

September 27, 2006

Mr. Karl W. Singer  
Chief Nuclear Officer and  
Executive Vice President  
Tennessee Valley Authority  
6A Lookout Place  
1101 Market Street  
Chattanooga, TN 37402-2801

SUBJECT: BROWNS FERRY NUCLEAR PLANT, UNIT 1 - REVIEW OF LICENSEE  
RESPONSE TO NRC GENERIC LETTER 98-04, "POTENTIAL FOR  
DEGRADATION OF THE EMERGENCY CORE COOLING SYSTEM AND THE  
CONTAINMENT SPRAY SYSTEM AFTER A LOSS-OF-COOLANT ACCIDENT  
BECAUSE OF CONSTRUCTION AND PROTECTIVE COATING  
DEFICIENCIES AND FOREIGN MATERIAL IN CONTAINMENT"  
(TAC NO. MC3159)

Dear Mr. Singer:

By letter dated May 11, 2004 (Agencywide Documents Access and Management System Accession Number ML041390221), Tennessee Valley Authority (TVA) provided an updated response to Nuclear Regulatory Commission (NRC) Generic Letter 98-04, "Potential for Degradation of the Emergency Core Cooling System and the Containment Spray System After a Loss-of-Coolant Accident Because of Construction and Protective Coating Deficiencies and Foreign Material in Containment," for Browns Ferry Nuclear Plant (BFN), Unit 1. This letter was supplemented by a letter dated September 7, 2006.

BFN Unit 1 has been in an extended outage since 1985. TVA is proposing to return the unit to service and is, therefore, responding to NRC generic communications that were not answered while BFN Unit 1 was shut down. The staff has reviewed the TVA's updated response to NRC Generic Letter 98-04 for BFN Unit 1.

We conclude that TVA has provided the information required by Generic Letter 98-04 as described in the enclosed safety evaluation. If you have any questions, please contact me at (301) 415-4041.

Sincerely,

*/RA/*

Margaret H. Chernoff, Project Manager  
Plant Licensing Branch II-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-259

Enclosure: Safety Evaluation

cc w/encl: See next page

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## **BROWNS FERRY NUCLEAR PLANT**

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SAFETY EVALUATION INPUT  
REVIEW OF GENERIC LETTER 98-04 RESPONSE  
TENNESSEE VALLEY AUTHORITY  
BROWNS FERRY NUCLEAR PLANT, UNIT 1  
DOCKET NO. 50-259

1.0 INTRODUCTION

On July 14, 1998, the U.S. Nuclear Regulatory Commission (NRC) issued Generic Letter (GL) 98-04, "Potential for Degradation of the Emergency Core Cooling System and the Containment Spray System After a Loss-of-Coolant Accident Because of Construction and Protective Coating Deficiencies and Foreign Material in Containment," to all holders of operating licenses or construction permits. The NRC issued GL 98-04 to determine the status of containment coating programs.

By letter dated November 10, 1998, the Tennessee Valley Authority (TVA) responded to GL 98-04 for Browns Ferry Nuclear Plant (BFN) Units 2 and 3. At the time that GL 98-04 was issued BFN Unit 1 was shut down in an extended outage. In their GL 98-04 response for Units 2 and 3, TVA committed to address GL 98-04 prior to restart of Unit 1.

By letter dated May 11, 2004 (ADAMS Accession No. ML041390221), TVA submitted to the U.S. Nuclear Regulatory Commission (NRC) a response to GL 98-04 for BFN Unit 1. On September 7, 2006, TVA submitted additional information as requested by the NRC staff (ADAMS Accession No. ML062510297). The staff's review of the information submitted by the licensee for BFN Unit 1 is provided below.

2.0 EVALUATION

The staff's review of the BFN Unit 1 submittal was based on the information requested in GL 98-04. In GL 98-04, the staff specifically requested that licensees provide the information outlined below for each of their facilities.

- (1) A summary description of the plant-specific program or programs implemented to ensure that Service Level 1 protective coatings used inside the containment are procured, applied, and maintained in compliance with applicable regulatory requirements and the plant-specific licensing basis for the facility. Include a discussion of how the plant-specific program meets the applicable criteria of Title 10, *Code of Federal Regulations* (10 CFR) Part 50, Appendix B, as well as information regarding any applicable standards, plant-specific procedures, or other guidance used for:

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(a) controlling the procurement of coatings and paints used at the facility, (b) the qualification testing of protective coatings, and (c) surface preparation, application, surveillance, and maintenance activities for protective coatings. Maintenance activities involve reworking degraded coatings, removing degraded coatings to sound coatings, correctly preparing the surfaces, applying new coatings, and verifying the quality of the coatings.

