

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401
400 Chestnut Street Tower II

September 2, 1981 8 P12-34

WBRD-50-390/81-33
WBRD-50-391/81-32
WBRD-50-390/81-50
WBRD-50-391/81-48

Mr. James P. O'Reilly, Director
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Region II - Suite 3100
101 Marietta Street
Atlanta, Georgia 30303



Dear Mr. O'Reilly:

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2 - IMPROPER CLASSIFICATION OF ERCW SYSTEM PIPING AND COMPONENTS - WBRD-50-390/81-33, WBRD-50-391/81-32, WBRD-50-390/81-50, WBRD-50-391/81-48 - THIRD INTERIM REPORT

The subject deficiency was initially reported to NRC-OIE Inspector R. V. Crlenjak on March 24, 1981 in accordance with 10 CFR 50.55(e) as NCR WBN NEB 8106. Interim reports were submitted on April 24 and July 14, 1981. A similar deficiency was initially reported to NRC-OIE Inspector R. V. Crlenjak on May 7, 1981 in accordance with 10 CFR 50.55(e) as NCR 3116R1. Our first interim report on NCR 3116R1 was submitted on June 8, 1981. Enclosed is our third interim report covering both NCR's. We expect to submit our next report by December 8, 1981.

If you have any questions, please get in touch with D. L. Lambert at FTS 857-2581.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

L M Mills by DSK

L. M. Mills, Manager
Nuclear Regulation and Safety

Enclosure

cc: Mr. Victor Stello, Director (Enclosure)
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Washington, DC 20555

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ENCLOSURE
WATTS BAR NUCLEAR PLANT UNITS 1 AND 2
IMPROPER CLASSIFICATION OF ERCW SYSTEM PIPING AND COMPONENTS
WBRD-50-390/81-33, WBRD-50-391/81-32, WBRD-50-390/81-50, WBRD-50-391/81-48
10 CFR 50.55(e)
THIRD INTERIM REPORT

This report covers the subject NCR's concerning improper classification for ERCW system piping and components. A description of the deficiencies, and interim progress for each deficiency is listed below. NCR WBNNEB8106 concerns the seismic qualification for the subject chillers/coolers and deficient piping of the HVAC system. Related NCR 3116 R1 concerns improper classification of piping used in the ERCW system which occurred because of the deficiency described in NCR WBNNEB8106.

This nonconformance report supersedes the reports submitted separately for each deficiency: NCR WBNNEB8106 dated July 14, 1981 - formerly entitled Seismic Qualification for ERCW Air Cooling Units; NCR 3116 R1 dated July 6, 1981 - formerly entitled Piping Classification for ERCW System.

Description of Deficiency WBNNEB8106

During the design review of the Watts Bar Essential Raw Cooling Water (ERCW) System, it was discovered that portions of the ERCW system (equipment coolers, air cooling units, etc.) may not have proper seismic specification. Watts Bar Design Criteria WB-DC-40-36.1, Revision 0, requires that the components discussed here be classified ANS Safety Class 2b and be Seismic Category I. These coolers were shown on TVA design drawings, 47W845 series, however, as TVA Class G, Seismic Category I(L) (limited requirement) which permits functional failure but not failure such as to damage other safety equipment. These air cooling units serve essential safety-related equipment (SIS, CSS pumps, etc.) required for accident mitigation. TVA Class G was used because it was incorrectly determined to represent the design requirements.

Interim Progress

TVA has reviewed the seismic test reports submitted by the vendors for each HVAC cooler, chiller, and valve connected to the ERCW system and found that each component was seismically qualified in accordance with Watts Bar Design Criteria WB-DC-40-36.1.

All components that have a primary safety function are certified as Seismic Category I in accordance with Design Criteria WB-DC-40-31.2, as specified in the contracts. Components with a secondary safety function are certified as Seismic Category I(L) in accordance with Design Criteria WB-DC-40-3.13, as specified in the contracts.

The design drawings have been revised to show the correct classification for the HVAC chillers/coolers and components. Watts Bar FSAR Section 3.2 and 9.2.1 will be revised to correct the tables showing the ERCW system classifications.

