

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401
400 Chestnut Street Tower II

August 23, 1985

WBRD-50-390/83-69
WBRD-50-391/83-64

U.S. Nuclear Regulatory Commission
Region II
Attn: Dr. J. Nelson Grace, Regional Administrator
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

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Dear Dr. Grace:

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2 - ALTERATIONS AND DAMAGE TO FIRE DOORS AND FRAMES - WBRD-50-390/83-69, WBRD-50-391/83-64 - REVISED FINAL REPORT FOR UNIT 1 AND FINAL REPORT FOR UNIT 2

The subject deficiency was initially reported to NRC-OIE Inspector Linda Watson on November 14, 1983 in accordance with 10 CFR 50.55(e) as NCR 4443R. Interim reports were submitted on December 14, 1983 and February 29, 1984. Our final report for unit 1 and third interim report for unit 2 was submitted on April 16, 1984. Enclosed is our revised final report for unit 1 and final report for unit 2.

If you have any questions concerning this matter, please get in touch with R. H. Shell at FTS 858-2688.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

J. W. Hufham

by RLL
J. W. Hufham, Manager
Licensing and Risk Protection

Enclosure

cc: Mr. James Taylor, Director (Enclosure)
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Records Center (Enclosure)
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ENCLOSURE
WATTS BAR NUCLEAR PLANT UNITS 1 AND 2
ALTERATIONS AND DAMAGE TO FIRE DOORS AND FRAMES
WBRD-50-390/83-69, WBRD-50-391/83-64
NCR 4443R1
10 CFR 50.55(e)
REVISED FINAL REPORT FOR UNIT 1 AND
FINAL REPORT FOR UNIT 2

Description of Deficiency

A number of fire-rated doors and frames at the Watts Bar Nuclear Plant (WBN) were altered without prior approval by TVA's Office of Engineering (OE). Alterations included lock hasps and staples welded to doors and/or frames, signs riveted to doors, torch and weld burns to doors and frames, electrical penetration through frames, and open cutouts in frames. Penetration of door skin and frame occurred in several cases.

During the evaluation of this nonconformance report (NCR), additional types of fire door and frame alterations and damage were identified. Alterations had been made without proper consideration for their impact on the fire-resistive rating of the doors and frames. Additionally, damage to fire doors and frames which could have impacted their ratings had occurred during construction activities.

A similar deficiency has been reported to the NRC for Bellefonte Nuclear Plant (BLN) as NCR BLN 3011 (BLRD-50-438/84-32, -439/84-30).

TVA considers the root cause of this condition to be that the personnel responsible for the alterations and damage were not aware of the impact of their actions on the Underwriters Laboratories, Incorporated (UL) fire-resistive rating of the doors and frames.

Safety Implications

Some of the fire door and frame alterations or damage, if uncorrected, could have adversely affected the safe shutdown capability of the plant during a fire. They could possibly have prevented the doors and frames from functioning to limit the spread of a fire. A fire that is allowed to propagate through a fire barrier which is penetrated by a door and frame could cause damage to redundant safe shutdown equipment that could exceed the limits established in 10 CFR 50 Appendix R.

Corrective Actions

To ensure that modifications which were made to fire doors do not compromise fire barriers, TVA contracted with UL to provide an evaluation of the fire doors as they existed in the plant. A copy of a letter from UL dated November 29, 1984, which summarizes their evaluation and provides recommendations for modifications was submitted to the NRC as attachment 2 to enclosure 2 of J. W. Hufham's letter to E. Adensam dated January 4, 1985. TVA has addressed the general recommendations of UL as follows:

