

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401  
1760 Chestnut Street Tower II

February 27, 1985

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

Dear Mr. Taylor:

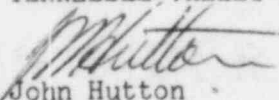
Enclosed is our response to J. P. O'Reilly's January 28, 1985 letter to H. G. Parris transmitting Notice of Violation and Proposed Imposition of Civil Penalties: EA 84-108, Core Spray System Overpressurization (IE Inspection Report Nos. 50-259/84-34, -260/84-34, -296/84-34) for Browns Ferry Nuclear Plant. Fees in response to the civil penalty of \$100,000 are being wired to the NRC, Attention: Office of Inspection and Enforcement.

If you have any questions, please call 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



John Hutton  
Director of Nuclear Services

Enclosure

cc (Enclosure):

U.S. Nuclear Regulatory Commission  
Region II  
ATTN: Dr. J. Nelson Grace, Regional Administrator  
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RESPONSE  
LEVEL III VIOLATIONS (\$100,000 CIVIL PENALTY) EA 84-108  
CORE SPRAY OVERPRESSURIZATION EVENT  
(REFERENCE NRC INSPECTION REPORT NOS.  
50-259/84-34, 50-260/84-34, AND 50-296/84-34)

Enclosure 1

Item 1 - (50-259/260/296/84-34-02)

Technical Specification 3.7.D.1 requires that during reactor power operation, the primary containment isolation valves listed in Table 3.7.A shall be operable. Table 3.7.A lists as a containment isolation valve the core spray discharge to reactor check valve FCV-75-26.

Contrary to the above, from at least December 29, 1983 (the beginning of the current fuel cycle) until August 21, 1984 (the discovery of the error), Unit 1 core spray discharge to reactor check valve FCV-75-26 was not operable. During this time, the testable check valve was held open by its test actuator during power operation and might not have closed if a line break had occurred outside the containment.

1. Admission or Denial of the Alleged Violation

TVA admits to the violation.

2. Reasons for the Violation

Maintenance Instructions were inadequate in that the lack of comprehensive post maintenance test requirements allowed the situation described by this violation to occur undetected.

3. Corrective Steps Which Have Been Taken and Results Achieved

Mechanical Maintenance Instruction MMI-51 has been revised to require a comprehensive operability test following work on any core spray (CS), residual heat removal (RHR), high pressure coolant injection (HPCI), or reactor core isolation cooling (RCIC) testable check valve.

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

No further actions are required.

5. Date When Full Compliance Will Be Achieved

Compliance has been achieved as described above.

Item 2 - (50-259/260/296/84-34-04)

Technical Specification 6.3.A requires that detailed written procedures, including applicable checkoff lists covering maintenance operations and surveillance requirements be prepared, approved and adhered to.

Example 2A - (50-259/260/296/84-34-04)

Contrary to the above, during the performance of Surveillance Instruction (SI) 4.2B-39A, Core Spray Logic Functional Test, on August 14, 1984 step 4.1.h was not followed in that the circuit breaker for flow control valve FCV-75-25 was not opened as required.

1. Admission or Denial of the Alleged Violation

TVA admits to the violation as stated.

2. Reasons for the Violation

The reactor operator conducting the surveillance test failed to properly secure the subject circuit breaker. He verified that the breaker was deenergized rather than open. Wording in the surveillance test was deficient in that better instructions could have been provided regarding the breaker manipulation.

3. Corrective Steps Which Have Been Taken and Results Achieved

The individual involved in the event was counseled. Live-time training on this entire event was provided for all operators, with particular emphasis on valve breaker manipulations. Also, the surveillance instruction step has been revised to clearly describe the necessary valve breaker manipulations.

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

No further actions are required.

5. Date When Full Compliance Will Be Achieved

Full compliance was achieved upon completion of the activities described above.

Example 2B - (50-259/260/296/84-34-04)

Contrary to the above, as of August 14, 1984 SI 4.2.B-39A did not specify the correct reactor Motor Operated Valve (MOV) electrical distribution board in this same step 4.1.h of the procedure. "MOV board 2A (MOV board 2B)" are listed in the SI instead of the correct MOV boards 1A and 1B.

1. Admission or Denial of the Alleged Violation

TVA admits to the violation as stated.

2. Reasons for the Violation

A typographical error existed in the surveillance step. It should be noted that this error did not contribute to the event.

3. Corrective Steps Which Have Been Taken and Results Achieved

The surveillance step has been corrected.

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

No further actions are required.

