

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

400 Chestnut Street Tower II

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July 23, 1985

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 - OIE INSPECTION REPORT NOS. 50-259/84-34,
50-260/84-34, AND 50-296/84-34 (EA 84-108) - SUPPLEMENTAL RESPONSE

Please refer to your letter to H. G. Parris dated May 23, 1985 regarding the
above subject inspection report. We have reviewed your letter and have
enclosed our supplemental response to the inspection report and improvements
to the Regulatory Performance Improvement Program. An extension for
responding was discussed between Dave Verrelli of your staff and me.

If you have any questions, please get in touch with R. E. Alsup at FTS
858-2725.

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

Very truly yours,

TENNESSEE VALLEY AUTHORITY

J. A. Domer
J. A. Domer, Chief
Nuclear Licensing Branch

Enclosure

cc (Enclosure)

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

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RESPONSE
ADDITIONAL INFORMATION RELATED
TO EA 84-108
CORE SPRAY OVERPRESSURIZATION EVENT

Violation 1

- a. Under "Reasons for the Violation," Tennessee Valley Authority (TVA) states "Maintenance Instructions were inadequate in that lack of comprehensive post maintenance test requirements allowed the situation described by this violation to occur undetected."

The reason the check valve FCV-75-26 was incorrectly assembled and what corrective actions have been or will be implemented to prevent recurrence were not provided.

TVA Response

This violation concerns reactor operation for a period of time while the testable check valve was not operable. As stated in our February 27, 1985 response, we believe the reason that this condition existed undetected was a lack of adequate post maintenance testing.

The incorrect assembly of the check valve air solenoid, which is the subject of violation 5a, was due to the wrong insert being installed during a rebuild operation. We believe that this situation was caused by over reliance on engineering and craft personnel for maintenance and post maintenance testing rather than using preestablished maintenance instructions for these activities. Similarly, the wiring error was discussed in the response to violation 5b. Corrective actions which have been taken are:

1. Solenoid problem and wiring error were corrected.
2. All remaining core spray (CS), residual heat removal (RHR), high pressure coolant injection (HPCI), and reactor core isolation cooling (RCIC) valves were inspected (17 valves). No similar problems were discovered.
3. Mechanical Maintenance Instruction (MMI) 51 has been revised to include verification of proper assembly and operation after maintenance on these valves.

The post maintenance test is the most powerful of the corrective actions in that an adequate test will detect not only the specific type of problem that led to this violation, but will also check overall integrity of the valve operator. These actions should prevent recurrence.

Violation 1

- b. 10 CFR 2.201(a)(3) requires the licensee's reply to a Notice of Violation to include a date when full compliance is achieved. No date was provided in your response.

TVA Response

Corrective action 1 above was completed shortly after the event. Item 2 was also completed shortly after the event for units 1 and 3. Unit 2 valves were inspected after the unit shut down for refueling in September 1984. The initial MMI-51 revision (item 3) was approved on August 23, 1984. The event date was August 14, 1984.

Violation 2

- a. Corrective steps you are taking to avoid further violations and the date when full compliance will be or has been achieved were not provided.
- b. TVA should evaluate whether this surveillance should be performed during power operation and initiate action as appropriate to have the Technical Specifications modified. Pending any change in requirements, this surveillance procedure and any other procedures that challenge the interface between the reactor coolant system and other low pressure systems outside containment should be specifically reviewed to determine whether independent verification and signoff of key steps in the procedure should be included.

TVA Response

Evaluation of the technical specifications has been carried as an internal action item. We have completed our study and proposed technical specifications to allow conduct of emergency core cooling system (ECCS) logic surveillance testing in cold shutdown were PORC approved in June 1985. These proposed changes will be sent for NRC consideration by August 1985.

A comprehensive program of implementing second party verification on plant instructions has been underway for several months. This program encompasses maintenance, modification, operating, testing, and surveillance instructions (including ECCS logic tests). The core spray logic surveillance was PORC approved in April 1985. Other ECCS logic surveillances such as the HPCI logic and LPCI timer surveillance have also been revised to incorporate second person verification. The remaining ECCS

logic surveillances revisions are in process and should be approved before September 1985. These revised procedures add an additional layer of defense during conduct of these surveillances. Further protection will be provided if the mentioned proposed technical specifications changes are approved.

