

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

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MAR 21 1988

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Gentlemen:

In the Matter of the Application of) Docket Nos. 50-390
Tennessee Valley Authority) 50-391

WATTS BAR NUCLEAR PLANT (WBN) UNIT 1 - TESTING REQUIREMENTS FOR THE ESSENTIAL
RAW COOLING WATER (ERCW) SYSTEM MORTAR-LINED PIPING

Reference: R. L. Gridley's letter to the Nuclear Regulatory Commission (NRC)
dated October 13, 1988 - ASME Section III Requirements for Welding
Activities

This is a supplemental response to the referenced letter. As stated in the
referenced letter, TVA has evaluated the testing requirements for the ERCW
system mortar-lined piping. TVA committed to provide a supplement to NRC
defining what additional testing would be performed on the mortar-lined piping.

Four populations of welds exist within the hydro test boundary of the
mortar-lined piping: Those welds originally made to the requirements of
American Society of Mechanical Engineers (ASME) Section III for which no
unacceptable indications have subsequently been identified; those welds
originally made to the requirements of ASME Section III for which unacceptable
radiographic indications have subsequently been identified and repaired; those
welds made or to be made in accordance with ASME Section III as a result of
recently identified modifications; and those welds originally made to the
requirements of ASME Section XI for which no unacceptable indications have
subsequently been identified. In order to address these four populations of
welds, WBN will institute the following test program for welds in ERCW supply
line to the building:

1. The ERCW mortar-lined piping will be brought to the ASME Section III
hydrostatic test pressure and maintained using a hydrostatic test pump.
After satisfying the ASME Section III hold time requirements, the welds
which are exposed inside the building will be examined in accordance with
the requirements of ASME Section III. Since all welds which have been
repaired or modified under ASME Section III are exposed inside the
building, this action will ensure compliance with ASME Section III
requirements for these welds.

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U.S. Nuclear Regulatory Commission

MAR 21 1989

2. Following completion of the examinations of the exposed welds, ASME Section III examination pressure will be maintained until the total time at pressure is one hour or greater. This will ensure that all welds originally made to the requirements of ASME Section XI which are now buried will have been exposed to ASME Section III examination pressure for one hour.
3. Following return of the system to service and before fuel load, a visual examination (VT-2) will be performed in accordance with ASME Section XI, IWA-5244, for buried components.

WBN believes this approach is acceptable for the following reasons:

1. Welds in the ERCW supply line to the building originally made in accordance with the requirements of ASME Section XI:
 - ° These welds were originally made in accordance with the requirements of ASME Section XI rather than Section III following the completion of the ASME Section III N-5 data report. No rejectable indications were known to exist at that time nor have any been identified in these welds.
 - ° These welds were originally tested by vacuum box testing, even though this type of testing was not required or recognized by ASME Section III or XI. Vacuum box testing increases the assurance that pinhole or other minor leakage paths do not exist in the welds.
 - ° By the completion of the described hydrostatic test program, these welds will have been exposed to the ASME Section III required examination pressure for a one-hour period. This pressure will be held using a hydrostatic test pump to provide makeup for leakage from the test boundary through the butterfly valves used for boundary isolation. The possibility of large leaks indicative of major leakage paths is small because of the limited capacity of the makeup pump.
 - ° To perform an ASME Section III hydrostatic test on these welds would require one of the following two actions:
 - Excavation of the ERCW piping in approximately 20 separate places, approximately 8 of which are under concrete missile shields which would have to be chipped out and repoured. Additionally, the outer protective coating on the piping would have to be removed in order to allow visual examination and, subsequently, replaced.
 - Removal of approximately 7 line valves per header in order to install blind flanges for a leak proof pressure boundary. In order to remove these valves, the entire train of ERCW will have to be removed from service and drained. Since ERCW interfaces with many plant systems, this will have a tremendous ripple-down affect.

U.S. Nuclear Regulatory Commission

MAR 21 1989

Because of the extremely large volume confined by this test boundary, it is conceivable that the ASME Section III acceptance criteria of no pressure loss for a one-hour period could not be met even with a leak tight system. Any volume changes due to thermal affects would be reflected as a corresponding change in pressure.

2. Welds originally made to the requirements of ASME Section III where unacceptable indications have subsequently been identified and repaired:
 - ° All rejectable indications will have been repaired to the requirements of ASME Section III.
 - ° All repaired welds will have been hydrostatically tested in accordance with the requirements of ASME Section III.
3. Welds originally made to the requirements of ASME Section III where no unacceptable indications have been identified will still be in compliance with the requirements of ASME Section III.
4. Welds made or to be made in accordance with ASME Section III as a result of recently identified modifications will have met the requirements of ASME Section III.
5. The open-ended welds in the ERCW discharge lines are exempt from hydrostatic testing according to ASME Section III Code Case N-240.

This letter satisfies TVA's commitment to provide the details of our evaluation of the testing requirements for the ERCW system. The enclosure provides a list of the individual commitments identified in this letter.

If there are any questions, please telephone D. E. McCloud at (615) 365-8650.

Very truly yours,

TENNESSEE VALLEY AUTHORITY


R. Gridley, Manager
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Enclosure
cc: See page 4

U.S. Nuclear Regulatory Commission

MAR 21 1989

cc (Enclosure):

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ENCLOSURE

LIST OF COMMITMENTS

1. The Essential Raw Cooling Water (ERCW) system mortar-lined pipe will be brought to the ASME Section III hydrostatic test pressure and the pressure maintained using a hydrostatic test pump. After satisfying the ASME Section III hold time requirements, the welds which are exposed inside the building will be examined in accordance with the requirements of ASME Section III.
2. Following completion of the examination of the exposed welds, ASME Section III examination pressure will be maintained at pressure for one hour or greater.
3. Following return of the ERCW system to service and before fuel load, a visual examination (VT-2) will be performed in accordance with ASME Section XI, IWA-5244, for buried components.
4. All rejectable indications will have been repaired to the requirement of ASME Section III.