TVA is still investigating the acceptability of material that was used in the HVAC chiller/coolers and components.

Description of Deficiency 3116 R1

TVA piping drawings and flow diagrams show piping and chillers/coolers for portions of the Essential Raw Cooling Water (ERCW) system as TVA class C (safety-related). The chillers/coolers were purchased without a specific TVA classification. Due to the chillers/coolers not having a specific TVA classification, TVA defined the class boundaries improperly; as a result, the subject piping was given an incorrect classification.

Field Change Request M-3276 erroneously revised the HVAC piping and components on the flow diagrams from TVA class C to TVA class M (safety-related-limited requirements) between the first two isolation valves of the ERCW system chillers/coolers. The ERCW system piping drawings showed the class change at the flanged connections to the equipment. Thereafter, piping was installed in accordance with the flow diagrams. Piping previously installed between the first two isolation valves of the chillers/coolers as class C was downgraded to class M. Also, any new piping was installed in accordance with the flow diagrams as class M piping; however, craft employees were instructed to use class C material. Subsequently, an engineering change has been made to reclassify the piping between the isolation valve and flange as TVA class C for all the HVAC chillers/cooler.

Approximately 1200 feet of piping in the ERCW system was installed incorrectly as class M instead of class C, and about 400 out of 900 welds were made during this installation without welder identification.

Interim Progress

The following actions are being taken to ensure that the safety-related portions of the ERCW system which are covered by this NCR meet TVA class C safety requirements.

1. Any piping involved for which original documentation is available will be upgraded to TVA class C by verifying and documenting that the heat numbers on the piping and fittings agree with the heat numbers recorded on the original documentation.

The following requirements to verify the adequacy of the piping and fittings will be documented.

- a. Verify material heat numbers for piping and fittings
 - b. Verify weld material
 - c. Document welders' identification on welds
 - d. Document welding procedure used
2. Three-inch and smaller diameter carbon steel piping involved which is also affected by potential corrosion problems (reported separately) will be replaced by stainless steel piping. The carbon steel piping over 3 inches in diameter (which is not affected by corrosion) for which no documentation is available will be replaced by other carbon steel piping. All replacement piping will be installed as TVA class C.

3. Stainless steel piping which does not have available documentation showing it was installed in accordance to TVA class C requirements will be exempted from the N-5 code stamp with the N-5 data report listing the exemptions based on the following justifications.
- a. Even though the material of the piping and fittings may not be traceable to a particular CMTR and/or COC, review of the contracts for all 2-inch diameter and under stainless steel piping received at Watts Bar shows that it was all ASTM A312 or a higher ASTM specification. Therefore, none of this piping could have been installed with an ASTM specification lower than ASTM A312. Also, if the material is not identifiable to the correct grade of stainless steel, it will be verified by an appropriate in situ analysis, via a sampling program.
 - b. All welds will be visually inspected and repaired as necessary to meet correct weld size requirements to comply with TVA class C qualifications.
 - c. All welds will be PT inspected and a ferrite check will be done on them to ensure integrity of the welds. (Correct welding material, i.e., stainless steel, can be visually checked.)
 - d. All piping involved in the upgrading will be rehydrotested at 1-1/2 times design pressure rather than normal 1-1/4 times design pressure (ASME Section III requirements) to ensure pressure boundary integrity.
 - e. Those portions to be exempted from the N-5 date code stamp are located within a Seismic Category I structure with Seismic Category I supports which limit the possibility for common mode failures.

Flow diagrams and physical piping drawings have been revised to show the correct classification for the piping and equipment in accordance with the applicable design criteria.

In response to NRC-OIE Region II Inspector John McDonald's concerns of the ERCW system being installed to specifications other than those in the FSAR Section 3.2, portions of the ERCW system are classified as TVA class G (Seismic I(L) - limited requirements) and TVA class H (limited requirements). The FSAR section 3.2 omitted reference to TVA class G and H portions of the ERCW system. TVA class G and H sections are described in FSAR section 9.2.1.