- a. The installation of plastic and metal signs on fire doors is a minor modification which will not change the fire rating of the doors. Based on guidance in the handouts from the NRC Appendix R workshop that was held in Atlanta, Georgia, on May 4, 1984, such minor modifications do not constitute a problem. Therefore, TVA will not remove signs from fire doors as recommended by UL.
- b. All existing gasketing material has been removed and replaced with material which is UL listed for use on fire-rated door assemblies.
- c. All conduit penetrations into door frames have been anchored either in accordance with sketch No. SK ACH-G2 (illustration 2 of UL letter, enclosure 1) or by a continuously welded fitting (item 4 of UL letter, enclosure 2).
- d. Small holes in fire doors and frames have been filled with steel rivets or sheet metal screws. Larger holes caused by the removal of previously installed hardware have been covered with a steel plate in accordance with UL recommendations. Dents in the door skin and other minor damage to doors have been repaired in accordance with the fire door manufacturer's recommended practices. Doors which showed signs of damage other than as listed above have been replaced with new fire-rated doors.
- e. All doors which required maintenance to the hardware have been repaired or the hardware has been replaced to ensure the proper operation of the door.
- f. Double doors and doors with transom panels that had electric strikes in the head of the door have been replaced with labeled door assemblies. The replacement assemblies have electric strikes located such that the label is not invalidated.
- g. All hardware components on fire doors have been checked for UL listing. Many of the top and bottom flush bolts on the inactive section of double doors were found to be unlisted. These have been replaced with UL-listed flush bolts. The remaining hardware has the required UL approval.

- h. All fire doors except A188, C49, and C50 have been adjusted to ensure the gap between the door and the frame does not exceed the maximum allowable clearance as specified in NFPA 80, paragraph 2-5.4. Fire door frames with excessive gaps between the frames and wall openings have been provided with spacers and with 1-1/2" x 1/2" 12-gauge angles in accordance with sketch No. SK ACH-G1 (illustration 1 of UL letter, enclosure 3). High temperature sealant has been utilized to seal off the small openings caused by slight irregularities in the wall construction.

The frames for doors A188, C49, and C50 have been filled with grout and cannot be moved to adjust the door-to-frame gaps without destroying the frames. TVA will leave these doors as is with gaps of up to 3/8 inch. A deviation request from the requirements of 10 CFR 50 Appendix R has been submitted to the NRC on the doors (reference J. A. Domer's letter to E. Adensam dated March 21, 1985).

- i. All fire doors and frames that are missing UL labels have been replaced unless documentation from the manufacturer is on file indicating that they were originally shipped to TVA as UL labeled equipment. Where such documentation exists, application of new labels as proposed by UL to the doors and frames will not provide additional assurance for their adequacy and will not be pursued by TVA.
- j. All fire doors with unlabeled louvers were provided by the manufacturer as a labeled assembly. Therefore, no action is required by TVA.

The following information responds to specific findings that were not covered by UL's general recommendations:

- a. Opening A61 between the radiological lab and the counting room does not penetrate a fire barrier. Therefore, a fire door is not required in the opening.
- b. Door A121, which had plywood covering its louvered opening, has been replaced with a solid door.
- c. A labeled louver has been installed in door A128. The cutout for a switch in this door's frame has been repaired.
- d. A continuous astragal has been provided on door A160. The astragal on door A189 extends to the full height of its door and does not need replacement.
- e. The transom panel for door A172 is not damaged and does not need to be repaired.

- f. The wall above door C12 has been repaired.
- g. Door C13 between the auxiliary building corridor on el 692.0 and the secondary alarm station is not located in a fire barrier. Therefore, a fire rating is not required for this door.
- h. The extra strike plate for door C63 has been removed and the frame repaired.
- i. Doors A118, C49, and C50 were supplied as part of labeled assemblies and the existing piano hinges are an integral part of these assemblies. Although the hinges are not labeled separately, they are identical to the piano hinges that were used to obtain the UL approval for the assemblies. Therefore, no corrective action is required.

To prevent recurrence, the personnel involved in the alteration or damage to the fire doors and frames have been indoctrinated in the importance of maintaining the fire resistive rating of fire barrier penetrations. All corrective actions for this deficiency are complete.