

APPENDIX J

Inspection and Testing of Boiler During Construction

GENERAL

The Inspecting Authority shall have access to the Works of the manufacturer at all reasonable times and shall be at liberty to inspect during the manufacture of a boiler at any stage and to reject any part that does not comply with the requirements of the Indian Boiler Regulations, 1950. Inspection shall be made at least at the following stages of construction and the manufacturer shall give at least 4 days' notice to the Inspecting Authority of reaching the stages. These stages may be combined to suit convenience of the Inspecting Authority.

I. AT THE STEEL WORKS

When the plates, angles, bars or any other parts to be used in the construction of the boiler are ready for examination and marking off of the mechanical test specimens and before they are cut from the parent plate or plates, and when the test specimens have been machined and are ready for testing.

II. AT THE TUBE MAKERS WORKS

When the tubes are ready for examination and selection of mechanical test pieces and the test specimens are ready for testing and also when the tubes are ready for hydraulic test.

III. AT THE MANUFACTURERS WORKS

*When the plates have been received in the works of manufacturer and are ready for checking of brand numbers with the steel-makers sheet for identification and also for stamping of test pieces representative of the welded seams for future identification before being cut from the parent plates in the case of fusion welded boilers and for:—

Shell Type Boilers

A. Lancashire, Cornish and Multitubular Horizontal Boilers

- (i) When the shell and flue plates are bent to the circular form and before the latter are welded and flanged.
- (ii) When the weld grooves are machined and flue sections are being welded.
- (iii) When the end plates have been dished and flanging operations completed.
- (iv) When the shell and end plates are being drilled and the flue sections have been welded, flanged and drilled, and when the rivets are ready for testing.
- (v) When the shell and flue seams are in process of riveting and the tube holes are ready for the reception of tubes.
- (vi) When the boiler is completed and filled with water in readiness for the hydraulic test.
- (vii) When the boiler has been prepared for a final internal and external examination.

B. Vertical Cross Tube and Multitubular Boilers

- (i) When the shell and firebox plates are bent to circular form and before the latter are welded.
- (ii) When the weld grooves have been machined on the firebox and uptake tube plates, ready for welding.
- (iii) When the crown plates, cross tubes and uptake finished prior to assembly.
- (iv) When the firebox and shell complete with crowns are in process of drilling and rivets are ready for testing.
- (v) When the shell and flue seams are in process of riveting, and the tube holes have been drilled ready for reception.
- (vi) When the boiler is completed and filled with water in readiness for the hydraulic test.
- (vii) When the boiler has been prepared for a final internal and external examination.

Water Tube Boilers

- (A) For all types of Water Tube Boilers.
- (B) Riveted Drums.
- (C) Fusion Welded Drums.
- (D) Seamless Drums.
- (E) Headers.

Water Tube Boilers*A. For all types of Water Tube Boilers*

- (i) If construction allows, when the headers are ready for the hydraulic test.
- (ii) When the tubes holes are drilled and ready for the reception of the tubes.
- (iii) When the boiler is completed and filled with water in readiness for the hydraulic test.
- (iv) When the boiler has been prepared for final internal and external examination.

B. Riveted Drums

- (i) When the drum shell plates are bent to the circular form and drum ends are flanged.
- (ii) When the drum shell and drum ends are drilled and when the rivets are ready for testing.
- (iii) When the drum seams are in process of riveting.
- (iv) When the boiler drums are ready for hydraulic test.

C. Fusion Welded Drums

- (i) When the drum shell plates are bent to the circular form, the drum end plates are flanged, the welding grooves are machined, and the parts are assembled ready for welding.

The Inspecting Officer will check that the test plates are tacked in position and that welding groove in each test plate is in alignment with the groove in the shell plate.

- (ii) When the welding is in its progress.
- (iii) When welding at the outside surface has been completed.
- (iv) When the inside surface has been prepared for welding and before the outside surface is dressed.
- (v) When the seams are dressed.
- (vi) When the seams are being radiographed.
- (vii) When the openings are prepared for the stand pipes and seatings, and these are being welded in place.
- (viii) When the drum has been heat treated prior to the hydraulic test.
- (ix) When the test plates are ready for the marking off of the test specimens.
- (x) When the test specimens have been machined and are ready for testing.
- (xi) When the drum is ready for hydraulic test.
- (xii) When the tube holes are bored and the drum is completed.

D. Seamless Drums

- (i) After completion of hot work (with the exception of closing in the end or ends) when the test rings are ready for stamping for identification and before they are cut from the shell.
- (ii) When the test rings are ready for the marking off of the test specimens.
- (iii) After any machining prior to closing in the end or ends.
- (iv) When the test specimens are ready for testing after closing in the end or ends and final heat-treatment has been carried out.
- (v) When the drum is ready for hydraulic test.
- (vi) When the tube holes are bored and the drum is completed.

E. Header

- (i) When the test ring is ready for stamping and the marking off of the test specimens for identification and before they are cut from the header.
- (ii) When the test specimens are ready for testing.
- (iii) When the header is ready for hydraulic test.

Valves and mountings

- (i) When the steel castings, steel forgings, iron castings, bronze castings, etc. are ready for examination and selection of test specimens.
- (ii) When the test specimens are ready for test.
- (iii) When the fittings are ready for hydraulic test.

IV. IDENTIFICATION MARKS

Each boiler shall be permanently and clearly marked on the front end plate with:—

- (a) Manufacturers, Identification Mark.
- (b) Inspecting Authority's Stamps.
- (c) Date of Hydraulic Test.
- (d) Hydraulic Test Pressure.
- (e) Permissible Working Pressure.