5. Date When Full Compliance Will Be Achieved

Compliance has been achieved as described above.

Item 3 - (50-259/260/296/84-34-07)

Technical Specification 6.3.A requires that detailed written procedures be prepared, approved, and adhered to. TVA Topical Report TVA-TR-75-1, Quality Assurance Program Description, Table 17.2-5, requires compliance with Regulatory Guide 1.33 which endorses ANSI N18.7-1976. ANSI N18.7-1976, in paragraph 5.2.6 requires independent verification, where appropriate, to ensure that necessary measures, such as tagging equipment, have been implemented correctly.

Contrary to the above, as of August 14, 1984 SI 4.2.B-39A did not require independent verification to ensure that the circuit breaker for valve FCV 75-25 was opened as required by step 4.1.h of the procedure. The failure to open the circuit breaker for FCV 75-25 resulted in the overpressurization of the core spray loop for approximately 15 minutes until this abnormal plant condition was discovered.

1. Admission or Denial of the Alleged Violation

TVA agrees a violation occurred.

2. Reasons for the Violation

Apparently during the original formulation of SI 4.2.B.39, it was determined that independent verification was not required. Under normal circumstances, the testable check valve would provide system isolation even in the case of an inadvertent motor operated valve operation.

3. Corrective Steps Which Have Been Taken and Results Achieved

A comprehensive program of implementing second party verification on maintenance, modification, operating, testing, surveillance, tagging, and identification instructions has been underway for several months. The Core Spray Logic Surveillance Test, SI 4.2.B-39 is currently being examined for suitable second party requirements as part of the master program. This instruction is scheduled for revision by April 1, 1985, and will include second party verification on the subject breaker manipulation.

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

As described in item 3

5. Date When Full Compliance Will Be Achieved

This particular surveillance will be revised by April 1, 1985.

Collectively, violations 1 through 3 have been evaluated as a Severity Level III problem (Supplement I).

(Cumulative Civil Penalty - \$50,000 assessed equally among the violations.)

Item 4 - (50-259/260/296/84-34-01)

10 CFR Part 50, Appendix B, Criterion IV, as implemented by the licensee Quality Assurance Manual, Part III, Section 2 and Standard Practice 16.3, requires that measures shall be established to assure that applicable regulatory requirements, design basis, and other requirements, which are necessary to assure adequate quality are suitably included or referenced in the documents for procurement of material.

Contrary to the above, parts used to rebuild QA level II ASCO 8344 series solenoid valves were procured without reference to any quality assurance requirements. Testable check valve FCV 75-26 was apparently rebuilt during a previous outage using these parts, since these were the only parts available, and maintenance records do not show another source of parts.

1. Admission or Denial of the Alleged Violation

TVA admits the violation as stated.

2. Reasons for the Violation

Original purchase requisitions for the solenoid rebuild kits in 1973 did not address current QA level designations. Personnel utilizing the kits at a later time failed to recognize the need to recategorize the QA level of the parts kits prior to use for rebuilding the solenoids. QA level II requires a parts number verification.

3. Corrective Steps Which Have Been Taken and Results Achieved

A general policy of utilizing whole solenoids as replacements has been instituted rather than the use of kits. This applies to critical structures, systems, and components (CSSC) solenoid valves addressed by MMI-51.

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

MMI-51 is under revision to formalize the policy stated above. Prior to resumption of solenoid rebuilding operations, detailed procedures will be required for assembly and verification of operability.

5. Date When Full Compliance Will Be Achieved

MMI-51 will be revised by April 1, 1985.

Item 5 - (50-259/260/296/84-34-06)

10 CFR Part 50, Appendix B, Criterion V, as implemented by TVA Topical Report TVA-TR-75-1, Section 17.1A.5, requires that activities affecting quality shall be prescribed by drawings or procedures of a type appropriate to the circumstances and shall be accomplished in accordance with these drawings or procedures.

Example 5A - (50-259/260/296/84-34-06)

Prior to August 23, 1984, Mechanical Maintenance Instruction 51, Maintenance of Critical System Structures Components (CSSC)/Non-CSSC Valves and Flanges, did not contain adequate post maintenance instructions to ensure proper valve operation, mechanically or electrically. The valves had routinely been worked by the skill-of-the-craft method with no check valve operability test conducted, or inadequate testing was conducted to demonstrate operability.

1. Admission or Denial of the Alleged Violation

TVA admits the violation.

2. Reasons for the Violation

Responsibility for maintenance and post maintenance testing relied too heavily on engineering and craft personnel rather than procedural programs.

