

TENNESSEE VALLEY AUTHORITY

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OCT 07 1988

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, D.C. 20555

Gentlemen:

In the Matter of	)	Docket Nos. 50-259
Tennessee Valley Authority	)	50-260
	)	50-296

BROWNS FERRY NUCLEAR PLANT (BFN) UNITS 1, 2, AND 3 - NRC INSPECTION REPORT NOS. 50-259/88-16, 50-260/88-16, AND 50-296/88-16 - RESPONSE TO NOTICE OF VIOLATION - 10 CFR 50, APPENDIX B, CRITERION V

This letter provides TVA's response to the Notice of Violation transmitted in the subject report. The report was sent from F. R. McCoy to S. A. White dated September 12, 1988, and cited TVA with one violation containing six examples. A response is also provided to address the unresolved item (URI) on Q-list inadequacies.

The violation response is provided as enclosure 1. Enclosure 2 provides TVA's corrective action. Enclosure 3 provides our response to the URI 88-16-02.

If you have any questions, please telephone James Wallace at (205) 729-2053.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

*R. Gridley*  
 R. Gridley, Manager  
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Enclosures  
cc: See page 2

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OCT 07 1988

U.S. Nuclear Regulatory Commission

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Enclosure 1  
RESPONSE  
NRC INSPECTION REPORT  
NOS. 50-259/88-16, 50-260/88-16, AND 50-296/88-16  
LETTER FROM F. R. McCOY TO S. A. WHITE  
DATED SEPTEMBER 12, 1988

10 CFR 50, Appendix B, Criterion V requires that activities affecting quality shall be prescribed by instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures or drawings.

This is a severity level IV violation and is applicable to all three units.

Violation 1

During the inspection immediately following the November 2, 1987, drywell fire, the following instances in which instructions and procedures were not adhered to for work activities were identified:

Violation 1.a

Plant Managers Instruction (PMI) 8.1, Temporary Alterations, requires that long term alterations shall be controlled using a temporary alteration control form (TACF) in lieu of other mechanisms, such as a maintenance request (MR), which are only for short term alterations.

Contrary to the above, a TACF was not used to authorize temporary connections through penetration EE for recirculation system valve controls and drywell blower controls performed under MRs A793993 and A775468. These MRs were performed in May and October 1987, and should have been considered long term alterations.

TVA's Response

1. Admission or Denial of the Alleged Violation

TVA admits the violation.

2. Reasons for the Violation

PORC made the original determination that the MR provided adequate controls for temporary alterations to penetration EE.

3. Corrective Actions Which Have Been Taken and Results Achieved

PORC reviewed and concurred with the original TVA response to this concern. This response was provided February 16, 1988, to address this and other concerns documented in your inspection report 87-43 on the BFN Unit 2 drywell fire which occurred on November 2, 1987. PORC considered and discussed all the procedures which affect controls for temporary alterations. These procedures included PMI 8.1, the Site Directors Standard Practice for MRs and the TVA Nuclear Quality Assurance

Manual. It is clear to PORC that temporary alterations can be handled in many ways and be controlled in accordance with approved procedures. PORC is sensitive to NRC's concerns in this area and ensures that proper consideration is given to controlling temporary alterations using TACFs.

4. Corrective Actions Which Will Be Taken

None

5. Date When Full Compliance Will Be Achieved

Full compliance has been achieved.

Violation 1.b

NQAM Part III, Section 4.1 requires that QA records shall have all blanks filled in or marked N/A.

Contrary to the above, MRs were found with signatures and data missing including MR A775468 which was missing signature's for "Raychem Acceptable" on 6 cards and signatures for "QC Verification of Standard Test 1" on 5 pages; and MR A822017 which was missing an entry on block 26 through 28 which should have documented work performed and the cause of failure.

TVA Response

1. Admission or Denial of the Alleged Violation

TVA admits the violation.

2. Reasons for the Violation

In TVA's response of February 16, 1988, TVA agreed with the basic concern that several signoffs were left blank on the MR which should have been marked not applicable or signed off at the time the work was completed.

The missing quality control signatures for continuity checks on five cable terminations were not completed because of personnel error by the quality control inspectors. Additionally, the physical work performed on another MR was complete, however, the corrective action/work performed and the cause of failure blocks on the MR were not completed. These were also personnel errors.

3. Corrective Actions Which Have Been Taken and Results Achieved

A condition adverse to quality report (CAQR) (BFP 871107) was generated to insure that the MRs which lacked appropriate information on the data sheets were completed by the individuals who committed the errors.

Electrical modifications and quality control personnel were trained on the recurrence control action of CAQR BFP 871107 which details the need to fill in or write "N/A" in all blocks as appropriate on the MR. Concurrently, the QC inspectors were instructed to sign-off the appropriate blocks for all verification which they have witnessed.

