

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

400 Chestnut Street Tower II
MAY 14 4 0.
MAY 08 1984

WBRD-50-390/84-22

WBRD-50-391/84-21

U.S. Nuclear Regulatory Commission

Region II

Attn: Mr. James P. O'Reilly, Regional Administrator

101 Marietta Street, NW, Suite 2900

Atlanta, Georgia 30303

Dear Mr. O'Reilly:

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2 - WRONG CLASSIFICATION ESSENTIAL RAW
COOLING WATER (ERCW) SCREEN WASH PIPING AND VALVES - WBRD-50-390/84-22,
WBRD-50-391/84-21 - FINAL REPORT

The subject deficiency was initially reported to NRC-OIE Inspector
Steve Weise on April 10, 1984 in accordance with 10 CFR 50.55(e) as
NCR WBN MEB 8408. Enclosed is our final report.

If you have any questions, please get in touch with R. H. Shell at
PTS 856-2688.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

L. M. Milis

L. M. Milis, Manager
Nuclear Licensing

Enclosure

cc: Mr. Richard C. DeYoung, Director (Enclosure)

Office of Inspection and Enforcement

U.S. Nuclear Regulatory Commission

Washington, D.C. 20555

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ENCLOSURE

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2
WRONG CLASSIFICATION FOR ESSENTIAL RAW COOLING WATER
SCREEN WASH PIPING AND VALVES
NCR WBN MEB 8408
WBRD-50-390/84-22, WBRD-50-391/84-21
10 CFR 50.55(e)
FINAL REPORT

Description of Deficiency

Watts Bar Nuclear Plant (WBN) FSAR paragraph 9.2.1.7(2) states that the essential raw cooling water (ERCW) screen wash pumps and associated piping "must remain operable during and after a safe shutdown earthquake." This paragraph further states, "The ERCW system provides for the simultaneous occurrence of a safe shutdown earthquake, a loss of coolant accident (LOCA) in one unit, and extended shutdown of the other unit, and the loss of upstream and downstream dams either individually or concurrently, and application of the single failure criteria." FSAR paragraph 3.2.2.6 further states the "Components that are used in seismic category I structures whose failure would not result in a release of radioactive products and are not required to function during an accident or malfunction within the reactor coolant pressure boundary have been assigned to TVA classification G or K." Thus, class C is applicable as defined in FSAR paragraph 3.2.2.3. Contrary to this, drawings 47W845-1R21 and R22 and 37W206-1R27 show the screen wash piping and valves to be class G.

In reviewing the history of the screen wash design process, several factors were discovered which may have contributed to the erroneous class G designation. These are listed below:

1. Duplication of the Sequoyah Nuclear Plant (SQN) design. Up until April 2, 1973, ANSI B31.1, piping met the requirements of TVA class C, which is the proper screen wash classification. However, ANSI B31.1 met only TVA class G at WBN.
2. Lack of an adequate design criteria document. WBN ERCW design criteria document WB-DC-40-16 lacked detail. Although issued in April 1972, it was never revised or amended, indicating probable lack of use. Furthermore, it was inactivated in February 1979.
3. Misinterpretation of mechanical flow diagram. Drawing 47W845-1, "Mechanical Flow Diagram-Essential Raw Cooling Water System," correctly shows the screen wash pump prelube line to be TVA class G. This drawing could have been misinterpreted to apply TVA class G to the entire screen wash portion of the system instead of only to the prelube line as intended.

Although the above are possible contributors, no single root cause could be pinpointed, and therefore, the assignable cause must be considered indeterminate.

Safety Implications

Should the ERCW screen wash system fail during a design basis earthquake, accumulated trash, debris, or aquatic life could clog the ERCW traveling screens. This could subsequently reduce the intake flow capacity of the ERCW system. Since the ERCW is the ultimate heat sink for the plant, and is necessary to carry away residual core heat and heat from operating essential equipment, reduced flow due to clogged traveling screens could adversely affect the safe operation of the plant.

Corrective Action

TVA will upgrade the existing ERCW screen wash piping to class G seismic category I(L), qualified for pressure boundary retention. This will meet the intent of a seismic category I class C system. To do this, the following actions will be accomplished.

1. All presently installed ERCW screen wash piping welds will be visually inspected by a qualified weld inspector. This inspection will be documented per the TVA quality assurance program.
2. The installed piping will be inspected to verify the as-built configuration per design drawings. This inspection will be documented per the TVA quality assurance program.
3. The existing piping system will be supported to seismic category I requirements.
4. The ERCW traveling screens will be verified to be designed and installed to seismic category I requirements.
5. The ERCW screen wash control instrumentation will be verified to meet IEEE class 1E requirements.

These requirements are consistent with TVA's Division of Engineering Design (EN DES) safety evaluation of this item. Also, any future modifications to the ERCW screen wash system will meet TVA safety class C requirements. All work for this item is being done per TVA engineering change notice (ECN) 4825.

TVA believes that the unique set of circumstances which led to the erroneous interpretation of the screen wash system classification on drawing N7W854-1 R4 was an isolated occurrence and not attributable to any programmatic deficiency. This is demonstrated by the fact that for Bellefonte Nuclear Plant, which was begun immediately after WBN, TVA properly classified the ERCW screen wash piping, pumps, and valves as ASME Code Section III, Class 3 components. The Bellefonte design criteria document (N4-KE-D74), the applicable flow diagram and physical piping drawing, and the Bellefonte FSAR show the proper classification. It should also be noted that EN DES Engineering Procedure (EP) 3.01 R5 now prohibits inactivating a design criteria until after approval of the system preoperational test. Therefore, TVA believes that no action to prevent recurrence is required.

All corrective action for this item will be completed by June 21, 1984.