Regarding the request for corrective action dates, personnel actions and live-time training were completed shortly after the original event. The procedure clarifications were approved on September 25, 1984, for violation examples 2a and 2b.

Violation 3

As part of your corrective steps taken to avoid further violations, describe any training TVA has performed to ensure that second party verification is "independent" of the prescribed action and describe the date this training was or will be completed.

TVA Response

Implementation of the second party verification program as discussed in the previous item is described in Standard Practice 3.11 and is implemented through written instructions. This program has been underway for several months and has constituted a major effort. The program should substantially reduce the probability of procedural oversights or omissions such as the core spray breaker manipulation that led to this event. As discussed in the previous response, the core spray surveillance test was revised in April 1985. The remaining ECCS surveillance revisions are in process.

Violation 4

- a. TVA states that general policy of utilizing whole solenoids as replacements has been instituted rather than the use of kits. However, TVA also states that prior to resumption of solenoid rebuilding operations, detailed procedures will be required for assembly and verification of operability.

Please make clear in your supplemental response whether the solenoids will be replaced whole or through the use of kits.

TVA Response

For purposes of clarification, our practice as stated verbatim in MMI-51 is as follows:

When solenoid valve problems are found, it is the policy to replace rather than rebuild. Rebuild when only absolutely necessary.

If rebuilding of a solenoid is required, a detailed instruction must be written and approved to perform work.

Violation 4

- b. As part of your corrective steps taken to avoid further violations, describe what action TVA has taken to ensure that other spare parts for safety-related equipment meet currently required quality levels.

TVA Response

Current procurement procedures as contained in standard practice require an accurate description of the material and intended use of parts be provided prior to issuance from our power stores. Stores material not having the required quality level are strictly banned for issuance and usage. We do not believe current practice would allow repetition of this violation. As a longer term project, we are establishing planning tools that will provide better assurance of proper QA level by relating inventory numbers to specific component identification numbers. The components QA level will also be listed and can, therefore, be verified prior to requisition.

Special attention has been directed toward identification and upgrading of ASCO parts kits used for QA level 1 and 2. This is due to the identified problem and also because ASCO solenoids are used extensively throughout the facility. During this review, two additional kits were discovered which require QA level upgrade. These kits had not been issued from our storeroom.

Violation 5

- a. Please give dates when full compliance will be or has been achieved.
- b. Describe any training that has or will be conducted to ensure that appropriate maintenance, engineering, and operating personnel understand the need for good procedures and strict adherence to those procedures.

TVA Response

- a. Please refer to item 1b for a summary of when the corrective actions were completed.

- b. No specific training regarding the need for adherence and maintenance of procedures was conducted directly due to the core spray event other than that described in the February 27, 1985 submittal example 2a.

The need for strict adherence to procedures was, however, thoroughly addressed following startup problems on unit 3 in October 1984. Our corrective action policy on procedures is summarized as follows:

The solution to procedural problems is bifold. First, a long-term procedural upgrade is in progress which is oriented toward improving the format and content. Of immediate attention, is a continuing dedication to meticulous compliance to existing procedures. Inherent in this principle is that all activities will be contingent on acceptable, applicable procedures. In the event of unclear or inadequate procedures, all activities are to be halted pending resolution of the problem. The site director has issued this manner of business as policy. Recent violations of this policy have resulted in escalated punitive measures with involved personnel.

We believe our commitment to the procedures upgrade program is indicative of the resources which we are willing to expend in improving our overall procedures. In the interim, we have noted various work projects are being routinely interrupted to remedy unclear or ambiguous procedures. This exemplifies the working level attitude in utilizing correct procedures.

Violation 5

- c. TVA admits the violation, i.e., that the noted valves are not equivalent in design characteristics, and that no safety evaluation was performed after the substitution. However, TVA also states that the valve was an acceptable substitute and has requested further clarification from the manufacturer.

In your supplemental response, please describe the results of any safety evaluation you have performed subsequent to substituting valves. Also, describe what corrective measures have been or will be taken to ensure that safety evaluations will be performed when required.