Ensuring personnel corrected their own errors and providing additional training should prevent recurrence of incomplete work by the affected personnel.

4. Corrective Actions Which Will Be Taken

None

5. Date When Full Compliance Will Be Achieved

Full compliance has been achieved.

Violation 1.c

PMI 6.2, Conduct of Maintenance, Section 4.4.13, requires that post-maintenance testing be performed on all plant process equipment following all corrective maintenance, and some preventive maintenance and troubleshooting activities that might have impaired proper functioning of the component.

Contrary to the above, no electrical checks of any nature were performed as post-maintenance testing following completion of the temporary electrical splices installed under MRs 793993 and 775468; and Electrical Maintenance Instruction (EMI) 7.2, test procedure for Initial Installation and Troubleshooting of Molded Case Circuit Breakers, failed to test the motor starter portion of the breakers. The starters contain the thermal overload elements which perform a necessary function for some modes of end-device failures.

TVA Response

1. Admission or Denial of the Alleged Violation

TVA admits the violation.

2. Reasons for the Violation

The post maintenance testing was inadequate because of procedural deficiencies in EMI 7.2 and Modification and Addition Instruction (MAI) 45.

At the time of the incident, MAI-45, step 6.10, standard cable inspections and tests, did not provide the crafts personnel with any instructions which required inspections or tests to be performed on temporary terminations. However, the subject temporary terminations were not on safety-related equipment.

Electrical maintenance instruction 7.2, Test Procedure for Initial Installation and Troubleshooting of Molded Case Circuit Breaker, did not cover the testing of motor starter overload relays for safety related molded case circuit breakers.

3. Corrective Actions Which Have Been Taken and Results Achieved

MAI-45, step 6.10, standard cable inspections and tests, was revised to include a note providing crafts personnel with adequate instructions requiring individual wire continuity be verified. Individual wire continuity verification requires the cable which is being tested to be isolated at both ends. This note is required for any future temporary terminations. Additionally, the note addresses the invalidating of a previous cable connection as well as eliminating "cross-talk." Electrical modification and quality control personnel were trained on the revised requirements in MAI-45 for required continuity testing on any temporary terminations and the need to ensure terminations remain validated.

EMI-7.2 was revised by an immediate temporary change (7.2.02) to include instructions for testing motor starter overload relays to eliminate past oversights. Design Nuclear Engineering Branch has issued drawings for four Design Change Notices specifying overload relay heater sizes for safety-related circuits. An engineering change notice was generated to test each overload heater and to correct drawing discrepancies. A preventative maintenance schedule will require 20 percent of the noted relays to be tested annually to ensure that the safety-related relays will be tested once every five years.

4. Corrective Actions Which Will Be Taken

None

5. Date When Full Compliance Will Be Achieved

Full compliance has been achieved for unit 2 safety-related equipment required for unit 2 restart. Units 1 and 3 will be completed before their respective restart.

Violation 1.d

The Browns Ferry Fire Protection Program Plan (FPP-1) requires that fire brigade members be qualified to the training and qualification requirements contained therein.

Contrary to the above, three of the six fire brigade members who entered the drywell for fire fighting operations were not qualified for fire brigade duty in accordance with FPP-1. Additionally, 67 of 127 fire brigade members assigned to five operating crews were ineligible for fire brigade duty in accordance with FPP-1.

### TVA Response

#### 1. Admission or Denial of the Alleged Violation

TVA admits the violation.

#### 2. Reasons for the Violation

TVA management did not have adequate controls in place, and training records were not maintained up to date for fire brigade members at BFN. In TVA's response on February 16, 1988, TVA noted that a means to track and notify management on individual fire brigade member's eligibility needed improvement.

#### 3. Corrective Actions Which Have Been Taken and Results Achieved

On June 27, 1988 five dedicated emergency response teams were assigned to BFN to respond to emergencies. An emergency response (ERT) team consists of a captain and four Emergency Service Technicians (EST), whose responsibility is the manual suppression of fires at BFN.

The ESTs initially received 12 weeks of intensive fire and plant familiarization training. A medical test was also a job prerequisite. Currently, these qualified ESTs are assigned to rotating shifts and are available to the Incident Commander. Fire Protection procedures (FPP-1, 2, and 3) were revised to detail manual fire suppression personnel as level I qualified while technical and support personnel are level II qualified. In addition, this new dedicated group is scheduled to receive training every five weeks.

On May 11, 1988, an unannounced fire drill was conducted to test the response time and to evaluate the proficiency of the ERT. The critique of this drill was reviewed by the senior resident inspector with no noted concerns. This newly dedicated emergency response team should allow operational personnel to provide technical expertise by assessing the consequences of the fire instead of fighting the fire. The training received by the ERT is directly applicable to their day-to-day duties, whereas, the training of the operational personnel qualified to fight fires was only a small portion of their qualifications. Finally, the dedicated crews will enhance preserving essential fire information at a fire scene while fighting the fire, thereby assisting personnel conducting the fire investigation.