(2) Information demonstrating compliance with item (i) or Item (ii):

- (i) For plants with licensing-basis requirements for tracking the amount of unqualified coatings inside the containment and for assessing the impact of potential coating debris on the operation of safety-related structures, systems and components during a postulated design basis loss-of-coolant accident, the following information shall be provided to demonstrate compliance:
  - (a) The date and findings of the last assessment of coatings, and the planned date of the next assessment of coatings.
  - (b) The limit for the amount of unqualified protective coatings allowed in the containment and how this limit is determined. Discuss any conservatism in the method used to determine this limit.
  - (c) If a commercial-grade dedication program is being used at your facility for dedicating commercial-grade coatings for Service Level 1 applications inside the containment, discuss how the program adequately qualifies such a coating for Service Level 1 service. Identify which standards or other guidance are currently being used to dedicate containment coatings at your facility; or,
- (ii) For plants without the above licensing-basis requirements, information shall be provided to demonstrate compliance with the requirements of 10 CFR 50.46b(5), "Long-term cooling" and the functional capability of the safety-related containment spray system as set forth in your licensing basis. If a licensee can demonstrate this compliance without quantifying the amount of unqualified coatings, this is acceptable. The following information shall be provided:
  - (a) If commercial-grade coatings are being used at your facility for Service Level 1 applications, and such coatings are not dedicated or controlled under your Appendix B Quality Assurance Program, provide the regulatory and safety basis for not controlling these coatings in accordance with such a program. Additionally, explain why the facility's licensing basis does not require such a program. The information provided by TVA addressed the required items above. In addition, the program described in TVA's response to the above request for BFN Unit 1 was consistent with the program described for BFN Units 2 and 3 in TVA's November 10, 1998, letter. Based on the program described for Units 2 and 3, the NRC closed GL 98-04 for BFN Units 2 and 3 in a letter to TVA dated November 24, 1999.

Because of the extended shutdown at BFN Unit 1 the NRC staff requested additional information about the extent of the inspections and the inspection techniques that were performed to verify that the containment coatings had not degraded during the shutdown. In response to the NRC 's request TVA provided greater detail regarding the coatings inspections and maintenance work that had recently been completed and that was scheduled prior to restart of BFN unit 1. The entire immersion area of the torus, including the interior and exterior of the downcomers in the immersion area, has been stripped to the substrate and re-coated with a coating system that has been design basis accident tested and is approved for immersion applications. As documented in NRC Inspection Report 2005-06, NRC inspectors examined the coatings work performed in the immersion area of the torus and found it acceptable. In addition to the stripping and re-coating of the immersion area, the entire vapor space of the torus was inspected and localized repairs were made in accordance with the BFN Unit 1 Containment Coating Program.

A visual inspection was performed by qualified inspectors on the entire primary containment pressure boundary. The adequacy of the visual inspections at BFN Unit 1 was verified by performing adhesion tests at selected locations in the drywell. These physical tests of the coatings' ability to adhere to the substrate were performed by qualified individuals and observed by Quality Control Inspectors. Areas of degraded coatings in the drywell will be repaired consistent with approved plant procedures.

TVA also stated that a large portion of the drywell structural steel at BFN Unit 1 has been replaced. They further state that all new steel and other components such as hangers and pipe supports have been coated with a Service Level 1 coating system per approved plant procedures.

### 3.0 CONCLUSION

The NRC staff finds that BFN Unit 1 has provided the information requested by GL 98-04. The coatings program for BFN Unit 1 is consistent with that previously approved for BFN Units 2 and 3. Based on the extensive remediation of coatings in both the torus and the drywell, the 100 percent visual inspection of the containment coatings, and the supplemental physical testing performed, the staff finds that proper maintenance of the containment coatings is being performed prior to the restart of BFN Unit 1. For the reasons stated above, the NRC staff considers the programmatic review of GL 98-04 complete for BFN Unit 1.