and Re-heater coils.(Approx 1500 points) perunit. 2 Inspect the De- super heater spray nozzles and liner in the LTSH outlet header and in cold reheatlines. 3 This includes all necessary and appropriate NDT techniques, in-situ tests, lab tests and software requirements for the abovepurpose. 4 Components life expectancy with sufficient supporting documentation / analysis reports, etc and recommendations regarding subsequent inspections and any change in operating conditions. The summary shall be furnished in the attachedPerforma. 5 Necessary component damage assessment for all critical components showing evidence of damage like crack, breakage etc. the component damage assessment shall necessarily include detailed analysis of the crack initiation, growth and recommendations regarding run / repair / replaceddecision. 6 Furnishing of detailed repair procedure for all components recommended forrepair. 7 Furnishing of detailed report on the studies and remaining life of different components including test data, analysis and recommendations in minimum 12sets. 8 The location and no. of samples / tests and the nature of tests / inspection which will be done for conducting various condition assessment / component damage assessment studies and for prediction of life of different components shall be to the owner's approval. The nos. and locations of sampling / testing shall be appropriately chosen to be able to make reliable assessment. Bidder

shall give all such details before start of studies. Any additional sampling / testing / inspection if required by the owner shall also be carried out by the bidder at no extracost.

9 The bidder shall provide and deploy all the requisite consumables , tools and tackles, instruments & diagnostic equipment / software required for comprehensive condition assessment, component damage assessment and for evaluation of remaining life.

It is not the intent of the specification to specify each and every item of work and any other job though not specifically mentioned but required for successful completion of the work shall be included in bidder's scope.

DETAILS OF SPECIFICATIONS & PROECEDURES FOR 200 MW

BOILER (TECHNICAL BID)

In Technical bid the bidder should agree with the scope of work and it should contain a write up on the methodology of RLA studies on major components indicated in scope of work shall be provided with method of calculation of residual life. The codes and practices followed for conducting RLA studies may also be furnished. The bidder is requested to submit the write up on the method of testing with testing instruments / equipment details and standard codes for the following tests.

1. Visual inspection
2. DPT/LPI
3. Fluorescent DPT
4. MPI
5. Fluorescent MPI
6. Ultrasonic test inspection
7. Radiography
8. Wall thickness measurement
9. Insitu Micro Structure (Replica) test
10. Dimensional measurement for creep deformation
11. Boroscopic test
12. Oxide scale thick. measurement.
13. Drum deposit analysis
14. Internal deposit analysis.
15. External deposit analysis
16. Check for hydrogen damage
17. Metallurgical analysis and creep rupture test
18. Header internal inspection
19. Header ligament cracking inspection
20. Micro etching of weldments
21. Any other test required for completion of the RLA study
22. Post exposure laboratory tests.

Summary of the total tests to be conducted for boiler & auxiliary, piping may also be submitted. We are enclosing a list of components and sub-components and various RLA tests in Annexure - I for reference.

The list of the tests are only indicative & not a comprehensive one, therefore any other tests required to complete the RLA studies on any of the component as per IBR requirement shall be indicated & executed by the bidder

**NAME OF WORK: RESIDUAL LIFE ASSESSMENT STUDY OF
BOILER & AUXILIARIES OF TWO UNITS OF 200 MW BOILER**

The following is a list of tests which are only indicative and not exhaustive one and shall be taken as a reference only. Bidder shall provide a detailed list of test for each component required to complete the RLA studies as per scope of work.

1. BOILER DRUM

1. visual inspection
2. Internal checking.
3. Drum deposit analysis.
4. NDT on circular seam & long seam welds and fillet welds in drum.
5. Replica

2. WATER WALL

1. Visual inspection
2. Dimensional measurement in burner and soot blower zone.
3. Hopper zone tubes.

4. Sampling for deposit analysis.
5. External deposit analysis.
6. NDT on attachment welds (Burner zone and water impound hopper seal plate scalloped bar weld.)
7. Random checks for hydrogen damage.
8. Rear water wall NDT checks on forged reducer.

3. WATER PLATENS

1. NDT on stub joints (inlet header and outlet header) at accessible location.
2. Sampling for internal deposit analysis.

4. ECONOMIZER

1. visual inspection.
2. Dimensional measurement (inlet & outlet header).
3. NDT checks on stub joints (inlet & outlet header)
4. Sample tube at inlet section for checking internal condition.

5. LOW TEMPERATURE SUPER-HEATER

1. Visual inspection.
2. Dimensional measurement.
3. Attachment welds (NDT at accessible location).
4. Hanger tube saddle weld checks at accessible locations.
5. Tube sample for metallurgical analysis.

6. PLATENSUPER-HEATER

1. Visual inspection.
2. Dimensional measurement.
3. External deposit analysis.
4. Dissimilar weld checks (LPI & MPI).
5. Dissimilar weld piece sample for analysis.
6. LPI on roof seal band weld.
7. Oxide scale thick. Measurement

7. FINAL SUPER-HEATER

1. Visual inspection.
2. Dimensional measurement.
3. Sample tube at outlet section for metallurgical analysis and creep rupture test.
4. NDT on roof seal band attachment weld.
5. Oxide scale thickness Measurement.