Additionally, TVA's plan to reorganize the BFN fire brigade was discussed in a letter to NRC dated April 29, 1988. The plan described the qualifications for members of the BFN dedicated fire brigade. A Safety Evaluation Report (SER) was issued by NRC on September 13, 1988. The SER stated that the reorganized fire brigade is acceptable since TVA's plan complied with prior commitments depicted in a March 22, 1975 fire plan.

4. Corrective Actions Which Will Be Taken

None

5. Date When Full Compliance Will Be Achieved

Full compliance has been achieved.

Violation 2

During this inspection the following instances of failure to follow procedures were identified:

Violation 2.a

The licensee's Nuclear Quality Assurance Manual (NQAM), Part III, Section 4.1, Quality Assurance Records, requires that QA records be prepared in black ink, have all blanks filled in or marked not applicable (N/A), and that corrections be made by the single line through, initial and date method. BFEP, PI 87-52, Development and Control of the BFN Unit 2 Phase I Q-List, Step 5.7.3 requires that QEDP's shall be controlled as QA records.

Contrary to the above, the Q-List Equipment Data Package (QEDP) for System 001, Main Steam, contained information in the Tabs entitled B1/Analyses Component Pick-off and the B1/B2 Analyses Component Pick-off which did not comply with the NQAM. Specifically, there were numerous entries made in red and light blue ink, most reviewer blocks did not contain a signature or N/A, and most corrections were made without the dated initials of the person who made the correction.

TVA Response

1. Admission or Denial of the Alleged Violation

TVA admits the violation.

2. Reasons for the Violation

The Q-list equipment data packages (QEDPs) for each system are a compilation of source documents, various miscellaneous information, and drawings that were used in the development of the Q-list. The component "pick-off" data sheets used by General Electric (GE) for input into the Q-list computer data base were included in QEDPs for information only. These documents were not considered a part of the Q-list nor did they need to comply with QA requirements. The Q-list software was QA verified in accordance with NEP 3.8, Computer Software Development, Procurement, Qualification, and Control.



BFN should have identified QEDPs as "information only" and should not have identified them as a QA document. These were personnel errors.

3. Corrective Steps Which Have Been Taken and Results Achieved

Personnel who improperly identified the QEDPs were required to read applicable procedures (NQAM part III, section 4.1, Quality Assurance Records and NEP 1.3-Records Control).

A CAQR (BFP 880374) was generated to document and resolve this problem. The QEDPs have been reclassified as "for information only." Project instruction PI 87-52, Development and Control of BFN Unit 2 Phase I Q-list, was revised to state that the QEDPs are not a QA document.

4. Corrective Actions Which Will Be Taken

None

5. Date When Full Compliance Will be Achieved

Full compliance has been achieved.

Violation 2.b

Site Director Standard Practice 3.7, Corrective Action, requires that a management reviewer identify, based on operability criteria in attachment 5 of the procedure, if operability at a nuclear plant could potentially be affected by a condition adverse to quality. SDSP 3.7 further requires that the responsible organization determine the significance of the CAQ in accordance with specified criteria in paragraph 4.12.

Contrary to the above, inadequate management and organization reviews of CAQR BFF 870180 were performed when it was found that the standby gas treatment building original designed seismic response was underpredicted. The operability determination was made that no unit operability was affected and the fact that General Design Criterion 2 of 10 CFR 50, Appendix A was violated was not evaluated as being significant.

TVA Response

1. Admission or Denial of the Alleged Violation

TVA admits the violation.

2. Reasons for the Violation

TVA agrees that inadequate management attention to who can perform CAQR reviews led to this violation. The subject CAQR indicated that general design criteria (GDC) 2 of 10 CFR 50 Appendix A was violated, incorrect design input was used, and that the seismic responses for the diesel generator (DG) building and standby gas treatment (SBGT) building are

under estimated. Based on these statements, the condition should have been identified as potentially affecting operability, and the CAQR sent to the Plant Operations Review Staff for a reportability determination. The wording of the condition description was in error, however, the correct design input was used. GDC criteria 2 was not violated, and that before issuance of the CAQR, the condition had been evaluated and determined to not affect operability.

This was documented in engineering report SCRBFNCEB8629 RO which was reviewed by PORS and determined to be not reportable in accordance with 10 CFR 50.72 or 50.73. This report, however, did not include a specific statement to indicate that engineering determined the DG building was a worse case example and that the conclusions of this report were also applicable to the SGBT building.

### 3. Corrective Steps Which Have Been Taken and Results Achieved

The initial call on whether a condition potentially affects operability is made by the management reviewer of the CAQR. Additionally, the management reviewer has the responsibility to ensure that the information contained on the CAQR accurately reflects the condition.