TVA Response

In accordance with TVA procurement procedures, the substitute valves were accepted for use based on ASCO Certificate of Compliance that ASCO HTX 8344A73 was manufactured with the same specification applying to ASCO WPHTX834472. Procurement procedures do not require a safety evaluation to be performed; however, because of recent inquiries, a safety evaluation has

been performed for several available substitutes including ASCO HTX 8344A73. Based on the safety evaluation and procurement records the substitute solenoid valves were determined to be suitable for the application.

Procedures for procurement and substitution of replacement parts have been formalized and strengthened compared to the program utilized during the timeframe of the violation (1982). In addition to the vendor certificate of compliance, an engineering evaluation is also required to allow use of substitute parts. Parts received with deviations from the procurement documents (such as different part number) are nonconformed contingent on completion of the engineering evaluation. This procedure minimizes the likelihood of recurrence.

Violation 7

- a. Please describe any training conducted or planned to ensure that appropriate personnel are aware of the need for post maintenance testing and give a date when full compliance will or has been achieved.

TVA Response

Standard Practice 7.6 delineates the responsibility for determining post maintenance testing (PMT) requirements for maintenance requests (MR). PMT requirements must be addressed on the MR form with appropriate special test requirements (such as ASME, Section XI and 10 CFR 50, Appendix J).

Currently the planners specify the PMT requirements on the MR. The majority of work items will reference portions of surveillance instruction that need to be performed as post maintenance testing. When an approved instruction is not referenced, the planners contact the cognizant engineer for specific test instructions.

There has been an increased focus on ensuring the adequacy of post maintenance testing as part of the general maintenance improvement program. The elements of this program are further discussed in our latest response to inspection report 85-06. Also, this area has attracted further attention as a result an event for failure to provide required PMT following control rod maintenance in February 1985.

Violation 7

- b. ASME Code subsection IWV-3510 specifies testing requirements for relief valves. Core spray system valves 75-543A and 75-543B are designed as relief valves in FSAR Section 6.4. Further, their relief capacity is used by the licensee as a basis for setting valve leakage limits between high and low pressure piping through valves FCV 75-26 and FCV 75-54 (to assure the low pressure piping is not overpressurized), as described in the licensee's SI 3.2.5. The licensee has not performed the Code required testing on valves FCV 75-543A and 75-543B, because these valves were considered to be valves for thermal protection rather than relief valves.

1. Admission or Denial of the Alleged Violation

TVA admits to this violation, however, there were mitigating circumstances as outlined in item 2 which details our concerns.

2. Reasons for the Violation

At the time of the violation, TVA and NRC were in the process of resolving differences in the final ASME Section XI Program. These particular valves had been included in the original program. However, after discussions and meetings with NRC in the 1977-78 timeframe, the program was modified substantially and these valves were deleted along with a number of other changes. The first formal submittal of the program, therefore, did not include these relief valves. NRC subsequently, recommended (along with other miscellaneous changes) that TVA add these valves to the program. The reference correspondence on this matter is the letter dated February 10, 1984, D. B. Vassallo (NRC) to H. G. Parris (TVA). TVA reconsidered the subject and made the decision to add these valves back into the program. This decision was made prior to the core spray event. This particular change as well as a number of other requested changes was formalized in our October 1, 1984 submittal on ASME Section XI testing.

3. Corrective Steps Which Have Been Taken and Results Achieved

ASME Section XI, Inservice Pump and Valves Testing Program for Browns Ferry, has been revised to include valves FCV 75-543A and 75-543B to satisfy ASME Code, Subsection IWV-3510 requirements and was submitted to NRC on October 1, 1984. A revision was made to the Browns Ferry Surveillance Instruction 3.2 to include valves FCV 75-543A and 75-543B for testing.

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

Complete

5. Date When Full Compliance Will Be Achieved

Full compliance has been achieved.

ATTACHMENT TO FOLLOWUP RESPONSE FOR INFORMATION
DISCUSSION OF RPIP RELATION TO CORRECTIVE ACTION

We have analyzed the violations and corrective actions as they relate to the core spray event. Many of the RPIP programs as listed below are designed to minimize recurrence of this type event.

Violation 2a - FAILURE TO FOLLOW PROCEDURE REQUIRING OPENING OF CIRCUIT BREAKER

Short-term 1.1 - Regulatory compliance training for managers.

Short-term 1.2, 3.10, 5.0 - Issuance of monthly performance data package.