8. SCREEN TUBES

		<p>8.1. Visual inspection.</p> <p>8.2. Dimensional measurement.</p> <p>9. STEAM COOLED WALL & EXTENDED SIDE WATER WALL & EXTENDED STEAM COOLED WALL</p> <p>9.1 Visual inspection.</p> <p>9.2 NDT on attachment weld.</p> <p>10. RE-HEATER</p> <p>10.1 Visual inspection</p> <p>10.2 Dimensional measurement.</p> <p>10.3 NDT on roof seal band attachment weld.</p> <p>10.4 Sample tube at out let section for metallurgical analysis and creep rupture test.</p> <p>NDT on dissimilar weld joints.</p> <p>10.5 Squeezed bend sample & dissimilar weld spool piece.</p> <p>10.6 Oxide scale thick measurement.</p> <p>11. WATER WALL RING HEADER & WATER WALL STEAM HEADERS</p> <p>11.1. NDT checks on stub joints.</p> <p>11.2. Inspection header internal surface through fibroscope</p> <p>12. WATER PLATEN HEADERS</p> <p>12.1. Internal inspection by fibro scope through stub hole.</p> <p>12.2. Ligament crack inspection in the stub hole</p> <p>13. LTSH INLET HEADER</p> <p>13.1. NDT on welds.</p> <p>13.2. Dimensional measurements.</p> <p>13.3. Ligament crack inspection in the stub hole and internal inspection through fibroscope.</p> <p>13.4. Replica</p> <p>13.5. Hardness</p> <p>14. LTSH OUTLET HEADER</p> <p>14.1. NDT on welds.</p> <p>14.2. Dimensional measurements.</p> <p>14.3. Hardness measurements</p> <p>14.4. Replica.</p> <p>14.5. Ligament crack inspection in the stub hole and internal inspection through fibroscope.</p> <p>15. DE SUPER-HEATER HEADER</p> <p>15.1. Visual</p> <p>15.2. NDT checks on welds.</p> <p>15.3. Nozzle and liner inspection.</p> <p>15.4. Replica (outlet header only)</p> <p>15.5. Header internal inspection using fibroscope</p> <p>15.6. Header support checking.</p> <p>15.7. Ligament crack inspection in the stub hole</p> <p>15.8. Hardness</p> <p>16. PLATEN SUPER-HEATER HEADERS</p> <p>16.1. NDT checks on welds and in stub joints at random</p> <p>16.2. Dimensional measurements.</p> <p>16.3. Hardness measurements.</p> <p>16.4. Replica (outlet & inlet header only).</p> <p>16.5. Header internal inspection using fibroscope</p> <p>16.6. Header support checking.</p> <p>16.7. Ligament crack inspection in the stub hole</p> <p>17. FINAL SUPER-HEATER AND RE HEATER HEADERS</p>
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		<p>17.1. Visual inspection 17.2. NDT checks on welds and in stub joints at random 17.3. Dimensional measurements. 17.4. Hardness test. 17.5. Replica (outlet & inlet header only). 17.6. Header internal inspection using fibroscope 17.7. Header support checking. 17.8. Ligament crack inspection in the stub hole</p> <p>18. PIPING</p> <p>(a) Main steam piping (b) Hot reheat piping (c) Cold reheat piping (d) PRD piping (e) Feed water piping (f) Soot blower system piping</p> <p>18.1. Visual inspection. 18.2. Cold walk down and hot walk down. 18.3. Check on hangers. 18.4. NDT checks on specific weld joints. 18.5. Replication and hardness test in bends and in specific butt weld locations on high temperature piping only. 18.6. Vent and drain lines (headers and pipes).</p> <p>The vendor should have following persons: (i)- One metallurgist deployed for in-situ metallography, (ii)- Two persons having at least Ultrasonic Testing (UT) Level 2 certification by ISNT / ASNT (iii)- At least 01 (One) Level 2 certified person in the individual NDT method. (iv) All the equipment to be deployed should have valid calibration from approved NABL lab.</p> <p>Other details of works shall be given in tender document.</p>
2.	Technical Qualifying requirements	<p>(i) The Applicant must be recognized by Central Boiler Board as Well-Known 'Remnant Life Assessment' Organisation. (ii) The applicant should have executed the Residual Life Assessment (RLA) of at least two numbers of boiler (Unit) with rating 200 MW or above during last five years from the date of application. Note- The RLA of Two Units/Boilers should be executed in one or multiple Work Orders.</p>
	Document to be submitted by Vendor in support of meeting QR	Relevant PO copy and Client's Completion Certificate/RA bill/Final Deviation Statement and other certificate/documents as mentioned elsewhere

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6	Additional Documents to be submitted	<p>In addition to the documents required in support of meeting Technical Qualifying Requirements as stated above, following documents are required to be submitted by the Applicants applying for enlistment:-</p> <ul style="list-style-type: none"> i. Three POs with BOQ of the highest executed values of similar work during previous five years from the date of application and Copy of Completion Certificate /RA Bill/Final Deviation Statement from the concerned client in support of successful execution of work against each of the POs to be submitted. ii. Audited balance sheet including Profit & Loss statement for the previous three completed financial years reckoned from the date of application. In case, the audited documents are not ready/available, then certified copy of financial statement by a registered practicing chartered accountant may be submitted. iii. NSIC / SSI / MSME registration certificate iv. PF and GST/Service Tax registration certificate v. Any other documents in addition to the above which the applicant wants to submit.
7	NOTES:	<p>1.0 Similar work means: Residual Life Assessment (RLA) of boiler (Unit) with rating 200 MW or above</p> <p>2.0 Value means basic value of the PO. Where PO value is composite (i.e. including Service taxes etc.), the applicant has to give break-up of composite PO value mentioning basic value, taxes etc. Executed value of contracts shall include escalation amount because of price adjustment, if any, in the contract.</p>