Since the issuance of the subject CAQR, specific individuals in Browns Ferry Engineering Project (BFEP) have been designated as management reviewers of CAQRs and have received appropriate training.

Engineering's position is that the design analyses of the DG and SGBT is correct. They are currently studying the use of updated shear modulus values for crushed stone and improved analytical methods to show that the results are not significantly different from the original design.

An adhoc committee was formed to review open BFN CAQRs for operability. The plant reporting section is reviewing the adhoc committee's operability reviews to verify reporting requirements have been implemented. The committee determined that the subject CAQR was correctly evaluated for operability during this independent review. Therefore, TVA contends that our confidence in the CAQR operability determination was not compromised. In addition, Site Directors Standard Practice 3.13, Corrective Actions, was issued. This procedure requires that a management reviewer consult with an experienced source familiar with the potential affected site when performing an operability determination.

The current BFEP management reviewers reviewed a critique on this violation. The critique stressed the importance of verifying that the CAQR accurately reflects the condition and provides guidance to ensure that any potential affect on operability is adequately addressed.

Therefore, TVA believes that the revised procedure and the experience gained by reviewing the critique should preclude recurrence by management reviewers.

4. Corrective Actions Which Will Be Taken

None

5. Date When Full Compliance Will Be Achieved

Full compliance has been achieved.

Enclosure 2  
RESPONSE  
NRC INSPECTION REPORT  
NOS. 50-259/88-16, 50-260/88-16, AND 50-296/88-16  
LETTER FROM F. R. McCOY TO S. A. WHITE  
DATED SEPTEMBER 12, 1988

1. PORC evaluated the use of TACF's on long term modifications. (Complete)
2. Train Modification Electrical Maintenance and QA personnel to complete QA records. (Complete)
3. Revise procedures MAI-45 and EMI 7.2 to ensure proper post maintenance tests are installed and troubleshooting unit 2 thermal overload relays on molded case circuit breakers. (Complete)
4. Establish a well trained, dedicated fire brigade which will manually suppress fires. (Complete)
5. Review NQAM procedure part III section 4.1 and SDSP 3.10 to ensure personnel comply with QA requirements. (Complete)
6. Train CAQR management reviewers for ensuring operability and reportability is properly assessed. (Complete)
7. Install and troubleshoot unit 1 safety related molded case circuit breakers for thermal overload relays before unit 1 restart.
8. Install and troubleshoot unit 3 safety-related molded case circuit breakers for thermal overload relays before unit 3 restart.

Enclosure 3  
RESPONSE  
NRC INSPECTION REPORT  
NOS. 50-259/88-16, 50-260/88-16, AND 50-296/88-16  
LETTER FROM F. R. McCOY TO S. A. WHITE  
DATED SEPTEMBER 12, 1988

On February 26, 1988, for safety related activities, BF Standard Practice 1.11, "CSSC and Non-CSSC Listing," was replaced by the unit 2 Q-list and procedure SDSP 3.10, "Use of the Q-List." This procedure replacement was facilitated by temporary change TC-5 to BF 1.11. For unit 2 limited QA activities and unit 2 non-safety related activities, procedure BF 1.11 remained in effect in accordance with this change. Temporary change TC-10 to BF 1.11 was issued on May 6, 1988 which continued the change. URI 50-260/88-16-02 questions the quality activities for the noted components during the specified time.

TVA issued a CAQR (BFN880418) to address the concern of proper control of activities affecting the quality of systems and components to their extent consistent with their importance to safety. The following actions were taken as a result.

1. The systems specified by the NRC resident inspectors and the systems determined by a comparison of the CSSC and the unit 2 Q-list identified to be considered were:

Condensate Circulating System, system 27  
Vacuum Priming System, system 34  
Standby liquid control system, system 63  
Reactor core isolation cooling, system 71  
Fuel pool cooling system, system 78

2. A plant maintenance request (MR) listing for all MRs performed between January 1988 and July 1988 on the subject system was reviewed for proper classification of the MRs. Questionable MRs were reviewed in detail for the work performed to determine if proper quality requirements were fulfilled.
3. Procedure SDSP 3.10 was reviewed for specification of proper QA coverage, requirements, and controls. Procedure SDSP 3.12 replaced the original BF 1.11. Procedure SDSP 3.10 provided proper specification of requirements and revision 1 was implemented on September 8, 1988. Revision 1 provides more explicit instruction for the use of the Q-list in conjunction with the CSSC list when necessary.
4. A review of the RHR shutdown cooling modes of operation has been completed to determine that all components for shutdown cooling are on the Q-list. The corrective actions of CAQR BFN880418 are complete and the CAQR is closed.

Procedures have been strengthened to provide recurrence control. TVA believes that activities during the interim period of concern of the URI provided adequate quality control of the subject systems.