3. Corrective Steps Which Have Been Taken and Results Achieved

The solenoid on the test valve was replaced and correct operation demonstrated. All remaining CS, RHR, HPCI, and RCIC testable check valves were subsequently inspected. No similar problems were discovered.

MMI-51 has been revised to include detailed instructions describing post maintenance test requirements. This instruction applies to CS, RHR, HPCI, and RCIC testable check valves and should be sufficient to prevent further violations.

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

No further actions are required.

5. Date When Full Compliance Will Be Achieved

Full compliance has been achieved as described above.

Example 5B - (50-259/260/296/84-34-06)

On August 21, 1984 the licensee determined that the Unit 1 core spray system testable check valve FCV-75-26 control and indicating circuitry was found to have the electrical leads reversed from the position shown on the system drawing for the magnetic and actuator limit switches. As shown on drawing 730E930, these switches indicate the valve position of the containment isolation valve.

1. Admission or Denial of the Alleged Violation

TVA admits the violation.

2. Reasons for the Violation

The solenoid valve insert was apparently installed incorrectly during a valve rebuild, causing FCV 75-26 to operate backwards. Wiring for the position indicating lights had been connected so that the lights would indicate the assumed valve position. It cannot be determined exactly when this occurred.

3. Corrective Steps Which Have Been Taken and Results Achieved

The solenoid valve was replaced, and the wiring to the position indicating lights was corrected to be as shown in GE drawing 730EW930-5. FCV 75-26 was then proven to operate properly.

MMI-51 has been revised to include verification of proper assembly and operation of testable check valves after completion of all work on these valves.

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

No further corrective action is required.

5. Date When Full Compliance Will Be Achieved

Full compliance has been achieved.



Example 5C - (50-259/260/296/84-34-06)

On August 21, 1984 a review of power stores records by the NRC inspector revealed that the Unit 1 core spray system testable check valve FCV-75-26 4-way solenoid valve was not in accordance with drawing PD-420870. Plant drawings require the use of an ASCO WPHTX 834472 type valve whereas the plant uses an ASCO HTX 8344A73. The above noted valves are not equivalent in design characteristics, and no safety evaluation was available to indicate an equivalency or that a design change had been instituted.

1. Admission or Denial of the Alleged Violation

TVA admits the violation.

2. Reasons for the Violation

The new model type was substituted by the vendor as a replacement solenoid valve in 1978. A certificate of compliance supplied by ASCO states that model number HTX8344A73 is manufactured with the same specifications applying to the original part, WPHTX834472. The plant accepted the substitution in accordance with procurement procedures.

3. Corrective Steps Which Have Been Taken and Results Achieved

An additional review of documentation and application of use for the newer solenoid was completed. The model HTX8344A73 valve is an improved model and is an acceptable substitute.

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

As a general clarification, we have decided to request that ASCO reconfirm that the newer model of this valve is as good as or better than originally purchased models.

5. Date When Full Compliance Will Be Achieved

We will request ASCO to provide an update by May 1985.

Item 6 - (50-259/260/296/84-34-05)

10 CFR Part 50, Appendix B, Criterion VII, as implemented by TVA Topical Report TVA-TR 75-1, Section 17.1A.7 and Standard Practices 16.4 and 16.5, requires that measures shall be established to assure that purchased material conforms to the procurement documents.

Contrary to the above, four ASCO solenoid valves ordered on requisition number 332421, March 4, 1982, were received on September 11, 1982. The receipt inspection conducted on the valves was inadequate in that the valves received had model/part numbers different from the contract purchase requisition valve description.

1. Admission or Denial of the Alleged Violation

TVA admits the violation.

2. Reasons for the Violation

The Power Stores Receipt Inspector receiving the valves on contract 82PK1-332421 failed to document on TVA Form BF-48 the acceptance justification. Like material previously received on contract 78P14-255964 was accepted for use and approved by the Plant Operations Review Committee.

3. Corrective Steps Which Have Been Taken and Results Achieved

Subsequent revisions were made to Browns Ferry Standard Practices which provide procedures and required documentation to prevent recurrence.

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

Power Stores is developing Standard Practice lesson plans to provide Power Stores Receipt Inspectors with comprehensive knowledge of procedures required to supplement their job task requirements. This training will become an ongoing effort. In addition, procurement information for these solenoid valves in Power Stores is being revised to reflect the latest vendor part identification numbers.

5. Date When Full Compliance Will Be Achieved

Full compliance will be achieved by March 30, 1985.

