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TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

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

Dear Dr. Grace:

BROWNS FERRY NUCLEAR PLANT UNITS 1, 2, AND 3 - NRC-OIE REGION II INSPECTION
REPORT NOS. 50-259/86-27, 50-260/86-27, AND 50-296/86-27 - RESPONSE TO
VIOLATION

Enclosed is our response to G. G. Zech's September 29, 1986 letter to
S. A. White transmitting IE Inspection Report Nos. 50-259/86-27, 50-260/86-27,
and 50-296/86-27 for our Browns Ferry Nuclear Plant which cited TVA with one
Severity Level IV Violation.

If you have any questions, please get in touch with M. J. May at
(205) 729-3566.

To the best of my knowledge, I declare the statements contained herein are
complete and true.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

R. Gridley, Director
Nuclear Safety and Licensing

Enclosure

cc (Enclosure):

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

Mr. G. G. Zech, Director
U.S. Nuclear Regulatory Commission
Region II
101 Marietta Street, NW
Atlanta, Georgia 30323

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RESPONSE
NRC INSPECTION REPORT NOS.
50-259/86-27, 50-260/86-27, AND 50-296/86-27
G. G. ZECH'S LETTER TO S. A. WHITE
DATED SEPTEMBER 29, 1986

Technical Specification (TS) 6.3 requires that safety-related preventive maintenance be performed in accordance with written procedural requirements.

Contrary to TS 6.3, safety-related preventive maintenance prescribed and documented by TVA Maintenance Requests (MRs) 583701 through 583706, 574683 and 574687, was not performed in accordance with written procedural requirements. The subject preventive maintenance included assembly of emergency diesel generator cooling water check valves. The inspections, measurements of bolt size and bolt torquing values utilized in reassembly of the valves failed to comply with procedural requirements as follows:

- A. TVA Standard Practice BF-3.2 requires the torquing of pressure retaining bolting on safety-related valves to be a QC inspection hold point. The torquing of the pressure retaining valve bolting prescribed by MRs 583701 through 583706, 574683, and 574687 did not include QC inspection hold points and the MRs indicate that no QC inspection of the torquing was performed.
- B. The subject MRs specified that valve bolt torquing was to be performed in accordance with Mechanical Maintenance Instruction (MMI) 143 which requires that the size and type of bolt be determined and recorded, and that the information be used to select torque values from the tables in MMI-143. All of the bolting materials were 5/8-inch studs with no type or grade identification and on that basis MMI-143 would require a torque value of 93 ft-lbs for all of the valve bolts. In conflict with the MMI-143 procedural requirements:
 - (1) Bolt size and grade were incorrectly determined and recorded on the following MRs:
 - (a) MR 583704 (grade recorded as B7)
 - (b) MR 583701 (size recorded as 3/4 inch and grade as "alloy steel")
 - (2) For the size and grade of bolting (5/8 inch size and indeterminate grade) MMI-143 specifies a torque of 93 ft-lbs. Instead, the following torque values were recorded on MMI-143 data sheets, as used:
 - (a) 200 ft-lbs. for MR 583701
 - (b) 100 ft-lbs for MR 583706
 - (c) 90 ft-lbs for the remaining MRs

This is a Severity Level IV violation (Supplement I).

200



1. Admission or Denial of the Alleged Violation

- A. TVA admits to the violation as stated.
- B. TVA admits to the violation as stated.

2. Reasons for the Violation

- A. The instruction utilized at the time of the violation, MMI-143, Torquing of Mechanical Bolted Joints, was inadequate. The MMI was in conflict with Standard Practice BF-3.2, QC Inspection Program, because it permitted craftsman verification of torquing on Class P piping systems.
- B. The procedure permitted torque value selection by craftsman.
 - (1.a.) For MR A-583704, the craftsman performing the work correctly recorded the stud material to be "B7" (ASTM A193, Grade B7). The craftsman then selected a torque value from Attachment A of MMI-143, as directed by paragraph 9.3, and applied 90 ft-lbs of torque based upon the median allowable stress value of 45 KSI. No errors were involved with the craftsman's determination and selection of the torque value.
 - (1.b. and 2.a.) During the performance of MR A-583701, the craftsman incorrectly determined the stud size to be 3/4-inch instead of 5/8-inch and applied 200 ft-lbs of torque to the fasteners.
 - (2.b.) In the instance of MR A-583706, the craftsman selected the 100 ft-lb value for 5/8-inch, SAE 2 grade material, based upon the stud material being unknown. The tabular value for the material assumption should have been 93 ft-lbs. Although paragraph 9.1.4 directed this assumption of material, this was in conflict with a caution statement in paragraph 9.3 which required the exclusive use of Attachment A for bolting of pressure retaining components.
 - (2.c.) Based upon subsequent conversations with the valve manufacturer, the correct value in each instance should have been 90 ft-lbs, resulting in a stud material stress of 45 KSI.

3. Corrective Steps Which Have Been Taken and Results Achieved

MMI-143 had been replaced by MSI-0-000-PR-0017-01 before discovery of this violation. The replacement instruction is not designed for field selection of torque values by craft personnel and does not address QC hold point requirements. As such, QC inspection requirements are governed by Standard Practice BF-3.2.

Since the applied torque of 200 ft-lbs resulted in a stud stress of 100 KSI (95 percent of the material yield point), valves 0-67-713, 714, 715, and 716 (MR A-583701) were removed from service and properly reinstalled. Valves 0-67-507, 508, 627, and 628 (MR A-583706) were not significantly overtorqued as the 100 ft-lbs of applied torque results in 50 KSI stud stress, less than 50 percent of the material yield stress. Therefore, no corrective action is required for these valves' bolting. The remaining check valves installed require no further corrective action, since the completed MMI-143 data sheets denote the correct torque value. Also, the absence of leakage at normal operating pressure provide additional assurance of proper installation.

4. Corrective Steps Which Will Be Taken to Avoid Further Violations

MSI-0-000-PR0017-01 is being revised to specifically exclude selection of torque values by craftsmen and to note that QC inspection requirements shall be as required by Standard Practice BF-3.2. The anticipated date for approval of the procedure revision is November 30, 1986.

The violation will be discussed with all Mechanical Technical craft and engineers. This should be complete by November 30, 1986.

The Mechanical Technical Section will review a random sample of MRs which utilized MMI-143 to determine if other errors exist. Based on the results of this sample, a determination will be made with regard to the adequacy of the sample size.

5. Date When Full Compliance Will Be Achieved

Full compliance will be achieved by February 1, 1987 when the sampling of MRs utilizing MMI-143 is complete.