Short-term 1.3, 1.6, 3.9 - Corrective personnel action program and training.

Short-term 1.4, 2.5 - Work place observance and inspection program and training.

Short-term 1.5 - Issuance of foreman's handbook and establishment of foreman's meetings.

Short-term 3.1 - Cognizance reviewer program and training.

Short-term 3.4 - Procedure and system training for crafts and engineers.

Short-term 3.8 - Regulatory compliance training for all employees.

Short-term 6.3 - Operations program review and evaluation.

Short-term 7.3 - "Live-time" training for operators and other employees.

Violation 2b - INCORRECT PROCEDURE DUE TO INDICATION OF WRONG MOV BOARD

Short-term 3.4 - Procedure and system training for craft engineers.

Long-term 3.4 - Intent/non-intent procedure change program and training.

Long-term 3.7 - Plant procedure upgrade effort.

Short-term 2.3 - Establishment of PORC subcommittee.

Long-term 3.3 - Assistant operations supervisor assigned to procedure improvement work.

Violation 3 - LACK OF INDEPENDENT VERIFICATION REQUIREMENT IN PROCEDURE

Short-term 3.1 - Cognizant reviewer program and training.

Short-term 3.8 - Regulatory compliance training for all employees.

Long-term 9.3 - Second-party verification program.

Violation 4 - CHECK VALVES REBUILT WITH NON-QA PARTS

Short-term 3.1 - Cognizant reviewer program and training.

Short-term 3.4 - Procedure and system training for crafts and engineers.

Short-term 3.8 - Regulatory compliance training for all employees.

Short-term 1.5 - Issuance of foreman's handbook.

Short-term 2.7 - Workplan preparation technical training.

Long-term 6.1 - Evaluation of procurement process.

Long-term 6.2 - Implementation of plan to improve and streamline process.

Violation 5a and 7a - PROCEDURE CONTAINED INADEQUATE POST-MAINTENANCE TESTING

Short-term 2.7 - Workplan preparation technical training.

Short-term 2.3 - Establishment of PORC subcommittee.

Short-term 3.1 - Cognizant reviewer program and training.

Short-term 3.4 - Procedure and system training for crafts and engineers.

Short-term 3.8 - Regulatory compliance training for all employees.

Short-term 4.7 - Establishment of codes and standard groups.

Long-term 3.2 - Managements and senior crafts review of procedures.

Long-term 3.7 - Plant procedure upgrade program.

Violation 5b - ELECTRICAL LEADS REVERSED FROM DATA INDICATED BY DRAWINGS

Short-term 2.7 - Workplan preparation technical training.

Short-term 3.4 - System training for crafts and engineers.

Short-term 3.8 - Regulatory compliance training for all employees.

Long-term 2.1 - Configuration program.

Violation 5c - WRONG SOLENOID VALVE ON TESTABLE CHECK VALVES

Short-term 3.4 - Procedure and system training for craft engineers.

Long-term 6.1 - Evaluation of procedure process.

Long-term 6.2 - Implementations of plant to improve and streamline procedure process.

Violation 6 - INADEQUATE RECEIPT INSPECTION OF SOLENOID VALVE

Short-term 4.27 - QA organization and functions.

Long-term 2.1 - Configuration program.

Long-term 6.1 - Evaluation of procurement process.

Long-term 6.2 - Implementation of plan to streamline and improve procedure process.

Violation 7b - FAILURE TO TEST CORE SPRAY RELIEF VALVE PER CODE

Short-term 4.7 - Establishment of codes and standard groups.

Long-term 3.7 - Plant procedure upgrade program.

In addition to the above, the following items will contribute to improving the overall maintenance planning functions:

Short-term 2.6 and 4.21 - Establishment of planning and scheduling group.

Long-term 9.5 - Expansion of functions within the planning and scheduling group.

The following items should contribute greatly to the overall compliance with procedures and contribute to decreased violations:

Short-term 3.6 - Monthly regulatory compliance supplementary training bulletins.

Short-term 3.11.- Oversight sub-committee activities relating to employee awareness and involvement.

Short-term 4.26 and Long-term 7.1 - Establishment and continuing expansion of onsite training functions in all areas.

Short-term 4.27 and Long-term 5.3 - Restructure of QA organization and expansion of functions.