Item 7 - (50-259/260/296/85-34-03)

10 CFR Part 50, Appendix B, Criterion XI as implemented by TVA Topical Report TVA-TR 75-1, Section 17.2.11, requires that a test program shall be established to assure that all testing required to demonstrate that structures, systems, and components will perform satisfactorily in service is identified and performed in accordance with written test procedures which incorporate the requirements and acceptance limits contained in applicable design documents. In addition, 10 CFR 50.55a(g) requires the licensee to test valves in accordance with the ASME Boiler and Pressure Vessel Code, Section XI, 1974 Edition, with Addenda through summer 1975 (hereafter referred to as the "ASME Code"). As stated in this Code, its test requirements apply to Class 1, 2, and 3 valves (classified in accordance with criteria given in NRC Regulatory Guide 1.26) except that valves used for operating convenience only may be excluded.

Contrary to the above, as of this inspection the licensee had not performed tests required by the ASME Code for certain valves which are of the specified classes and do not qualify for exclusion. The tests omitted and the involved valves are as follows:

Example 7A - (50-259/260/296/84-34-03)

Code subsection IWV-3200 requires that a valve that has undergone maintenance that could affect its performance be tested to demonstrate its performance parameters prior to return to service. The licensee performed maintenance on the actuating solenoid and on the indicator circuitry of core spray system check valve FCV 75-26 during the refueling outage completed in December of 1983 but failed to test the valve to verify proper performance of its opening and closing functions or to verify proper remote position indication.

1. Admission or Denial of the Alleged Violation

TVA admits the violation.

2. Reasons for the Violation

The reason for the violation is explained in Item 5A.

3. Corrective Steps Which Have Been Taken and Results Achieved

MMI-51 has been revised to include a comprehensive post maintenance test which will satisfy ASME Code subsection IWV-3200 requirements.

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

No further corrective action is required.

5. Date When Full Compliance Will Be Achieved

Full compliance has been achieved.

Example 7B - (50-259/260/296/84-34-03)

ASME Code subsection IWV-3510 specifies testing requirements for relief valves. Core spray system valves 75-543A and 75-543B are designated 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 denies this 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 meeting 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, Domenic Vasallo (NRC) to H. G. Parris (TVA). TVA reconsidered the subject and made the decision to add these valves back into the program. 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. In summary, TVA believes that since this was an open item at the time of the inspection report, no violation could exist. We request a reconsideration on this item.

2. Reasons for the Violation

N/A

3. Corrective Steps Which Have Been Taken and Results Achieved

ASME, Section XI, Inservice Pump and Valve 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 the NRC on October 1, 1984.

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

A revision is currently being made to Browns Ferry Surveillance Instruction 3.2 to include valves FCV 75-543A and 75-543B for testing.

5. Date When Full Compliance Will Be Achieved

Full compliance will be achieved by April 19, 1985.

Collectively, violations 4 through 7 have been evaluated as a Severity Level III problem (Supplement I).  
(Cumulative Civil Penalty - \$50,000 assessed equally among the violations.)

## ATTACHMENT TO CIVIL PENALTY

### DISCUSSION OF RPIP RELATIONSHIP

The Notice of Violation requested that TVA provide a discussion of the Regulatory Plan Improvement Program (RPIP) as it relates to corrective actions for the violations in this report. It is important to note that with the exception of violation Example 2A, the conditions which ultimately led to the remaining violations had origins prior to the establishment of the RPIP. These violations are, however, generally indicative of weaknesses in several functional areas. Recognition of these type problems and others, in fact, led to the establishment of the RPIP. The ultimate goal of the RPIP is to strengthen the overall site by programmatic improvement of all functional areas. Inherent in this principle is the investment of sufficient resources to carry out the improvements.

There are several RPIP projects in varying stages of completion that are directly related to improving performance in the areas associated to the violations. These are:

Item 3.7 - Upgrade plant procedures

Item 6.2 - Purchasing/stores task project

Item 7.1 - Establish onsite training organization

Item 9.3 - Implementation of second party verification program

Item 9.5 - Improve maintenance equipment history program

Equally important is a RPIP organizational alteration which is consolidating all maintenance activities under a single organization rather than shared between the plant maintenance staff and modifications staff as has been the past practice. Many other RPIP projects, too numerous to mention, are indirectly related with activities to minimize violations of the type described in this inspection report. The RPIP initiatives have matured to a point where positive results are being increasingly observed. We expect this trend to continue throughout 1985.