DEAERATOR HEATER AND STORAGE TANK INSPECTION POLICY

DIVISION OF FACILITIES DEVELOPMENT

REVISION 12/10/2013

1.0 Introduction

The Deaerator is an integral part of the heating plant. The Deaerator removes oxygen from boiler feedwater before it enters the boiler. A properly functioning Deaerator assures reliable and safe operation of the boilers in the plant. Proper maintenance procedures will assure safe and reliable operations of the Deaerator.

There are 2 major components to the Deaerator. The Deaerator heater can be a vertical or horizontal tank that contains spray nozzles and trays. The sprays are mounted at the top of the heater and direct the water over a series of trays. Steam and feedwater are brought to the heater section. The combination of heat, water dispersal from the sprays, and water cascading over the trays drives the oxygen out of the feedwater.

The storage tank is used to collect boiler feedwater after it passes through the heater. The storage tank is sized to act as a reservoir so that the boilers have a steady flow of deaerated water.

There are a number of ancillary items attached to the tank. These include the safety valve, sight glass, and gauges.

2.0 Policy Intent

Establish operations and maintenance procedures to optimize Deaerator performance, reliability and safety.

3.0 Deaerator Inspection

3.1 Annual Inspection

3.1.1 Deaerator Heater
-Inspect all trays for damage
-Inspect spray nozzles and related hardware. Replace and repair as needed

3.1.2 Safety Valve
-Lift safety valve before tank is taken out of service. Verify that valve reseats

3.1.3 Sight glasses
-Inspect sight glasses. Clean or replace as needed

3.1.4 Gauges
-Replace any faulty pressure or temperature gauges

3.1.5 Level control
-Verify that storage tank level control is in good working order

3.2 Five Year Inspection

3.2.1 Deaerator Heater

-Remove all trays. Perform a visual inspection of stainless steel box that holds trays. Inspect attachment points to Deaerator heater
-Perform a visual inspection of Deaerator heater shell and head
-Perform NDE of heater shell and head if accessible (See 3.2.2)

3.2.2 Deaerator Storage Tank

-Perform internal inspection of Deaerator storage tank. Utilize a firm that performs nondestructive examination (NDE). NDE Technicians must be certified to ASNT-TC-1A for the NDE technique used and is to be a Certified Weld Inspector (CWI) by the American Welding Society (AWS). Testing will include visual inspection of tank shell, heads, penetrations, and welds. Contractor will perform 100% wet fluorescent magnetic particle testing (WFMT) of tank welds. Contractor will determine tank wall thickness by ultrasonic testing (UT). UT test points will be taken at 4 equidistant points around the tank shell and heads at 2 foot intervals. The DA tank man way will be designated the 0 degree reference. All indication and low readings will be marked on the tank and brought to the Agency's attention. NDE contractor will provide a field report of findings before leaving the jobsite. A final report will be sent to the Agency within 2 weeks after the actual date of the inspection.

3.2.3 Safety Valve

-Remove safety valve and send to a valve repair facility to be disassembled, inspected, and tested. Repair or replace as needed. Provide and replace with a certified new or repaired spare valve if Deaerator Tank shutdown will not allow for the disassembly, inspection and testing of the existing valve.
-Valve can only be inspected by a National Board certified valve repair facility in possession of a current VR stamp.

4.0 Repairs and Alterations

4.1 Qualified Contractors

-Only contractors registered with the National Board and in possession of a current R stamp can repair any defect in a Deaerator that requires a weld repair.

4.2 Defect review and repair

-All defects identified by the NDE company must be reviewed before the Deaerator is put back into service. The decision to repair or monitor a defect is at the discretion of the Agency, theDFD, and/or the Agency's insurance carrier.

4.3 Inspection of Repairs

- All weld repairs must be inspected by nondestructive methods one year after the repairs are made.

5.0 Documentation and Record Keeping

5.1 Tank file

- A separate file for the Deaerator will be maintained for reference. It will include original drawings, original data report (U-1), inspection reports, and repair history

5.2 Record Retention

- All tank records will be kept for the life of the tank plus 5 years.